



PROCEEDINGS

Competition in the Financial Sector



G20 Workshop on “Competition in the Financial Sector”

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Foreword

Analyzing the merits and disadvantages of competition in the financial sector is a crucial endeavor. Indeed, the degree of competition in the financial sector affects both efficiency and innovation in this industry. Furthermore, there is a close link between competition and financial stability. The level of competition in the financial sector can also influence firms' and households' access to financial services and external financing. Ultimately, competition in the financial sector is relevant for economic growth.

Notwithstanding its importance, the theoretical and empirical work on the implications of competition in the financial sector is relatively modest. Furthermore, it is widely recognized that this is an area where analysis is more complex than when considering competition in other industries. For instance, the link between competition and systemic stability is a topic of debate, with some arguing that too much competition reduces margins and fosters excessive risk taking, and others considering that banking systems with a limited number of large institutions face a higher probability to be subject to regulators' "too important to fail policies" that encourage risk taking behavior by banks. Moreover, the regulatory challenges linked to competition in the financial sector are changing constantly, and even finding proper measures of the degree of competition in this industry represents a rather difficult task.

As an effort to contribute to the understanding of this important topic, a Workshop on Competition in the Financial Sector was co-organized by Bank Indonesia and Banco de México on February 16-17, 2008, in Bali, Indonesia. To benefit from a wide array of views and experiences, the Workshop included participants from six international institutions, academics and representatives from the public and private sectors, in addition to G-20 member countries' delegates.

The Workshop was structured to cover the most important areas of this topic. Thus, the program focused on the main features of competition policies in the financial sector, the relationship between competition and financial stability,

the role of regulatory frameworks, the impact of greater openness to foreign bank presence on local financial systems, and the implications of consolidation for competition in the financial sector, among other issues. In addition, the links between a greater degree of competition in the financial industry and economic growth were explored.

This book presents the Workshop's proceedings. We hope that the ideas included in this publication will be a useful contribution to understanding the benefits and risks related to competition in the financial sector, and will stimulate much needed additional work in this area. On behalf of Bank Indonesia and Banco de México, we want to express our gratitude to all participants in the Workshop for sharing with us their expertise and insights in a topic of central relevance for financial development.

Boediono

Governor

Bank Indonesia

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Governor

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Introduction

The need for an in depth analysis of competition is particularly relevant in the case of financial services, as its effects on the sector's performance are not as clear cut as in the case of other industries. Indeed, greater competition in the financial sector has beneficial effects in improving resource allocation and promoting innovation and efficiency in the provision of financial services. However, the nature of the financial sector complicates the analysis of competition, and there is debate on the repercussions of competition in this sector on the industry's stability and, more generally, on overall economic growth.

In keeping with the objective of actively promoting the discussion of topics linked to economic growth, particularly those associated to the financial sector, and considering the importance attached to competition by the G-20 Accord for Sustained Growth, the Group decided to discuss the benefits and risks related to increased competition in the financial sector, in the context of a Workshop jointly organized by Bank Indonesia and Banco de México.

This book includes, in addition to the papers presented in the Workshop, the Report prepared by Bank Indonesia and Banco de México for the meeting of the G-20 Finance Ministers and Central Bank Deputies that took place in Brasilia, Brazil, on March 15-16, 2008. This Report summarizes the topics discussed during the Workshop, as well as the central conclusions and the issues that still need to be settled. The structure of the book follows that adopted for the Workshop.

The first session was designed to provide a general overview of competition policies in the financial sector, as well as an assessment of the degree of competition in this industry. Stijn Claessens, from the International Monetary Fund, shows that competition varies greatly across countries and notes that it is not related negatively to market concentration. A contestability approach (lack of barriers to entry and exit) is thus considered as better suited to assess the degree of effective competition in the financial services industry. Claessens also acknowledges that competition policy in the financial sector is still at an early stage, even regarding

the measurement of competition itself. He explains that the relationships and tradeoffs among competition, financial system performance, access to financing, stability, and growth remain complex from a theoretical perspective, and insufficiently supported by empirical evidence. Finally, Claessens emphasizes the need for adjusting competition policies and procedures regularly in the context of a rapidly changing financial services industry.

Jacob A. Bikker (De Nederlandsche Bank and University of Utrecht) and Laura Spierdijk (University of Groningen), identify a number of market failures which may allow financial institutions to exploit market power and so impair competition. As solutions to make it harder for financial institutions to profit from these market failures, Bikker and Spierdijk suggest, among others, the following: financial education, standardization of financial products, implementation of the right incentive structures for intermediaries, and consumer empowerment. They recommend as guidelines for competition policies in the financial sector more strength for anti-trust regulation, free entry of foreign investment and abolishment of cross-sector obstacles. Bikker and Spierdijk point out that a downward trend in competition in many major economies is observed at present. They mention that possible drivers may be consolidation in the financial sector and the relative decline in traditional intermediation.

In discussing these issues, the representative from Brazil reviewed his country's experience for improving access to financial services and noted that competition may be hampered by the presence of large state-owned development banks. He also acknowledged that, in his country, the presence of foreign banks has not had a significant impact on competition. The document from the European Commission reviews the efforts of the EU to increase contestability in the provision of financial services by removing cross-border barriers to entry and creating a level playing field across the EU financial sector. It notes that at the retail level the benefits of competition have not yet been fully delivered, and highlights the importance of raising consumer empowerment by increasing financial literacy, market transparency and reducing switching costs.

The second session of the Workshop, "Changes in the financial services industry", focused on two major trends in the financial services industry worldwide: the movement towards consolidation and financial conglomeration, and the growing presence of foreign banks in domestic financial sectors. Jeffrey Charmichael, from the Promontory Financial Group Australasia, analyses the regulatory challenges that the ongoing process of conglomeration in the financial sector has posed to regulatory and supervision authorities. According to the author,

the main regulatory risks that give rise to problems related to both competition and prudential concerns, are those arising from conflicts of interest and regulatory arbitrage. His paper details some of the alternatives that regulatory authorities have at their disposal to cope with these challenges. Charmichael concludes that until these issues are resolved and adopted internationally, financial conglomerates will continue to pose not only prudential challenges for their regulators but also competitive distortions.

Phillip Turner, from the Bank for International Settlements, studies two major competitive forces for the banking systems from the perspective of emerging market economies (EME): the entry of foreign banks and domestic consolidation. He focuses on the assessment of how these tendencies have altered banks' performance in these countries. The document acknowledges that during the period 1997-2006, banks in both emerging Asia and in Latin America have become more profitable than banks in the advanced economies, and that substantial differences in net interest margins across the main areas persist. The fact that profits remain so high in emerging economies suggests a need to look more closely at policies to enhance competition. He also notes that the recent trends pose serious dilemmas for policy makers in a number of areas: competition *versus* stability considerations, exercising the shared responsibilities of home/host supervision, and how to assign responsibility for differing objectives to various domestic regulatory agencies.

In discussing Charmichael's concerns, the representative from Italy underlines the importance of a cooperative approach to minimize competitive distortions arising from different supervisory approaches to financial conglomerates. On the other hand, in the opinion of the Canadian discussant, notwithstanding the challenges linked to consolidation and competition in the financial sector, the appropriate policy response is not to step back, but to learn the adequate lessons from past mistakes.

Another major trend shaping competition patterns worldwide has been the greater penetration of foreign banks in local financial systems. The second part of session 2 of the Workshop concentrated on this issue. Andrew Powell, from the Inter-American Development Bank, provides an overview of trends regarding foreign bank entry in developing countries. Powell focuses on competition, stability, corporate governance and regulation issues related to foreign investment in the banking sector. He highlights the benefits in terms of efficiency and reduced margins from foreign bank entry. While he downplays some of the possible drawbacks (such as cherry picking and reducing the access to financial

services), he emphasizes the potential risks to financial stability arising from increased competition from foreign banks. His paper also reviews some corporate governance issues relating to possible conflicts of interest between the subsidiaries and the parent bank.

The document on Mexico recognizes benefits from greater foreign bank entry in terms of efficiency, technology and risk management. However, it also notes a number of challenges faced by local regulators and supervisors in dealing with financial institutions of a global nature, such as potential conflicts of interest, corporate linkages between parent banks and subsidiaries, and crisis resolution processes. The paper from Indonesia reviews a number of policy responses to and the challenges resulting from foreign bank entry.

The third session of the Workshop was designed to address the various challenges faced by the financial sector in the areas of regulation and supervision. Andrew Sheng, from the China Banking Regulatory Commission, focuses on the lessons provided by the Asian crisis of 1997-98 and the sub-prime crisis for regulators, and acknowledges certain limitations which are present in current regulatory paradigms and frameworks. Sheng notes the limits of conventional thinking in which markets are assumed to be self-equilibrating, and emphasizes the need to move one step forward toward the view that markets are adaptive ecosystems that are also reflexive (markets are affected by regulatory/policy maker behavior and viceversa). In his opinion, this implies that supervision needs to make sure that enforcement is focused on preventing systemic risks from exploding into crisis.

Also in this session, Prof. James R. Barth, from Auburn University, reviews a number of key issues related to the challenges for regulation raised by competition in the financial sector. Mr. Barth's comprehensive text analyses the importance of size and composition of the financial sector for delineating the regulatory regime, the complexity of defining what a bank is in the context of the growing importance of the originate-and-distribute business model, the relevance (or irrelevance) of concentration for competition in the financial sector, and countries' regulatory posture toward foreign entry. Mr. Barth also reflects on the current state of financial sector regulation as well as on the proper focus of supervision: financial sector firms or the products that they offer. The author provides an overview of the current turmoil in the US sub-prime residential mortgage market, and explores how can regulation promote a safety and sound financial system without stifling innovation and competition in the sector.

The representative from the United Kingdom presented his country's experiences on regulatory and financial stability issues, in the context of the current

financial turmoil and a shift towards a more principle-based approach to regulation by financial supervision authorities in this country. The document on Japan describes recent regulatory changes in this country, highlights the need for regulation to adapt to market conditions, and points to the importance of a transparent bank resolution scheme with clear loss sharing rules and a crisis management scheme for a sound framework of competition and financial stability.

Debate on the implications of competition in the financial sector frequently centers on the potential trade-off between greater competition and systemic financial stability. Thorsten L. Beck, from the World Bank, addresses this issue in the second part of session 3, by presenting a survey of existing analysis and empirical results on the effects of competition in the financial industry on the sector's stability. Although Beck notes that theory makes ambiguous predictions about the impact of competition on banking stability, on the basis of his analysis he tentatively concludes that competition per se is not detrimental for banking stability in a market-based financial system with the necessary supporting institutional framework. Therefore, in his view, efforts should concentrate on improving this framework, rather on limiting competition.

The papers presented by the representatives of Australia and the United States support Beck's conclusion. Indeed, the Australian experience suggests that while after a deregulation process aimed at making the financial industry more competitive and efficient, vulnerability of the financial system may increase, these effects are transitional in nature. Similarly, the paper presented by the United States concludes that it would be wrong to blame excessive competition for the recent financial turmoil; in fact, these authors stress the beneficial effects of competition, and argue that the policy response to those events should aim at firming up the regulatory structure and removing specific market failures that distort competition, such as poor transparency and misaligned incentives. Finally, the document from France acknowledges the need to analyze competition in the financial sector as a whole and not to focus exclusively on banks, the need to distinguish between financial innovation and increased leverage, and the importance of better aligning incentives so as to pursue competition and stability objectives.

The final session of the Workshop was dedicated to the implications of competition in the financial sector for economic growth. While the effect of financial development on economic growth has been discussed at length, an equivalent analysis for the link between competition in the financial sector and economic growth does not exist in the theoretical or empirical literature. Sveinbjörn

Blöndal, from the Organization for Economic Co-operation and Development, uses a sectoral approach to assess whether industries that rely more heavily on external sources of funds, grow more rapidly in countries where regulation allows for stronger competition in markets for banking services and financial instruments. His paper supports the view that more competition-friendly regulation has a favorable impact on output and productivity growth. Santiago Carbó, from the University of Granada and the Federal Reserve Bank of Chicago, reviews much of the literature available on the role of competition in the financial sector and its link with economic growth. In his paper, Carbó notes the complexity of this link and the lack of a unique relationship between bank competition and growth, as this relation is heavily influenced by the institutional environment in which the financial sector operates.

In reviewing this topic, the experiences of two countries with drastically different market structures in their financial systems were presented: Korea and Germany. The experience of Korea supports Carbó's conclusion on the importance of the institutional framework for the impact of competition in the financial sector on economic growth. On the other hand, Germany provides an interesting case of a financial system in which consolidation is consistent with increased competition, cost efficiency and incentives for growth.

Evidently, there are still many issues that need to be studied in more depth to have an adequate understanding of the pros and cons of competition in the financial sector. Furthermore, in view of the different set of circumstances, the specific approach towards competition in the financial sector is likely to vary from one country to another. However, we believe that the material included in this book provides a more solid basis to analyse this complex topic. We would like to express our appreciation to the G-20 officials, academics and representatives of other institutions that participated in the Workshop and worked hard and efficiently to allow the publication of this book.

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Executive Summary¹

G-20 Finance Ministry and Central Bank officials met on 16-17 February in Bali, Indonesia, to discuss a range of policy issues related to competition in the financial sector in the context of a Workshop jointly organized by Bank Indonesia and Banco de México. The discussions benefited from the views of policymakers, representatives of international financial institutions, academics and other participants from the private and public sectors. The broad areas that were considered at the Workshop and that are expected to form the basis for discussion on competition in the financial sector by G-20 Finance Ministers and Central Bank Deputies in March, include: overview of competition policies, changes in the financial services industry due to consolidation and financial conglomeration and foreign bank entry, challenges for regulation and stability, and lessons for competition and growth.

Overview of competition policies. Participants noted that competition in the financial sector, as in other industries, is important for efficiency, quality of products and services, and innovation in the sector, as well as for improving the dynamic allocation of resources. There was broad agreement that competition policy in the financial sector is more complex than in other industries, mainly because of the tradeoff that exists between a more competitive environment and the need to safeguard financial system stability.

Finding proper measures of competition in the financial sector is a difficult assignment, but there was a generalized perception that bank concentration indicators are not good proxies for competition in the financial sector. Competition appears to be less driven by financial system structure and more by contestability. In particular, participants pointed out that the degree of financial sector competition tends to be higher with: (i) more anti-trust regulations, (ii) fewer obstacles to

¹ Chairman' Summary of the G20 Workshop on "Competition in the Financial Sector" for the G-20 Finance Ministers and Central Bank Deputies, Brasília, Brazil, March 15-16, 2008 .

entry and to foreign investment, and (iii) fewer cross-sector restrictions. However, it was noted that there is no “one-size-fits-all” framework to enhance competition in the financial sector. Entry barriers, cross-sector restrictions, as well as antitrust regulations should, therefore, be appropriate to the local conditions of each country.

Changes in the financial services industry. Participants acknowledged that one of the major trends in the international financial markets is consolidation. However, the evidence is inconclusive regarding the implications of the strong worldwide movement towards consolidation for competition in the financial sector. Furthermore, the development of a regulatory framework for financial conglomerates continues to evolve and several issues remain unresolved. Some participants argued that a lot still needs to be done to cope with the competition and prudential concerns arising from regulatory arbitrage and conflicts of interest that result from the creation of financial conglomerates.

Participants noted that regulatory responses to the challenges posed by conflicts of interest in financial conglomerates vary. These responses include setting limits on the corporate structure, on the participation in financial conglomerates, on intra and extra group exposures, etc. A fundamental challenge is that the component entities of a financial conglomerate face different capital regimes, which could lead to regulatory arbitrage both within and across countries. Although there has been some progress in the development of harmonized regulatory frameworks for financial conglomerates, much still remains to be achieved.

Another major trend is the increased entry of foreign banks into domestic financial systems, particularly in many EMEs. Evidence suggests that this trend has brought significant benefits in terms of competition, although the cases of some G-20 member countries show that this is not necessarily a universal experience. Notwithstanding the benefits of a stronger financial presence in domestic financial systems, foreign bank entry is not free of risks, and therefore to ensure that these benefits are materialized, actions need to be taken in a number of areas relating to stability, governance, regulation and supervision, and for addressing conflicts of interest among subsidiaries and the parent bank. Some participants argued that in order to avoid potential adverse effects on competition associated to foreign presence, mainly in EMEs, a gradual and orderly liberalization of foreign bank entry is preferred.

Challenges for regulation and stability. In the interest of stimulating competition in the financial sector, regulatory frameworks should be devised that strike an appropriate balance between the following key dimensions: (1) competition *versus* financial stability; (2) domestic *versus* international policies;

(3) home *versus* host supervisors; and (4) standards that best fit normal times *versus* crisis periods.

Participants noted that countries have adopted various regulations that try to influence competition in financial markets. On the one hand, regulations can hinder competition and function as barriers by controlling domestic and foreign entry, business activities and government ownership. On the other hand, regulations can enhance efficiency by ensuring the existence of contract enforcement, access to credit, investor protection and bankruptcy procedures.

It was pointed out that markets are not always stable and authorities' behavior affects the markets and vice versa. In this regard, conventional standards (such as capital adequacy regimes, VaR models, liquidity ratios or accounting standards) may be effective assuming normal conditions, but may add risks when the markets experience "tail events". In this situation regulators cannot rely only on a "one-dimensional" methodology of off-site surveillance. Thus, on-site examinations become vital to close the gap between theoretical perspectives and practices. Participants emphasized that regulatory and supervision authorities should work jointly towards preventing destabilizing market behavior.

It was noted that there is still no consensus on the implications of competition for financial stability on theoretical grounds. However, there is a good amount of empirical evidence showing that competition *per se* is not detrimental to financial stability as long as adequate legal, prudential and institutional frameworks are in place. Participants mentioned that open, competitive, democratic institutions foster private monitoring and transparency, in turn conduits for system stability. Policies associated with more competitive financial systems, namely through fewer activity restrictions, lower entry barriers and openness to foreign bank entry, also tend to be associated with higher stability. However, it is necessary to devise proper institutional frameworks for countries to reap the maximum benefits from competition in the financial sector. The general view among participants was that while competition in the financial sector can lead to financial fragility in a weak institutional framework, it is important to focus on improving this framework, rather than limiting competition.

Lessons for economic growth. Efficiency of a financial system can influence productivity and economic growth. There are good reasons to believe that competition in the financial sector also has a positive impact on these variables. However, participants agreed that there are important information gaps that need to be filled to have a better estimation of this impact. In addition, recent empirical evidence has demonstrated that the relationship between competition in the

financial sector and economic growth is heavily influenced by institutional and legal factors, and especially by the frameworks for regulation and supervision and also by governance practices.

Participants acknowledged that financial deepening is also a top priority. Deep and efficient financial systems are important catalysts for economic growth and poverty alleviation. Therefore, it is important to create efficient financial markets that best utilize society's savings to support real economic activity. The evidence suggests that competition has an overall positive influence in this regard.

Despite the ambiguities on the effects of competition in the financial sector on economic growth, it was noted that this should not be an argument against pursuing policies that foster competition in the industry. Therefore, the question is not whether competition in the financial sector should be encouraged or not, but rather what measures are required to ensure that countries adequately reap the benefits from competition.

Participants acknowledged that competition in the financial sector is a complex and comprehensive issue on which analysis is at an early stage and many questions still remain. Much theoretical and empirical research is needed to improve the understanding of this topic, including work on competition not only within the banking system but also from non-bank financial institutions. The range of important and challenging policy issues that were discussed during the Workshop are expected to stimulate further work by the G-20 in this area.

SESSION

1

Overview of Competition Policies

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Competition in the Financial Sector: Overview of Competition Policies

Stijn Claessens¹

abstract

Competition in the financial sector, as in other sectors, matters for allocative, productive and dynamic efficiency. Unfettered competition is, however, not necessarily first best given the special features of financial services. In this paper, I first discuss these complications from an analytical perspective. I then review how one assesses competition in the financial sector and its determinants. I show that competitiveness varies greatly across countries, in perhaps surprising ways, and that competitiveness is not driven by financial system concentration. Rather systems with greater foreign entry and fewer entry and activity restrictions tend to be more competitive, confirming that contestability –the lack of barriers to entry and exit– determines effective competition. I next analyze how competition policy in the financial sector has generally been conducted in the past and how changes in financial services industries affect competition going forward. In part based on comparison with other industries, I provide some suggestions how competition policy in the financial sector could be better approached, as well as what institutional arrangements and tools best fit a modern view of competition policy in the financial sector. I also highlight some specific competition challenges for emerging markets. I conclude that practices today fall far short of the large need for better competition policy in the financial sector.

¹ Stijn Claessens is Assistant Director in the Research Department of the IMF, a Professor of International Finance Policy at the University of Amsterdam, and a Research Fellow at the CEPR. This paper's findings, interpretations and conclusions are entirely those of the author and do not necessarily represent the views of the IMF, its Executive Directors or the countries they represent. I would like to thank Thorsten Beck, Jaap Bikker, Giovanni Dell'Ariccia and Luc Laeven for useful comments and discussions, the discussant, Marcio Nakane, participants at the G-20 meeting, and participants at seminars at the IMF Regional Office in Tokyo, the World Trade Organization (Geneva), and Bruegel (Brussels) for useful comments.

1. Introduction

Competition in the financial sector matters for a number of reasons. As in other industries, the degree of competition in the financial sector matters for the efficiency of the production of financial services, the quality of financial products and the degree of innovation in the sector. The view that competition in financial services is unambiguously good, however, is more naive than in other industries and vigorous rivalry may not be the first best. Specific to the financial sector is the effect of excessive competition on financial stability, long recognized in theoretical and empirical research and, most importantly, in the actual conduct of (prudential) policy towards banks. But there are other complications as well. It has also been shown, theoretically as well empirically, that the degree of competition in the financial sector can matter (negatively or positively) for the access of firms and households to financial services and external financing, in turn affecting overall economic growth.

In terms of the factors driving competition in the financial sector and empirical measurement of competition, one needs to consider the standard industrial organization factors, such as entry/exit and contestability. But financial services provision also has many network properties, in their production (e.g., use of information networks), distribution (e.g., use of ATMs), and in their consumption (e.g., the large externalities of stock exchanges and the agglomeration effects in liquidity). This can make for complex competition structures since various aspects, such as the availability of networks used in financial services provision or the first mover advantage in introducing financial contracts, become important.

Not only are many of the relationships and tradeoffs among competition, financial system performance, access to financing, stability, and finally growth, complex from a theoretical perspective, but empirical evidence on competition in the financial sector has been scarce and to the extent available, often not (yet) clear. What is evident from theory and empirics, however, is that these tradeoffs mean that it is not sufficient to analyze competitiveness from a narrow concept alone or focus on one effect only. One has to consider competition as part of a broad set of objectives, including financial sector efficiency, access to financial services to various segments of users, and systemic financial sector stability, and consider possible tradeoffs among these objectives. And since competition depends on several factors, one has to consider a broad set of policy tools when trying to increase competition in the financial sector.

In all, this means that competition policy in the financial sector is quite complex by nature and can be hard to analyze. Empirical research on competition

in the financial sector is also still at an early stage. The evidence nevertheless shows that competition and factors driving competition have been important aspects of recent financial sector improvements. Making financial systems more open and contestable, i.e., having low barriers to entry and exit, has generally led to greater product differentiation, lower cost of financial intermediation, more access to financial services, and enhanced stability. The evidence for these effects is fairly universal, from the US, EU and other developed countries to many developing countries. As globalization, technological improvements and de-regulation further progress, the gains of competition can be expected to become even more wide-spread across and within countries.

While competition has increased and led to many gains, it is also true that competition policy in the financial sector is behind that in many other sectors and still a missing part of the financial sector development agenda in many countries. Too often, competition is seen as an afterthought, rather than being considered an essential ingredient of a financial sector development strategy. Also, the rapid competitive gains due to the first rounds of liberalization over the past few decades will be hard to sustain going forward. Importantly, new regulatory and competition policy issues will arise as financial markets and products become more complex and global. The rapidly changing world of financial services provision and the many new forms of financial services provision means all the more that approaches to competition issues need to be adjusted.

To assure markets will remain competitive will require taking into account the special properties of financial markets, including the existence of many networks in finance. But here the theoretical and empirical literature is just catching up with changes. And competition policy will become more difficult institutionally to organize, both within and across countries, the latter being very necessary given the global dimensions of many financial markets these days. Furthermore, financial systems are often entrenched, in developing countries especially, including through links between the financial and real sectors, and odious relationships with the political sector as well, all of which can make achieving effective competition complex.

The paper reviews the state of knowledge on competition and how competition policy is and should be organized. It does so in the following manner. Section 2 provides a review of literature, both of the nature and effects of competition in the financial sector as well as of how to go about measuring competition in general and in the financial sector specifically. The section discusses, among others, the approaches and methodology used to tests for the degree of competition in the banking market of a particular country or market, present

some data on measures that are starting to be used for assessing financial sector competitiveness, and show how these measures relate to structural and policy variables. Section 3 discusses the current state of affairs in competition policy and how changes in financial services industries underway may affect the nature of competition. Section 4 discusses the implications for competition policy, how to approach it, how to organize it, and what tools to use to measure competition. In the last section, the paper presents some conclusions, although not many definitive. It does stress, however, that practices in many countries fall far short of the large need for better competition policy in the financial sector.

2. Nature of competition in the financial sector²

What is special about competition in financial sector? And how does competition matter? The two questions are closely related and depend in turn on what dimensions one analyzes. For the purpose of this review, I consider the links between competition and the following three financial sector dimensions: financial sector development (including the efficiency of financial services provision); access to financial services for households and firms (i.e., the availability, or lack thereof, of financial services at reasonable cost and convenience); and financial sector stability (i.e., the absence of systemic disturbances that have major real sector impact). Under the first link, development and efficiency, one can consider questions like: with greater competition, is the system more developed, *e.g.*, is it larger, does it provide better quality financial products/services, in a static and dynamic way; is it more efficient, i.e., exhibit a lower cost of financial intermediation, is it less profitable; and is it closer to some competitive benchmark? Under access, one can consider whether access to financing, particularly for smaller firms and poorer individuals, but also in general for households, large firms and other agents is improved, in terms of volume and costs, with greater competition. And in terms of stability, one can consider whether the banking system has less instability, fewer financial crises and is generally more robust and its financial integrity higher with more competition.

I consider what theory predicts on each of the three dimensions, since all are important and there can be relationships among them, making analyzing any individually not complete. I then review the current empirical findings on the same dimensions. I next review what both theory and empirics predict on what drives competition in the financial sector. Lastly, I analyze specifically internationalization of financial services, which is growing rapidly and which has

2 For a recent review of the theoretical literature on competition and banking, see Vives 2001.

had an especially large impact on competition in the financial sector of emerging markets and many developing countries.

Effects of competition in the financial sector: Theory

Development and efficiency, static and dynamic. As a first-order effect, one expects increased competition in the financial sector to lead to lower costs and enhanced efficiency of financial intermediation, greater product innovation, and improved quality. Even though financial services have some special properties, the channels are similar to other industries. In a theoretical model, Besanko and Thakor (1992), for example, allowing for the fact that financial products are heterogeneous, analyze the allocational consequences of relaxing entry barriers and find that equilibrium loan rates decline and deposit interest rates increase, even when allowing for differentiated competition. In turn, by lowering the costs of financial intermediation, and thus lowering the cost of capital for non-financial firms, more competitive banking systems lead to higher growth rates. Of course, they are not just efficiency and costs, but also the incentives of institutions and markets to innovate that are likely affected by the degree of competition.

Access to financial services. As a first-order effect, greater development, lower costs, enhanced efficiency, and a greater and wider supply resulting from competition will lead to greater access. The relationships between competition and banking system performance in terms of access to financing are more complex, however. The theoretical literature has analyzed how access can depend on the franchise value of financial institutions and how the general degree of competition can negatively or positively affect access. Market power in banking, for example, may, to a degree, be beneficial for access to financing (Petersen and Rajan, 1995). With too much competition, banks may be less inclined to invest in relationship lending (Rajan, 1992). At the same time, because of hold-up problems, too little competition may tie borrowers too much to an individual institution, making the borrower less willing to enter a relationship (Petersen and Rajan, 1994; and Boot and Thakor, 2000).

The quality of information can interact with the size and structure of the financial system to affect the degree of access to financial services. Financial system consolidation can lead to a greater distance and thereby to less lending to more opaque firms such as SMEs. Improvements in technology and better information that spur consolidation can be offsetting factors, however, leading on net to less change. Theory has shown some other complications. Some have highlighted that competition is partly endogenous as financial institutions invest in technology

and relationships (e.g., Hauswald and Marquez, 2003). The theoretical literature has also shown that technological progress lowering production or distribution costs for financial services providers, does not necessarily lead to more or better access to finance. Models often end up with ambiguous effects of technological innovations, access to information, and the dynamic pattern of entry and exit on competition, access, stability and efficiency (e.g., Dell’Ariccia and Marquez, 2004, and Marquez, 2002). Increased competition, for example, can lead to more access, but also to weaker lending standards, as has been observed recently in the sub-prime lending markets, but also in other episodes.

These effects are further complicated by the fact that network effects exist in many aspects of supply, demand or distribution of financial services. In financial services production, much use is made of information networks (e.g., credit bureaus) and in distribution networks are also extensively used (e.g., use of ATMs). Furthermore, in their consumption, many financial services display network properties (e.g., liquidity in stock exchanges). As for other network industries, this is making competition complex (see, for example, Ausubel, 1991; see further Claessens, Dobos, Klingebiel and Laeven, 2003).

Stability. The relationships between competition and stability are also not obvious (see further Beck, in this conference volume). Many academics and especially policy makers have stressed the importance of franchise value for banks in maintaining incentives for prudent behavior. This in turn has led banking regulators to carefully balance entry and exit. Licensing, for example, is in part used as a prudential policy, often with little regard for its impact on competition. This has often been a static view, however. Perotti and Suarez (2002) show in a formal model that the behavior of banks today will be affected by both current and future concentration and the degree to which authorities will allow for a contestable, i.e., open, system in the future. In such a dynamic model, current concentration does not necessarily reduce risky lending, but an expected increase in future market concentration can make banks choose to pursue safer lending today. More generally, there may not be a tradeoff between stability and increased competition as shown among others by Allen and Gale (2004), Boyd and De Nicolò (2005) and reviewed recently by Allen and Gale (2007). Allen and Gale furthermore show that financial crises, possibly related to the degree of competition, are not necessarily harmful for growth.

The determinants of competition and assessing competition: Theory and empirics

I will first review in more detail as what theory predicts drives competition, in general and specifically in the financial sector. In the next

subsection I will review what theory suggests on how best to measure of competition.

Theory of the determinants of competition. In terms of the factors driving competition and empirical measurement one can consider three types of approaches: market structure and associated measures; contestability and regulatory indicators to gauge contestability; and formal competition measures. Much attention in policy context and empirical tests is given to market structure and the actual degree of entry and exit in particular markets as determining the degree of competition. The general *Structure-Conduct-Performance* (SCP) paradigm was the dominant paradigm in industrial organization from 1950 till the 1970s. *Structure* refers to market structure defined mainly by the concentration of market share in the market. *Conduct* refers to the behavior of firms—competitive or collusive—in various dimensions (pricing, R&D, advertising, production, choice of technology, entry barriers, predation, etc.). And *Performance* refers to (social) efficiency, mainly defined by extent of market power, with greater market power implying lower efficiency. The paradigm was based on the hypotheses that i) Structure influences Conduct (e.g., lower concentration leads to more competitive the behavior of firms); ii) Conduct influences Performance (e.g., more competitive behavior leads to less market power and greater social efficiency). And iii) Structure therefore influences Performance (e.g., lower concentration leads to lower market power).³

Theoretically and empirically there are a number of problems with the SCP-paradigm and its implications that, directly and indirectly, structure determines performance. For one, structure is not (necessarily) exogenous since market structure is itself affected by firms' conduct and hence by performance. Another conceptual problem is that industries with rapid technological innovation and much creative destruction may have high concentration and market power, but this is necessary to compensate these firms for their innovation and investment and does not mean reduced social welfare. Most importantly, and different from the SCP-paradigm, the more general competition and contestability theory suggests that market structure and actual degree of entry or exit are not necessarily the most important factors in determining competition. The degree of contestability, that is, the degree of absence of entry and exit barriers, rather than actual entry, matters for competitiveness (Baumol, Panzar, and Willig, 1982). Contestable

³ Within this general paradigm, many aspects have been investigated. For example, there exist studies of the degree to which firms deviate from a production-efficient frontier, so-called x-inefficiency (see Berger and Humphrey, 1997, for an international survey of x-inefficiency studies for financial institutions).

markets are characterized by operating under the threat of entry. If a firm in a market with no entry or exit barriers raises its prices above marginal cost and begins to earn abnormal profits, potential rivals will enter the market to take advantage of these profits. When the incumbent firm(s) respond(s) by returning prices to levels consistent with normal profits, the new firms will exit. In this manner, even a single-firm market can show highly competitive behavior.

The theory of contestable markets has also drawn attention to the fact that there are several sets of conditions that can yield competitive outcomes, with competitive outcomes possible even in concentrated systems since it does not mean that the firm is harming consumers by earning super-normal profits. On the other hand, collusive actions can be sustained even in the presence of many firms. The applicability of the contestability theory to specific situations can vary, however, particularly as there are very few markets which are completely free of sunk costs and entry and exit barriers. Financial sector specific theory adds to this some specific considerations (see further Bikker in this conference volume). While the threat of entry or exit can also be an important determinant of the behavior of financial market participants, issues such as information asymmetries, investment in relationships, the role of technology, networks, prudential concerns, and other factors can matter as well for determining the effective degree of competition.

Empirical approaches to measure competition. I review the various approaches that have been proposed for measuring competition. The first empirical approach considers factors such as financial system concentration, the number of banks, or Herfindahl indices. It relies on there being relationships between structure-conduct-performance, but does not directly gauge banks' behavior. The second considers regulatory indicators to gauge contestability. It takes into account entry requirements, formal and informal barriers to entry for domestic and foreign banks, activity restrictions etc. It also considers changes over time in financial instruments, innovations, etc. as these can lead to changes in the competitive landscape. The third set uses formal competition measures, such as the so-called H-statistics, that proxies the reaction of output to input prices. These formal competition measures are theoretical well motivated, and have often been used in other industries, but they do impose assumptions on banks' cost and production functions.

In terms of the first two approaches, theory has made clear, regardless of the specific paradigm used, *e.g.*, the long-existing theory of industrial organization or the newer contestability theory, that documenting the structure, the degree of competition, its determinants, and its impacts requires specific approaches. For

one, the competitiveness of an industry cannot be measured by market structure indicators alone, such as number of institutions, or Herfindahl and other concentration indexes. And even then, there are no clearly preferred market concentration measures. Neither the number of firms, nor the market share of the top 3 or 5, or the often used Herfindahl index is necessarily the best. Second, traditional performance measures, used in finance, such as the size of net interest margins or profitability, do not necessarily indicate the competitiveness of a financial system. These performance measures are also influenced by a number of factors, such as a country's macro-performance and stability, the form and degree of taxation of financial intermediation, the quality of country's information and judicial systems and bank specific factors, such as the scale of operations and risk preferences. As such, these measures can be poor indicators of the degree of competition. Yet, they have often been so used as such. Because of these weaknesses, general structure and performance measures have declined in empirical studies in favor of more specific tests.

Indeed, the third approach has emphasized that documenting the degree of competition requires specific measures and techniques. One needs to study actual behavior –in terms of marginal revenue, pass-through cost pricing, etc.– using a model and develop from there a specific measure of competitiveness. While such theoretical well-founded tests have been conducted for many industries, empirical research on competition in the financial sector, particularly cross-country research, was at an early stage a decade or so ago (see Cetorelli, 1999). More and more, however, formal empirical tests for competition are being applied to the financial sector, mostly to banking systems in individual countries (see further Bikker in this conference volume). Data problems were previously a hindrance for the cross-country research –since little bank– level data were available outside of the main developed countries, but recently established databases have also allowed for better empirical work across many countries.

Generally, as in other sectors, the degree of competition is measured with respect to the actual behavior of (marginal) bank conduct. To date, the broadest cross-country studies using formal methodologies are Claessens and Laeven (2004) and Bikker and Spierdijk (2007). Using bank-level data and applying the Panzar and Rosse (1987; PR) methodology, the first study estimates the extent to which changes in input prices are reflected in revenues earned by specific banks in 50 countries' banking systems. The second study also uses the PR-methodology, but allows the degree of competition to vary over time and covers 101 countries. Table 1 documents by individual country the measures of the two studies, varying from 0 (monopolistic) to 1 (fully competitive). The H-statistic of Claessens and

Laeven varies generally between 0.60 and 0.80, suggesting that monopolistic competition is the best description of the degree of competition. The Bikker and Spierdijk data show even larger variation in the degree of competitiveness across the larger sample of countries, possibly also due to their estimation technique allowing for time variation. It is also worthwhile to note that there can be large differences between the two measures for individual countries, showing some of the difficulty in measuring competitiveness.

There does not appear to be any strong pattern among types of countries, although it is interesting that some of the largest countries (in terms of number of banks and general size of their economy) have relatively low values for the H-statistics, perhaps surprising. In both studies, for example, Japan and the US, have H-statistics less than 0.5. This may in part be due to the more fragmented banking markets in these countries, where small banks may operate in local markets that are less competitive. Studying all banks may lead to a distorted measure of the overall competitiveness of a banking system, especially in countries with a large number of banks, such as the United States, since studies also find differences between types of banks. For example, De Bandt and Davis (2000) find monopoly behavior for small banks in France and Germany, while they find monopolistic competition for small banks in Italy and for the large banks in all three countries in their sample. This suggests that in these countries, small banks have more market power, perhaps as they cater more to local markets. However, even if one computes H-statistics using data on large banks, rather than all banks for countries with many banks, results remain similar.

Other papers that use this methodology mostly also reject both perfect collusion as well as perfect competition, i.e., they find mostly evidence of monopolistic competition (Bikker and Haaf, 2001 summarize the results of some ten studies; Berger, 2000, further reviews). Tests for emerging markets are rarer, but those done (e.g., Nakane, 2001, for Brazil) also find evidence of monopolistic competition. In general, formal competitiveness tests find large variations across countries (Bikker, Spierdijk, and Finnie, 2006, review a number of studies). The ability to capture the degree of competition is still imperfect, however, as estimates vary considerably among studies for the same banking systems.

Empirical approaches to explain competition. Fewer studies have tried to explain the degree of competition in particular markets. Claessens and Laeven (2004) relate their competitiveness (H) measure to indicators of countries' banking system structures and regulatory regimes. Importantly, and consistent with some other studies, they find no evidence that their competitiveness measure negatively relates

to banking system concentration or the number of banks in the market. They do find systems with greater foreign bank entry, and fewer entry and activity restrictions to be more competitive. Their findings suggest that measures of market structures do not necessarily translate into effective competition, consistent with the theory that contestability rather than market structure determines effective competition (see also Bikker and Haaf, 2001). Others have studied the impact of financial liberalization on the degree of competitiveness and find generally that liberalized systems are more competitive, in the sense of having a higher H-measure.

Other empirical regularities. There is a broad empirical literature that has documented many relationships between financial system performance and structural factors within and across countries. It has related actual financial markets behavior to factors deemed to be related to competition, including not only structure, but also entry barriers, including on foreign ownership, and the severity of activity restrictions, since those can limit intra-industry competition. Many of these studies, however, do not use a structural, contestability approach to measure the actual degree of competitive conduct and as such can not indicate whether the underlying behavior is based on competitive or say oligopolistic behavior. Furthermore, often the focus has been on the banking system only, neglecting other forms of financial intermediation have become important. Also, competition from other forms of financial intermediation (capital markets, non-bank financial institutions, insurance companies) that plays a role in determining banking system competitiveness is often ignored. Nevertheless, this literature sheds some light on competition issues. It can be classified in individual country studies, cross-country studies and specific studies on the effects of internationalization.

Country studies. Much empirical work shows structure to affect conditions in financial systems. Especially for banking systems, a number of empirical studies have found that the ownership of the entrants and incumbents, the size and the degree of financial conglomeration (that is, the mixture of banking and other forms of financial services, such as insurance and investment banking), matter in a number of ways. Many studies have focused on the effects of consolidation in the banking systems. (For an early review, see Berger, Demsetz and Strahan, 1999). While many of these papers are not formal structure-performance-conduct tests, their results nevertheless suggest that the degree of competition has consequences for financial sector performance.

Evidence of competition to matter is most convincingly available from steps of financial liberalization, i.e., when reform “unambiguously” introduced more competition. This has notably been the case in the US with the abolishment of

restrictions on intra- and inter-state banking. Strahan (2003), a major contributor himself, reviews this large literature and notes how it has been able to document large real effects of US branching deregulation. He summarizes it as follows: “This paper focuses on how one dimension of this broad-based deregulation—the removal of limits on bank entry and expansion—affected economic performance. In a nutshell, the results suggest that this regulatory change was followed by better performance of the real economy. State economies grew faster and had higher rates of new business formation after this deregulation. At the same time, macroeconomic stability improved. By opening up markets and allowing the banking system to integrate across the nation, deregulation made local economies less sensitive to the fortunes of their local banks.”

Similar experiences have been documented for the EU following the Single Banking Directives and other measures aimed at creating a more integrated and competitive financial markets (see for example, CEPR 2005, for a review). These experiences have also highlighted the symbiotic relationships between increased competition and changes in regulation: as competition intensifies, regulators are being forced to evaluate remaining rules by markets participants, leading to more focused rules. Foreign banks have been found to stimulate improvements in the quality of local regulation and supervision (Levine, 1996). As such, foreign banks entry and others forms of international financial liberalization need not wait until the local institutional environment is fully developed. And greater competition can highlight other deficiencies that raise the costs of financial intermediation or hinder access to financial services, and as such be an impetus to reform.

The experiences have also brought some costs to light, though. There is evidence, for example, for the US, EU and elsewhere that consolidation has led to a greater distance and thereby to less lending to more opaque SMEs (Berger, Miller, Petersen, Rajan and Stein, 2005; Carow, Kane and Marayaman 2004, Karceski, Ongena and Smith 2005, Sapienza 2002, Degryse, Masschelein and Mitchell, 2005).

Cross-country studies. A number of recent papers have investigated across countries the effects on banking performance of (changes in) financial regulations and specific structural or other factors relating to how competitive the environment is. Factors analyzed include entry and exit barriers, activity restrictions, limits on information sharing, and other barriers. Here the empirical findings are fairly clear. In terms of development and efficiency, increased “competition” has led to lower costs of capital for borrowers and higher rates of return for lenders, i.e., lower margins and lower costs of financial intermediation, spurring growth. Barth, Caprio and Levine (2001) document for 107 countries various regulations in place

in 1999 on commercial banks, including various entry and exit restrictions and practices. Using this data, Barth, Caprio and Levine (2003) show, among others, that tighter entry requirements are negatively linked with bank efficiency, leading to higher interest rate margins and overhead expenditures. These results are consistent with both tighter entry restrictions limiting competition and the contestability of a market determining bank efficiency.

Using bank-level data for 77 countries, Demirgüç-Kunt, Laeven, and Levine (2004) find that bank concentration, which as noted needs not proxy for the degree of competition, has a negative effect on banking system efficiency, except in rich countries with well-developed financial systems and more economic freedoms. Furthermore, limiting entry of new banks and implicit and explicit restrictions on bank activities are associated with higher bank margins. The fact that too much competition can undermine stability and lead to financial crises has been often argued (Allen and Gale, 2004 review), however it has been difficult to document systematically (for example, Beck, Demirgüç-Kunt and Levine, 2002; see further Beck in this conference volume).⁴ Finally, since overall growth combines a number of aspects –efficiency, access and stability– studying the relationship between competition in the financial sector and growth can be insightful. Claessens and Laeven (2005) relate their competition measure to industrial growth in 16 banking systems. They find that greater competition in countries' banking systems allows financially dependent industries to grow faster. It thus provides comprehensive evidence that more competition in the financial sector serves the broader economy well.

Internationalization. There is also much evidence on the competitive effects of international openness and financial liberalization. Overall, the competitive effects of cross-border capital flows have been found to be favorable. In terms of development and efficiency, competition through cross-border capital flows has been shown to lead to lower cost of capital for borrowers and higher (risk-adjusted) rates of return for lenders. Generally much evidence has shown that opening up internationally can spur growth, including through improved financial intermediation (Bekaert, Harvey and Lundblad, 2005; Henry 2006 review this literature; Claessens 2006 reviews the competitive effects of cross-border banking).

Greater cross-border capital flows have been found though to increase access more for selected groups of borrowers, *e.g.*, large corporations that already

4 Boyd, De Nicolò and Jalal (2006) find for the US no trade-off between bank competition and stability, and that bank competition fosters the willingness of banks to lend. See also Cihák, Schaeck, and Wolfe (2006) and Cihák and Schaeck (2007).

had preferential access to financial services. Tressel and Verdier (2007), for example, find that in countries with weaker overall governance, politically connected firms benefit relatively more from international financial integration than other firms do. And while the effects on stability of international capital flows have generally been found to be favorable—as international financial integration allows for greater international specialization and diversification (e.g., Obstfeld, 1998), international capital flows can add to risks, among others, through contagion (IMF, 2007).

Foreign bank entry can be an alternative to capital flows to reach a market. The entry of foreign banks has been found to have generally favorable competitive effects on the development and efficiency of domestic, host banking systems (Chopra, 2007 provides an extensive review of the literature). These generally positive results have occurred through various channels, resulting from both direct financial intermediation by foreign banks and from competitive pressures being put on existing banks. There is little evidence of increased volatility associated with foreign bank entry; rather risks seem to be diversified better. Barth, Caprio and Levine (2003) show, for example, that allowing foreign bank participation tends to reduce bank fragility. The qualitative aspects of competitive foreign bank entry—new and better products, pressures to improve regulation and supervision (see Levine, 1996)—have by nature been harder to document, but have possibly been most important. One caveat, although often interpreted as competitiveness effects, the results of these studies are not necessarily so, since they are not formal competition model tests.

The effects of entry of foreign banks have been found, though, to depend on some conditions, and in some cases there can be negative consequences. Detragiache, Poonam, and Tressel, (forthcoming) find that foreign bank entry in poor countries is associated with lower private credit. Beck and Soledad Martínez Pería (2007) find contrasting patterns for different classes of borrowers in case of foreign bank entry in Mexico. More generally, while evidence of immiserizing effects of internationalization is limited, achieving the full gains from entry often requires more (minimal) convergence of regulations, legal and other institutional infrastructure. Furthermore, interactions between capital account liberalization, financial services liberalization and domestic deregulation can affect the gains.

3. Current state of affairs in financial services industries

The theoretical and empirical literatures reviewed above make clear, with all the caveats, that many of the improvements in financial intermediation in most countries and in most dimensions can be attributed to greater competition. The

means to achieve the greater competition have been the traditional ones: removing entry barriers, liberalizing product restrictions, abolishing restrictive market definitions, eliminating intra-sectoral restrictions, etc. At the same time, experiences have shown that once the easier steps have been taken, policies to achieve effective competition in all dimensions, and balancing the trade-offs between competition and other concerns, can become complex. This complexity will become even greater going forward as financial services industries further evolve. I review the current state of affairs in financial services industries and recent developments to set the stage for the discussion on how to conduct competition policies.

More difficult steps to follow. As reviewed, there have been large and rapid competitive gains in the US and the EU due to intra-country and regional deregulation. The large progress in developing countries' financial systems that opened up and experienced large entry –for example, Central and Eastern Europe and Latin America, can also be ascribed to increased competition. These gains will be hard to repeat in the future, however, as they largely involved the easy steps of liberalization and opening up; rather the task of competition policy will be more to deepen the competitive impact of liberalization. Even without (many) formal barriers, competition in many markets remains imperfect and the gains from competition can be limited to certain financial services segments. In most countries, major gains have come first and foremost to the wholesale capital and corporate finance markets (CEPR, 2005). And even this has been with some limits since the competitive effects, even after eliminating barriers can remain limited to some markets, regions or segments.⁵

Extending the gains to other types of consumers of financial services has not proven easy. Even in the most developed countries, with good financial institutions and solid institutional infrastructures, the degree of effective competition in consumer and retail services still lags that in other financial services segments. While in the EMU, for example, retail deposit and mortgage interest rates have converged, other financial services still show large price and cost differences. Indeed in the EU, there remain very large differences in the cost of a typical basket of retail banking services. The World Retail Banking Report (2005), for example, estimated that for 19 countries in Europe, North America, Eastern Europe, and the Far East the cost of a basket varied from €34 to €252, a 1 to 7.4 range, with the high and the low being two EMU-countries. And beyond the

⁵ Even within fully integrated whole-sale markets (no currency risks, limited legal and regulatory differences, good information, etc.), such as the U.S. and increasingly the EU/EMU, there still is, for example, a familiarity bias, e.g., more investment and entry closer to the home of the investor.

traditional loan and deposit services, many wholesale products still show large price differences, possibly due to imperfect competition.

Many countries have made improving competition in these segments therefore a priority (e.g., the Financial Sector Action Plan 2005-2010 of the European Commission launched in 2005; the UK following the 2001 Cruickshank report). This has been difficult, however, and not just a matter of opening up or liberalizing more. Rather in many markets there are still many (subtle) barriers and their further removal is needed to further facilitate competition. The Cruickshank report in the UK showed that the barriers to lowering costs for consumers and SMEs are often subtle, involving combinations of high costs of switching bank accounts, hidden fees, and limited transparency. The 2007 EU extensive competition inquiry in retail banking found a number of competition concerns in the markets for payment cards, payment systems and retail banking products. Particular indicators highlighted were large variations in merchant and interchange fees for payment cards, barriers to entry in the markets for payment systems and credit registers, obstacles to customer mobility, and product tying. All these barriers are not easy to eliminate. The recent experience with sub-prime lending in the US has brought to the fore many issues as well. Although largely an issue of lack of consumer protection and failure to conduct proper regulation and supervision, there are elements where unfettered competition has fostered misuses in this market.

Possible general and specific policy interventions. With the often subtle barriers, further steps and policy recommendations to foster more effective competition are not easy. Better price information and more disclosure to consumers on the costs of various financial services can help. Many countries have centralized places where, say, interest rates on deposit and standard loan contracts can be found. Experiences show though, that this remains of limited effectiveness when done alone. Market solutions can greatly and often more effectively foster competition than government initiatives alone, witness the many firms offering price comparators on the internet. In the EU case, as in most other markets, policy actions and recommendations related to retail banking have largely been in the form of putting more pressures on the banking industry, including by relying on codes of conduct, to reduce extensive barriers, converge standards, limit collusive practices, and encourage consumer mobility by lowering switching costs. Some strong general policy intervention can at times be necessary, however, to force more rapid adjustments, create standardization or remove barriers. Some examples illustrate the benefits of strong actions.

Over the past decade many governments have required various retail payments systems initially developed by (groups of) individual banks within a nation to be integrated and available to all consumers. This greatly increased not only the quality of payments services, but also often lowered costs. The EU recently required charges for financial transfers among Euro-zone countries to be equal to those for domestic transfers (subject to some conditions). Another option is mandating easy portability of one's bank account number, which is being introduced in some EU countries. Mandating by government rule a level playing field can be equally necessary in capital markets to assure fair trading and pricing for small as well as large investors. In the U.S., for example, traders are required to use the best price. This is embodied in the SEC "order protection rule": no matter where a customer order is routed, it should receive the best price that is immediately and automatically available anywhere in the national market system. This principle promotes competition among individual market centers by ensuring that dominant markets cannot ignore smaller markets displaying the best price.

Facilitating access to financial services. Improving access and promoting financial inclusion can require some specific measures, not just complementary to those increasing competition, but partly to offset possible negative effects of competition. As noted, in some circumstances, increased competition can have adverse effects on access to financial services, as it can undermine the incentives of banks to invest in information acquisition and lower their lending to information-intensive borrowers. More generally, more formal lending arrangements often associated with consolidation, increased distance between lenders and borrowers, greater foreign bank entry, greater use of technology and more competition –as has happened in many markets– may in theory have adverse impact on access for some classes of borrowers. More competition has been found for the U.S. and some European markets to reduce access in some cases of relationship-based lending (Boot and Schmeits, 2005 review). Evidence of this happening on a large scale in developed countries, has been limited though, and there have been clearly offsetting trends as well.⁶

For developing countries and emerging markets specifically, however, these risks may be higher. Due to institutional weaknesses, including poor information and institutional infrastructure and weak contracting environment, and more

⁶ In part due to technology, banks are better able today to combine soft and hard information in efficient manners, and some banks have become very profitable specializing in SME-lending. Also, larger multiple-service banks can have a comparative advantage in offering a wide range of products and services on a large scale, through the use of new technologies, business models, and risk management systems, making them effective in the SME markets.

general higher degrees of inequality, the access of SMEs and households in developing countries is often already less than desirable. In these markets, the possibility exists of bifurcated markets: large (international) banks will concentrate on large corporations, serving them using domestic and international platforms with a wide variety of products; and on consumers, providing them with financial services based on advanced scoring techniques and the like. The left out, middle segment under such a scenario could be the SMEs. As competition intensifies, profitability may go down and banks may have little incentives to invest in longer-term, relationships-based lending and information collection necessary for lending to this segment (for a model along these lines, see Sengupta, 2007). The question is whether improvements in the information institutional infrastructure and the contracting environment can compensate for this, such that SMEs and the like (still) have sufficient access to financial services. Empirical evidence on this has been limited to date, but early evidence is quite positive (see, for example, de la Torre, Soledad Martínez Pería, and Schmukler, 2008).

Changes in financial services provision and financial services industries. Complexity is also increasingly due to the changing nature of financial services provision. Financial services industries are continuously changing –due to removal of barriers, globalization, increased role of non-bank financial institutions, technological progress and increased importance of networks, which are affecting the degree and type of competition. Even in market segments where competition has been intense and benefits in terms in access and costs have been very favorable, such as wholesale and capital markets, new competition policy challenges has arisen, nationally and internationally. This is largely because the forms of financial services provision have changed so much in the last decade. The consolidation of financial services industries, the emergence of large, global players, the large investments in information technology and brand names necessary to operate effectively and to gain scale, and the presence of large sunk costs make it difficult to assure full competition, even abstracting from the special characteristics of financial services.

There is indeed some evidence from studies on banking systems that the progress in increasing competition may have slowed down from the early 2000s on, with even some indications of a decline in competition in some markets (Bikker and Spierdijk, 2007). The exact causes are unclear, and in any case, are likely to be multiple. The increasing presence of high fixed costs and large sunk costs in the production of whole-sale financial services, for example, can mean significant first mover and scale advantages, possibly leading to natural monopoly and market power. Externalities, say in e-finance in the adoption of payments using mobile

phones, can make the adoption of new technologies exhibit critical mass properties. In consumer finance, switching costs may have increased –for example, because automatic payments are increasingly linked to one’s specific bank account number. This means in turn that customers can not and do not easily change provider, leading to more complex competition.

Financial services provision also involves the use of an ever greater number of networks, such as payments, distribution and information systems. This means barriers to entry can arise due to a lack of access for some financial services providers to essential services. In banking, for example, network barriers can be closely related to which financial institutions have access to the payments system, typically banks only. ATM and other distribution networks can further be limited to banks, or only be available at higher costs to non-bank financial institutions. Access to credit and other information on borrowers and other clients is often limited to (a subset of) incumbent banks. In addition, network externalities –especially in capital markets, *e.g.*, the agglomeration effects of liquidity– can complicate the application of competition policy. Ownership and governance structures can play a role as well. In many stock exchanges, derivatives and other formal trading markets, for example, ownership and governance structures are changing from mutual to for profit ownership and with fewer owners. This can make traditional means of ensuring competition work poorly, or at least, differently,⁷ and new competition approaches can be required. There are also forces towards vertical integration, especially in capital markets (*e.g.*, the integration of trading systems with clearing and settlement), while other forces push towards more separation in other aspects (*e.g.*, clarity in functions) or horizontal consolidation (*e.g.*, economies of scale). Each of these raises (new) forms of possible anti-competitive behavior.

In addition to these complications, market and product definitions have become (more) difficult. It is somewhat trite, but nevertheless very important from a competition policy point of view to state that many financial markets today are global in nature, making any application of competition policy to national markets only of lesser value than in the past. In addition, the definition of a specific financial service (and its market) has become more difficult. Today, for example, there are fewer differences than in the past between the markets for pension services (like a company-provided, funded pension plan) and that for asset management services (like the US 401-K plans); after all, many people can save in both ways and, provided tax rules are largely harmonized between the two, will

⁷ For example, a private provider of an essential service will have different incentives to serve all in need than a mutual owned provider where all uses are also members/owners.

do so. And with many non-financial institutions providing (near) banking and other financial services, the boundary between banks and non-bank financial institutions has become more blurred.

4. Implications for competition policy in the financial sector

There was already little analysis of the design and conduct of competition policy in the financial sector. And the “special nature” of finance, with its emphasis on stability, always meant that competition policy was considered more complicated in the financial services industry. The changes in financial services industries reviewed in Section 3 create their own set of competition issues and there are surely no easy answers to how many of the new issues have to be reflected in policy. What is clear is that the three aspects that have to be considered in competition policy include *approaches*, *institutional arrangements*, and *tools*.

Approaches. One can think of three possible, and largely complementary approaches to conducting competition policy. One is assuring that entry/exit rules allow for contestable markets in terms of financial institutions. Two is leveling the playing field across financial services providers and financial products such that there is effective intra-sectoral competition. And three is assuring that the institutional environment (for example, payments system, credit bureaus, etc) is contestable. The first has been the traditional approach and the norm. As analyzed above, it has been quite effective, and will have to remain the essential cornerstone of competition policy in the financial sector, as in other sectors. But, as noted, on its own it may have reached its limits.

The second, leveling the playing field, means harmonization (or convergence), both among financial services providers (banks, insurance companies, pension funds, asset management, etc.), markets –national, regional and global– and between different, but functionally equivalent types of products –whether called banking, insurance, or capital markets products. Harmonization’s goal should be that, within particular markets, products are not regulated differently depending on what type of financial institution provides the service. And products that offer the same functionality of service, but may be “labeled” differently, i.e., fall under different regulatory approaches, need to be treated similarly. Harmonization (or convergence) includes addressing differences in taxes, capital adequacy requirements, transparency/disclosure, etc. across sectors and products. It is not just useful to increase competition, but also to avoid regulatory arbitrage and to reduce differences in the net overall regulatory burden of products. The increased creation of complex financial products that straddle various markets

and institutions makes the need for a common regulatory approach all the more necessary.

Harmonization across financial service sectors and products is a long-standing issue. On one hand, the big barriers across financial service sectors have been removed: only in some countries, but increasingly less so, are there still (large) regulatory barriers between commercial banks, investment banks, insurance companies and other financial institutions. The fact that these large barriers have been removed, however, does not make the issue of harmonization moot since often many smaller barriers remain. Some differences will be due to some “path dependence;” for example, some products emerged as insurance products but migrated to becoming savings products. Others arise from the existence of subtle barriers, *e.g.*, some products may be linked to the payments system for which access is limited. And others again exist because of linkages with other economic policies, *e.g.*, preferences may be linked to pension products but not to savings. Furthermore, many financial products come bundled (*e.g.*, a checking account has both savings, payments and often as well credit –overdraft– functions linked to it), making it hard to compare regulatory burdens of individual products with each other (*e.g.*, the costs of complying with AML/CFT may be assigned to a checking account or may be spread over various products).

In all cases, there is a need to go more in depth. Yet, designing an ex-ante approach to perfectly level the playing field is conceptually and in practice very difficult. The current approach, which is largely reactive –as producers and consumers are faced with differences, they may approach the various regulators and appeal for harmonization– has therefore benefits. It has also risks, however. There can be a race to the bottom as the lowest treatment becomes the norm for all products. It also opens up the possibility of lobbying for favorable treatments. This can be a problem since there can valid reasons for differences in regulatory treatments, say based on prudential concerns or consumer protection. A more proactive approach by authorities and competition agencies can therefore still be useful, and some, such as the EU has done so in payments systems and clearing and settlement. Regardless, and similar to what is needed for assessing degree of competition, agencies could require better data on price and costs at the level of individual products and make this data available. This would be a very important starting point for users of financial services that often lack the empirical bases to make their case.

The third approach, assuring that the institutional environment is contestable, is complex as well. This would mean that the various inputs required

for the production and distribution of financial services, including network services (for example, payments and check system, credit bureaus, other networks, etc), need to be available to all interested in using them, be fairly and uniformly priced, and be efficiently provided. For no part of a specific financial service production and distribution chain, should there be any undue barriers or unfair pricing. These steps are considered basic requirements in most other network industries, where (private) firms are producing and delivering services (e.g., phone, other telecommunications, energy, and water), using common networks (e.g., telecommunication lines, power lines, railroads, pipelines, etc.).

Important to assuring a contestable institutional infrastructure in financial services industries will be the formulation and application of standards, but here policy makers will face many trade-offs. As the payments system examples show, in networks, compatibility of systems is mostly based on standards. Standards can also help avoid coordination problems in firms' technology choice, and can help consumers forecast whether the specific technology will be widespread, leading to reduced uncertainty and less risk of consumer lock-in, and thereby avoid non-adoption (waiting). In several cases after the industry agreed on a common standard, the adoption of the good or service indeed increased sharply. In financial services, one good example has been the Society for Worldwide Interbank Financial Telecommunication (SWIFT) protocol for transacting international payments introduced in 1977. At the same time, with standards, users can be forced to make a choice. Furthermore, joining more than one network is often ruled out by contract. Exclusivity arrangements can lead to the predominance of a large network, even when more differentiated networks with more consumer choice could proliferate. Anti-competitive behavior can then easily follow. Policy makers face then a trade-offs between on one hand encouraging market development by supporting (a particular) standard(s) and achieving critical mass with the best technology, *versus* at the same time stimulating competition and not favoring incumbents.

Competition policy approaches in the financial sector can perhaps learn from those used in other network industries, many of which have adopted relatively sophisticated competition policies. For example, in many infrastructure industries, the ownership or management of the network has often been separated in recent years from the provision of services to assure fairer competition. Access policies and pricing of network services are often subject to government regulatory review. In these other industries, some rules for operating on the network may be standardized through direct government actions or through self-regulatory agencies assigned with this task, and not left to the (private sector) operators or owners (alone).

Some of these other network industries have also come to grip with the issue of assuring access to basic services for a wide class of consumers. Through mechanisms such “universal service obligations,” uniform price rules for essential inputs in producing services or key outputs, selected subsidies and other (tax) incentives, policy makers have been able to assure (near) universal access in these other network industries, at least in the most developed countries. These approaches may equally apply to those financial services with large network properties. For example, in payment services, standard uniform pricing rules could be imposed, similar to uniform rates for certain basic postal, phone, telecommunications, water or electricity services.

Institutional arrangements. The institutional arrangements for competition policy often will need to change as well. For one, competition policy often will need to be separated more clearly from prudential oversight. Some countries have already taken competition policy out of the central bank or supervisory authority, but in many countries the responsibility for competition policy still lies with the prudential authority. This creates conflict of interests (for review of the arguments, see Carletti and Hartmann, 2002).⁸ Separation does not mean that the prudential authority would have no say in competition: the prudential authority could have some (veto) rights in any specific decisions or general policy changes. Furthermore, the competition authority could still rely on analyses by the prudential authority, say in case technical expertise is scarce in the competition authority. But clearer separation does address the conflict of interests’ issue that has hindered effective competition policy in the financial sector.

Second, there is much more need to coordinate better, and preferably bring together, competition policy functions now often dispersed among various agencies within a country (e.g., separate for banking and non-bank financial institutions, or with prudential regulators, or among both specialized and general competition policy agencies). Reducing this dispersion will avoid the inconsistent application of competition policy across financial institutions and products that functionally are equivalent. It will also allow for the buildup of skills necessary for proper competition policy analysis. Of course, in many countries, there is also need to improve the skill base in the judicial system where competition cases may be finally settled or arbitrated.

8 The EU e-money Directive –specifying that the issuance of electronic money is subject to bank-like licensing and prudential controls– is arguably an example of conflict of interest. The fact that other countries such as the US did not carry this limitation and that the EC itself in its 2005 White Paper finds that this “may have constrained market developments” suggest that it may have been the self-interests of monetary agencies (and incumbent banks) that led to these (anti-competitive) rules.

It will also be important to consider the interactions between competition policy and consumer protection policies specific to the financial sector. I am referring here to three sets of issues: assuring markets work better for all final consumers –what is sometimes called assuring a proper business conduct; protecting individual consumers– which can be considered a narrow version of consumer protection; and assuring consumers obtain the greatest benefits from financial services provision, for example, through proper information and education –which makes for an even wider concept of consumer protection. Competition policy is relevant for all these issues, as both too little and too much competition can hurt consumers through each of these channels.

The costs and benefits of single *versus* multiple supervisory agencies have been debated for some time⁹ and no simple answers exist here on the best balance, from the point of view of financial stability or from the perspective of efficiency of financial services provision. It also relates, however, to the issues of competition and harmonization across financial services and financial services providers and financial sector competition policy design has to consider the organization of the supervisory agencies. The move towards single supervisory authorities across the world presumably could help with reducing unnecessary differences arising from multiple regulatory regimes. Although there is this trend, it is not general. Some countries have recently adopted the model of integrating systemic stability and all –banking, insurance and pension– individual financial institutions prudential oversight, in one agency, but separate from the agency for market conduct supervision. Others have left systemic stability with the central bank, but organized prudential and market conduct under two separate agencies. Yet others have made no changes and still have separate (and sometimes multiple of each) prudential banking, securities markets and insurance supervisors operating in one country, *e.g.*, the US.

Superficially, differences in the degree of de-jure or de-facto harmonization (or lack thereof) among financial instruments are not obvious between these various supervisory regimes. Even where there is a single supervisory authority, it has not done away with all (or even many) of the regulatory harmonization issues across sectors or products. Presumably, competitive pressures from both producers and users and the lobbying strength of these constituencies relative to regulators will be the most important factors driving the (de-facto) reduction in barriers. In that respect, a more fragmented structure of regulation and supervision may well lead

⁹ The issue of consolidated supervision is less debated.

to more de-facto harmonization and convergence as financial services industries are stronger positioned to argue for regulatory changes and agencies “compete” with each other.¹⁰ Nevertheless, whether any of these institutional arrangements are superior from the point of view of efficient financial services provision has not been researched in depth and may remain unclear in any case given the difficulty of attribution. And the organization of a supervisory authority in a single country may in any case be of little relevance when competition is on a global basis.

The changing nature of financial services provision also means that other aspects affect the competitive environment for financial services provision. For example, the competitive structure in telecommunications markets may affect the market for e-finance, as in case of mobile payments. And, obviously, there is a much greater need today for international cooperation among various national agencies in the application of competition policy. Harmonization and convergence across markets, already a very complex undertaking within countries, will of course be compounded, whether regionally or globally. The EU-experience, which has been engaged for quite some time now in a process of financial integration and convergence, shows the tenacity needed to create a single market for financial services. It shows that requiring some uniformity in minimal regulations—in the form of the various Directives—is not sufficient since inconsistencies with national rules and laws still arise, also as other policy areas need to be adjusted, which take much time and effort.

These national, regional and global experiences also show how many conceptually difficult questions can arise with convergence. For example, while in many developed countries, banks operate across borders without barriers, liquidity support and lender of last resort facilities are still organized nationally. This creates inconsistencies with policies for dealing with financial insolvency.¹¹ While this topic largely concerns financial stability and is beyond this paper (there is large literature here; see, for example, papers collected in Caprio, Evanoff and Kaufman, 2006), these differences can also have competitive implications. For

10 Obviously, this is highly context and country dependent, and ignores many other dimensions. For example, with strong financial institutions and weak regulators, a greater influence of private interests could lead in some countries to lax and low-cost standards, with perhaps greater competitiveness, but with more risk of financial instability. In other environments, capture of the regulator may lead to rent-seeking by (selected) financial institutions, but with limited risks.

11 Although liquidity management may be done centrally by the foreign bank in its home country, branches of foreign banks are typically eligible to receive liquidity support from the local host central bank. In case of insolvency of the head bank, however, the home country authorities are responsible, which can involve home government resources in case the whole bank fails. In single currency regions, like the EMU, there is an additional need for coordination between member countries’ liquidity support and ECB’s monetary policy. The obvious policy solution—a single supervisor in the EU/EMU with access to its own fiscal resources in case of financial insolvencies requiring government support—is a long way off in most observers’ assessments.

example, banks from some countries may have more generous access to the local safety net than banks from other countries do. Of course, these issues also arise within countries, as when state-owned banks attract more deposits at low interest rate because they are (perceived to be) covered more generously by the safety net. And they arise both ex-ante and ex-post, as when weak banks receive liquidity and/or solvency support.¹²

Harmonization and convergence depend these days to a great extent on international standards, of which the ones developed by the BCBS, IOSCO, IAIS and CPSS are the most visible. This has become a large body of “soft law”.¹³ The ambition levels of these standards vary, from suggestions to achieve a minimum common denominator among existing national requirements, which is most often the case, to going beyond existing national requirements, as is the case for Basel II. Although the standards are voluntary in nature and implementation is left to countries themselves, some of the standards can be quite intrusive. Adapting the many broad-based, global principles to individual country circumstances, while maintaining a common framework, has proven difficult. Difficulties range from the very narrow to the broad. For example, some countries have corporations with two supervisory boards, some with one, making uniform standards for corporate governance somewhat more difficult. And the Basel II rules encourage international banks to use the same risk management approaches across national jurisdictions, which can help with competition. At the same time, too uniform application could lead credit risks to be priced too rich in some countries and too thin in other countries. Adapting the model to capture the risks in various markets appropriately is necessary, but would negate some of the gains of uniformity. In most cases, functional convergence and arbitrage would make remaining cross-border regulatory differences of little consequence in hindering competition, but some major initiatives, like Basel II and other rules affecting (cross-border) banking, may end up hindering effective competition.

Tools to analyze. Corresponding to the changes in financial services industries, the tools for identifying and addressing competition issues need to be adjusted. Clearly, the measures typically used to date for measuring lack of competition (e.g., Herfindahl or concentration indexes of banks or branches within a geographic area) were quite limited even a few decades ago, and are now even

12 The case of the liquidity support for Northern Rock in the UK, the solvency support for IKB in Germany and the “bail-out” of Bear Stearns have attracted attention for their potential ant-competitive implications. Also, the (on-going) large scale liquidity support during the recent financial crisis from the US Federal Reserve Board, the ECB and the Bank of England could raise such questions.

13 There are issues of the legitimacy and governance of the standards setting bodies, which are not discussed here.

more so given the changes.¹⁴ Yet, the more sophisticated analytical and empirical tools developed for measuring competition in other industries are hard to apply to financial services industries given the unclear production function for financial services, the tendency to produce and sell bundles of services, the weaker and more volatile data, the presence of network properties, etc. A few examples can illustrate the difficulties.

It has already been difficult to measure effectively changes in competition in banking, the most traditional financial service for which much data is available, using the tools from the traditional industrial organization literature (such as pass-through coefficients). The difficulty lies largely in the limited data and span of observations. Most tests require at least 50 bank-year observations, which means, since the number of banks with good financial information is small in many markets, that one can not conduct year-by-year estimates of the degree of competition, or only subject to large confidence intervals, making comparisons over time hard. Using data from a larger sample of countries, *e.g.*, the EU-15, creates other difficulties, such as comparability of data.

In payments services, as in many other financial services these days, the issue arises what constitutes the relevant product market. Payment cards include credit cards, debit cards and charge (or stored value) cards. While different in terms of underlying technology, pricing schemes and some auxiliary services, these cards are similar in their cash substitute function, in which case competition analysis should cover all type of cards. Alternatively, however, payment cards can be seen as part of a bundle of different services like ATM cash withdrawal, payment service at point-of-sale (POS) terminals, etc. In which case, payment cards should be analyzed as part of the competition in bundles of household financial services, including deposit services.

Another example from the capital markets is the increasing trend toward internalization of trading within financial institutions, institutional investors and other financial intermediaries. While this can save transactions costs for the final consumer, it makes for less overall transparency and can lead to anti-competitive outcomes. Yes, data are more difficult to obtain and analysis becomes more complex.

Networks are another complication that can give rise to special competition policy issues. Obvious network effects arise when some banks have large nation-

¹⁴ More generally, it will be necessary not to rely on rigid rules and guidelines, *e.g.*, certain cutoffs for Herfindahl or concentration indexes, but rather on solid analyses of degree of competitive behavior.

wide coverage in branches or ATMs, as it can allow them to service costumers more cheaply. Two-sided networks effects exist in all payment cards markets, since larger POS networks are more valuable to both cardholders and merchants. This leads to complex measurement issues, for which the credit card industries provide an interesting example.¹⁵ The two-sided network properties argue for a few players, but that comes with many concerns over competition. Both Visa and MasterCard, for example, used to require exclusivity, i.e., members cannot join rival networks, which hinders competition. This rule was challenged and declared illegal in the EU. And in the US, court actions have forced the major credit companies to allow banks to offer competing credit cards.¹⁶ Similar other actions have been attempted to stop tying.¹⁷ The general protracted process on demonstrating some degree of collusion, however, highlights the empirical and conceptual problems of measuring competition in network type services. Also, collusion on interchange fees in payments system has often been argued for, but difficult to proof in court.

Tools to measure the (lack of) competition policy in financial services industries thus often need to be enhanced or even be newly designed to address these changes. Short of developing and applying new, economically fully justified models, however, much can be done. Much information on the competitive structure can still be discerned by focusing on price setting for specific products or financial functions, *e.g.*, what are the fees charged for consumer retail products or for processing individual pension premiums or payments. In addition, more focus can be given to the pricing and availability of inputs necessary to produce financial services, *e.g.*, do all types of financial institutions have access on the same basis to the retail payments system? Again, this type of information can

15 Credit cards come in two forms: under a common brand name, mainly Visa and Mastercard (85% of the market), or from closed, proprietary systems, as AmEx, and Diners' Club. Payment card associations are self-regulating organizations, providing the necessary infrastructure for transactions and interconnection (servers and (international) backbone clearance network, identification and authorization with agreed upon technology-standards), and agreed upon operation rules. Visa and Mastercard also have some shared governance through common memberships.

16 Pindyck (2007) discusses the antitrust suit brought by the U.S. Department of Justice (DoJ) against Visa and MasterCard in 1998. In the end, after a trial and a failed appeal by the two card networks, the DOJ won in 2001 on its issuance restriction claim, but lost on shared governance.

17 Unlike in proprietary systems, Visa and MasterCard require that the interchange fee is paid by the acquirer bank to the issuer bank, that all branded payment cards must be accepted (the "honor all cards" rule, which is a form of tying), and that card and cash payers pay the same price for the good (the "no surcharge" rule). Visa is thought to have become successful by requiring its members to accept also debit cards whenever accepting credit cards. These additional requirements can have competitive effects that are widely being debated but have been hard to proof (see Rochet and Tirole, 2001a and 2000b, and Balto 2000 and the debates over the recent regulation of associations in Australia). In the US, a case was brought against the two networks by Wal-Mart and other large merchants, alleging illegal tying of debit cards to credit cards. The case began in 1996 and settled in 2003; the associations agreed to pay the plaintiff class more than \$3 billion, and to separate acceptance of debit cards from acceptance of credit cards.

also be better disclosed such that users can act on it. Competition agencies can also be more proactive in their investigations. Today, agencies often only respond to events such as large scale mergers and acquisitions, but undertake little analysis of competitive conditions in existing markets. A more active approach targeted at key areas of concern of possible anti-competitive behavior would be useful.

5. Conclusions

Competition policy in the financial sector is still at an early stage. This starts with the measurement of competition. Much of the current literature relates performance indicators to countries' financial system structures and regulatory regimes without formal measures of competitiveness. Using a formal methodology, however, one can not only show that competitiveness varies greatly across countries, but also in perhaps surprising ways (for example, the US and Japan do not have the most competitive systems). Competitiveness also does not relate negatively to banking system concentration. Rather systems with greater foreign bank entry and fewer entry and activity restrictions tend to be more competitive, confirming that contestability determines effective competition. The contestability view of competition is, however, not the one typically applied. Rather, the market structure-conduct-performance paradigm is at best used.

Beyond documenting the degree of competition, there are many other open questions. Foremost are the tradeoffs between financial system performance, access to financing, stability, and finally growth which are complex from a theoretical perspective and on which empirical evidence has been scarce and to the extent available, often not (yet) clear. This lack of knowledge does not obviate the need for more rigorous application of competition policies to financial services industries. In terms of the application of competition policy, the financial sector is far behind other industries. While adaptations are necessary, much can be learned from policies already standard in many other industries, especially network industries. Authorities can also greatly enhance the available of data so that users will have the information needed to assess the costs of different financial services. Finally, with the rapid changing financial services industries, there is a need to remain agile and adjust competition policies and procedures over time.

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Table 1: PR-measures (H-statistics) of competitiveness of banking systems around the world

Country	Bikker and Spierdijk H (at end of the period)	Claessens and Laeven H average
Algeria	0.34	
Andorra	0.88	
Argentina	0.55	0.73
Armenia	0.43	
Australia	0.29	0.8
Austria	-0.05	0.66
Azerbaijan	0	
Bahamas	0.6	
Bahrain	0.41	
Bangladesh	0.87	0.69
Belgium	0.73	0.73
Bermuda	0.87	
Bolivia	0.99	
Botswana	0.23	
Brazil	0.55	0.83
Canada	0.2	0.67
Cayman Islands	0.96	
Chile	0.93	0.66
China PR	1.57	
Colombia	0.78	0.66
Costa Rica	0.78	0.92
Croatia	0.04	0.56
Cyprus	-0.09	
Czech Republic	0.82	0.73
Denmark	0.27	0.5
Dominican Republic	0.23	0.72
Ecuador	0.67	0.68
El Salvador	0.45	
Estonia	0.11	
Finland	-0.07	
France	0.82	0.69
Germany	0.8	0.58
Ghana	0.61	
Greece	0.47	0.76
Hong Kong	-0.04	0.7
Honduras		0.81
Hungary	0.79	0.75
Iceland	0.55	
India	0.49	0.53
Indonesia	-0.06	0.62

Table 1: PR-measures (H-statistics) of competitiveness of banking systems around the world (concluded)

Country	Bikker and Spierdijk H (at end of the period)	Claessens and Laeven H average
Ireland	1.12	
Israel	0.15	
Italy	0.08	0.6
Ivory Coast	-0.04	
Japan	0.44	0.47
Jordan	0.33	
Kazakhstan	0.28	
Kenya	0.62	0.58
Korea	1.03	
Kuwait	0.36	
Latvia	0.52	0.66
Lithuania	0.4	
Luxembourg	0.37	0.82
Macau	0.23	
Macedonia	-0.01	
Malaysia	0.7	0.68
Malta	0.3	
Mauritius	0.58	
Mexico	0.37	0.78
Moldova	0.58	
Monaco	0.41	
Morocco	0.32	
Mozambique	0.61	
Nepal	0.9	
Netherlands	0.92	0.86
New Zealand	-0.25	
Nigeria	0.74	0.67
Norway	0.5	0.57
Oman	0.35	
Pakistan	0.54	0.48
Panama	0.56	0.74
Paraguay	0.75	0.6
Peru	1.37	0.72
Philippines	0.28	0.66
Poland	0.03	0.77
Portugal	-0.02	0.67
Romania	0.59	
Russian Federation	0.41	0.54
Saudi Arabia	0.51	
Senegal	0.18	

Table 1: PR-measures (H-statistics) of competitiveness of banking systems around the world (concluded)

Country	Bikker and Spierdijk H (at end of the period)	Claessens and Laeven H average
Singapore	0.51	
Slovakia	0.16	
Slovenia	0.29	
South Africa	2.03	0.85
Spain	0.52	0.53
Sri Lanka	0.67	
Sweden	-0.08	
Switzerland	0.74	0.67
Taiwan	0.94	
Thailand	0.63	
Trinidad Tobago	0.21	
Turkey	0.43	0.46
Ukraine	0.44	0.68
United Arab Emirates	0.46	
United Kingdom	0.76	0.74
United States	0.46	0.41
Uruguay	0.53	
Venezuela	0.74	0.74
Vietnam	0.74	
Zambia	0.53	

NOTES: The table displays two measures. The Bikker and Spierdijk measure allows for variation over time and the reported H-statistic for each country is the one estimated for the end of the sample period. The samples used vary considerably across countries. The Claessens and Laeven measure is the estimated average H-statistic for each country in their sample calculated for the years 1994-2001 using the Panzar-Rosse (1987) approach. In their case, the H-statistics are based on a sample that includes observations from countries with a total number of at least 50 bank-year observations and observations on at least 20 banks.

1. Introduction

This paper consists of two parts. The first discusses structural characteristics of the financial markets including potential obstacles that may hinder competition, whereas the second deals with measuring and explaining competition, the impact of consolidation and changes in competition over time.

Claessens (2008) provides a splendid introduction to the theory on competition in the financial sector, addresses implications for competition policy and gives an excellent overview of the literature on this subject. Rather than run the risk of repeating parts of his argument, we refer to Claessens' paper for the general setting of competition in the financial sector. Further, we aim to expand on his introduction by presenting an overview of the structural features of financial markets which may impair competition, focusing especially on underlying microeconomic market failures and suggesting possible solutions. We use a diagnostic framework to investigate the typical structure of the financial sector, distinguishing between supply and demand characteristics. Weaknesses at the supply side are (in)formal entry barriers (e.g. large scale economies and brand names), the heterogeneity of bank products and their complexity, the sometimes limited numbers of suppliers, and cross-ownership and bank productions' network properties. Possible obstacles at the demand side are high search and switching costs, the opaque nature of pricing and quality of financial

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products, and financial illiteracy of consumers. A further problem is the weakly functioning markets of intermediaries. Given the potential weaknesses of the financial market structure, we suggest a number of possible policy reactions to these market failures.

The structure of the financial markets provides information on potential threats to competition. However, structure itself does not impair competition. It is the conduct of financial institutions that determines competitive behaviour. To assess the real situation on the financial markets in terms of competition, we need to measure the latter. This paper provides estimates of the degree of banking competition in 101 countries. Further, it tests for each country whether its market structure is either monopolistic (or a perfect cartel), perfectly competitive or monopolistic competitive. A next step is to explain each country's level of competition, using explanatory variables of market structure, contestability, inter-industry competition, and institutional and macro economic conditions. Determining what drives competition and, hence, observing which different feature across countries are crucial, helps in developing competitive policies and regulation further. Finally, we observe how competition develops over time.

The setup of this paper is as follows. Section 2 describes structural problems of competition on financial markets, while Section 3 develops possible policy reaction to financial market failures. Section 4 discusses how competition should be defined and measured, while the next section provides empirical results of the competition measure for the banking markets in 101 countries. Section 6 explains the observed banking competition in 76 countries, examining a large set of potential determinants of competition. The next section investigates the impact of consolidation by assessing the market power of larger banks compared to that of smaller ones. Section 8 examines changes in banking competition over time, seeking for upward or downwards trends. The last section summarizes, and provides policy recommendations.

2. Structural problems of competition on financial markets

The diagnostic framework developed in CPB (2003) enables us to assess whether a given market structure harbours impediments to competition. Structural problems promote the occurrence of supernormal profits during a substantial period of time, in comparison to more competitive market structures. 'Supernormal' refers to profits that exceed a market-conforming rate of risk-adjusted return on capital, while 'substantial period of time' typically reflects several years. We apply this framework to the financial markets. Note that structure itself does not impair

competition. It is the conduct of financial institutions that determines competitive behaviour. But structure may create the temptation which incites exploitation of market power.

Table 1: Determinants of imperfect competition

	Coordinated factors	Unilateral factors
<i>Supply side factors</i>		
Essential	Few firms High entry and exit barriers Frequent interaction	Few firms High entry barriers Heterogeneous products
Important	Transparency Symmetry	Structural links Adverse selection
<i>Demand side factors</i>		
	Low firm-level elasticity of demand (incl. switching costs and lock-in effects) Stable demand	Ditto Imperfection in financial advice

Supply side factors

The diagnostic framework contains a list of coordinated and unilateral factors that increase the probability of a tight oligopoly, see Table 1. Coordinated factors refer to explicit or tacit collusion, while unilateral factors refer to actions undertaken by individual firms without any form of coordination with other firms.

High concentration is conducive to the realization of supernormal profits, according to the traditional economic theory. A more recent and dynamic view considers that high concentration may also be the result of heavy competition forcing the market to consolidate and that it is therefore difficult to draw clear conclusions from concentration in the financial industry.

High entry barriers have long been recognized as an obstacle to competition. Although many formal barriers in financial markets have been removed over time in many countries, informal entry barriers are quite common. The existence of large scale economies in many financial industries, due to relatively large fixed costs, makes a hindrance for new entries. Due to developments in informational technologies, increases in regulatory, accounting and legal requirements (e.g. IFRS, Basel II, Solvency II), the high costs of developing new products and so on, the optimal size of financial firms is ever increasing (e.g. Bikker and Gorter, 2008).

The importance of brand names, supporting confidence in the respective financial firms, has a similar result. A large scale is also necessary for the supply of certain specific services to wholesale firms, such as merger and take-over advice, the equity and bond issuance management, and the construction of complex investment products.

Frequent interaction, transparency (with respect to competitors) and symmetry (in terms of equal cost structures) are beneficial to a tight oligopoly, since they make it easier for firms to coordinate their actions and to detect and punish deviations from the (explicitly or tacitly) pre-agreed behaviour. Although frequent interaction is common and sometimes unavoidable (e.g. in the case of efficient payment systems), cost structures of financial markets are quite opaque.

Heterogeneous products make it easier for firms to raise prices independently of competitors, as clients are less likely to choose for, or switch to, other firms in response to price differences. Here we observe a second severe weakness of financial markets. Most financial products are quite complicated in practice and carry high switching costs. Payment accounts become easily more complex owing to varying tariff structures and services, while savings and deposits accounts may carry diverging withdrawal conditions. Mortgage loans are complicated by redemption rules and the frequency and timing of interest payments. The sophistication of mortgages increases when they are combined with life insurance policies or where redemption is based on investment portfolios. Life insurance, pension and (mutual) investment products are generally far more complicated than the basic banking products. Bank services for wholesale clients usually show an even higher level of sophistication, although, of course, those clients are also more professional. Financial institutions offer a wide range of heterogeneous products, most probably in respond to market demands, but in addition, they may well have purposely raised product complexity to be able to exploit monopolistic competition. An incentive to offer more transparent products seems absent. This potential weakness of financial markets is aggravated by the behaviour of the clients of financial institutions, as discussed below.

Structural links between firms such as cross-ownership would give firms a stake in each others' performance, thus softening competition. Such links between financial institutions are quite common in European countries, but less in the US. Information about risks (and the lack of it) plays a crucial role in markets for financial products. Asymmetric information plays a major role in lending. Particularly in lending to small and medium-sized enterprises (SMEs), some local banks are far better informed than others due to long-lasting and close relationships with clients

and the benefit of local presence. This severely limits banking competition, but may have gains in terms of access to external financing.¹⁹ In the case of life insurance, adverse selection may play a role when consumers have more information regarding their life expectancy than insurance companies. Adverse selection may lead to higher price-cost margins.

Its network property makes the payment market special. Banks need to cooperate in developing technical standards for automatic processing, which adds substantially to market efficiency. Of course, competition may be limited under such an arrangement, due to the trade-off against efficiency, though not absent (NMa, 2006). This is also observed in other financial markets with network properties. Drawbacks of standardisation may be increase of entry barriers, risks for illegitimate coordination and a disincentive for innovation.

All in all, we observe a number of supply conditions that may contribute to (tacit) collusion and make oligopoly on financial markets more likely than perfect competition. Such dubious conditions are potential market distortions and regulation may be needed to reduce their disruption of competition.

Demand side factors

Demand-side factors also affect the intensity of competition, see Table 1. As above, we distinguish coordinated and unilateral factors. The elasticity of residual demand determines how attractive it is for a firm to change its prices unilaterally. The firm may relinquish a price agreement, if only demand responds sufficiently strongly to price changes. In the absence of coordination among firms, low elasticity of demand will also help to keep prices above competitive levels, as in that case the loss of sales caused by a price increase will be small. High search and switching costs contribute to low firm-level demand elasticity. Stable, predictable demand makes it easier for firms to collude in order to keep prices high, since cheating by one or more firms will be easier to detect than in the case of volatile demand.

The elasticity of residual demand for financial services is limited, in practice, as substitutes are rare. Bank savings, investment funds and life insurance policies (such as annuities) are, in principle, substitutes for each other, but only in a limited way since their characteristics differ substantially in terms of risk, liquidity and tax treatment. For other financial services, substitutes are absent. Foreign competition may help to alleviate this problem. However, in practice, cross-border competition

¹⁹ The stronger banking competition is, the less banks are inclined to invest in lasting relationships, as their clients may be snatched by competitors before they have re-earned their investment (Petersen and Rajan, 1995).

is often limited, particularly for consumers. Entry by foreign banks may help but in practice remains limited in many markets and segments, probably due to differences in legal, regulatory and institutional structures, consumer preferences, national habits, etcetera.

High switching costs are typical for many financial products such as mortgage loans, life insurance policies and pension arrangements, since contracts are often of a long-term nature and early termination of contracts involves costs. These high switching costs are prohibitive, so consumers are locked-in. (By the way, this holds also for the financial institutions). Switching costs are also high for payment accounts (in terms of the effort required), where automatic payment and collection services are linked to a unique account number. Here, the switching costs are not prohibitively high.

Search costs for financial products are high as these products are often complicated or seen as such. The financial market is opaque in the sense that prices and quality are often difficult to observe or assess. Search cost could be alleviated if search could be entrusted to specialist agents. However, the flip side from this extra link in the supply chain is that it goes with additional costs. Advice would help consumers (and producers) to avoid errors in their product and brand choice. Moreover, it would make the market more competitive by increasing the elasticity of demand. Thus, it is very desirable to have a well-functioning market for financial advice. However, financial advice markets often function improperly. In particular, under less efficient incentive structures in these markets (notably commissions) and with inexperienced consumers, insurance agents may give advice that is not in the best interest of consumers.²⁰

Consumer power weakens as a market becomes less transparent. Strong brand names are indicators of non-transparency, as confidence in a well-known brand may replace price comparisons or personal judgment.²¹ The power of consumers also depends on their financial literacy. On average, financial literacy is rather low, also among the high educated. This has been documented particularly for pension services (Van Rooij *et al.*, 2007). Financial illiteracy increases the dependency of consumers on the (weak) intermediation sector. Another indicator

20 Research in the Netherlands shows that the effect of advice may turn out to be negative: the clients that bought a policy through an insurance advisor received, on average, a significantly lower pay-out than the respondents that bought a policy directly from an insurer. Further, intermediaries appeared to deteriorate the (initial) choice of consumers with respect to risk taking, probably because commissions are highest for high risk products, so that their added value is negative (CPB, 2005, Chapter 5). New regulation requires intermediaries to disclose their commission or income and their dependency on financial institutions.

21 Strong effects of brands names may also reflect a good functioning reputation mechanism. However, we observe that bank 'use' their brand names, for instance, by offering low deposit rates.

is the degree to which buyers organize themselves, for instance to be informed and to reduce the opaque nature of the market. Consumer organizations, Internet sites and financial magazines, compare prices and inform consumers continuously on financial product conditions and prices in order to enable them to make comparisons and well-founded choices. Consumer (and commercial) organizations reduce market opacity, but they are unable to overcome all problems, because products are inherently complicated and come in a wide range of different properties. Besides, many consumers are not able or not willing to make the effort to search for the best offer. A third indicator is the degree to which consumers can take out financial products collectively. Collective contracts are usually based on thorough comparisons of conditions and prices by experts, are often negotiated via the employer and contribute substantially to consumer power.²² There are examples of how in the US 401(k) plans offered by large employers carry lower costs. Of course, many people are unable to add to their consumer power this way. Particularly for banking products such collective contracts are rare.

Abundant examples exist of poorly functioning consumer markets. We name a few current examples in the Netherlands: interest rates on simple saving accounts vary between 1.25% and 3.5%, due to consumers' loyalty, ignorance, or apathy, and to smart strategies of the banks,²³ similar large spreads in prices of annuities and life insurances,²⁴ high cost margins (of around 40%) in life insurance types of saving products. Similarly, regarding failing international competition, we observe large differences in interest rate on deposits across countries, annual costs of payments accounts varying within in the EU from € 34 to € 252 (Cap Gemini, 2005), and so on.

Most problems faced by consumers are also affecting SMEs. However, their position may be even more unfavourable, as they usually depend on a few local banks only, due to information asymmetries. Incidentally, dependency on local banks can also have benefits.²⁵ Boot (2007) recommends introduction of legislation and regulation to support existence of credit registries with fine-grained information about SME clients to make them more attractive to a potential new bank. The position of wholesale firms is more difficult to assess. Of course, for traditional

22 In the Netherlands, health cost insurance arrangements are often offered by employers or social organizations. Of course, the employees' pension plan is the best example of a collectively offered financial product.

23 For instance, the regular introduction of new types of account, while lowering the interest rates on older accounts of mainly immobile clients.

24 In the Netherlands, the guaranteed pay-out a life insurances with the same premium may vary across insurers by a factor of 1.5 (CPB, 2005, Chapter 5).

25 Benefits from having local banks could come from relationship lending, where the banks are more willing to acquire information on the borrower.

banking products, the wholesale firms are well equipped to assess the prices and quality of banking services. However, we observe a continuous shift over time from traditional intermediation to new, more sophisticated and complex products whose prices and quality are more difficult to assess. Examples are merger and take-over services the equity and bond issuance management, and the construction of complex investment products such as SPVs and SIVs. Furthermore, the price and quality of many wholesale banking services are subject to tailor-made contracts and therefore less public. Consequently, price competition in these new banking service markets is presumably more limited than in traditional intermediation.

Thus on the supply side, we observe a certain degree of supplier power, due in particular to the existence of informal entry barriers and strong product differentiation, where in the case of limited numbers of suppliers the risk of (tacit) collusion may increase. On the demand side we find factors such as high search and switching costs, few substitution possibilities, limited consumer power due to the opaque nature of financial products and financial illiteracy of consumers. Furthermore, the booming markets of complex, tailor-made wholesale banking services are also opaque.

All in all, we observe a number of conditions that make some kind of oligopoly or monopolistic competition on financial markets more likely than perfect competition. It should be kept in mind that impediments to perfect competition may simply result from, given existing trade-offs with stability, innovations and access to financial services. Regulation of competitive authorities may be needed to improve these conditions and reduce their possible adverse effects on competition, thereby aiming at heavier competition, not necessary at perfect competition.

3. Possible policy reaction to financial market failures

The analysis above points to many factors, which contribute to financial market failures. Some of them have already been discussed by Claessens (2008), e.g. removal of entry barriers.²⁶ Here, we briefly discuss some possibilities to remove other obstacles to competition.

Competition is generally seen as crucial in order to obtain low prices, high quality, efficiency, innovation, easy access for all potential clients, effective monetary

²⁶ Boot (2007) recommends regulators and governments to ensure that costs of essential memberships (credit bureaus, banking associations and payment systems), regulatory reporting, and minimum capital requirements are not disproportionate to the size of new institutions.

policy,²⁷ financial stability, and so on. Nevertheless, there may be submarkets where, given the underlying market conditions, strong (let alone full) competition cannot produce welfare gains. An example is the market for pensions. The Netherlands has an extensive capital based collective pension system, which is mandatory for (almost) all employees. The employer and the labour unions choose a company-specific or industry-wide pension fund,²⁸ an insurer or (in the near future) a so-called General Pension Institution to perform the agreed pension scheme.²⁹ Although this choice creates a certain degree of competition between pension funds and insurers, competition is limited in the sense that individual employees have no choice at all. The alternative is a free market for pension provisions, where we need to distinguish between freedom with respect to savings (free *versus* mandatory) and freedom with respect to the way the savings are managed (fund's choice *versus* employee's own choice). In countries where mandatory savings are (often) absent, as in the UK and the US, consumers frequently appear unable to save adequately for their old age. For instance, Chile and the Netherlands have some mandatory savings components, but management in Chile takes place on a competitive, individual basis, whereas in Netherlands it is collective. However, 'commercial' pension funds and insurers need to lay out high costs to acquire clients, have to deal with adverse selection and with expenses to diminish its adverse effects, and (with respect to insurers) the need to make a profit.³⁰ In the Netherlands, the operational costs of free-market voluntary pension provisions, the only tax-friendly option open to the self-employed, are estimated to be seven times those of obligatory employee pension funds (Bikker and De Dreu, 2007).³¹ The operational costs of Dutch pension funds are among the lowest world-wide (Bikker and De Dreu, 2008). Most Dutch employers appear to be quite happy about not having to choose (Van Rooij *et al.*, 2007). Of course, this is a very specific situation, where many issues may raise further discussion. More generally, in the presence of information asymmetries, agency issues and so forth, competition is likely to be imperfect and may lead to perverse results. Hence, for some particular financial submarkets, we should not aim at competition but only at efficiency.

27 More competition lowers bank interest rate spreads on policy and market rates and increases the speed of adjustment after changes in the latter rates (Van Leuvensteijn *et al.*, 2008).

28 In the Netherlands, unless an industry-wide pension fund is mandatory under the sector's Collective Labour Agreement.

29 Or, due to coming EU regulation, a foreign pension fund (NMa, 2006).

30 Many of these arguments also apply to a lot of non-financial markets. Stimulation of pension savings may be the dominant reason for the authorities to act more paternalistic on the pension market.

31 Different institutional conditions and regulatory regimes across types of voluntary pension providers also play a role.

Using our diagnostic framework, we observed that financial illiteracy is one of the major causes of weak consumer power. Providing financial education may relieve the problem and enhance competition. A range of academic articles evaluate the results and indicate what kind of programmes are effective (e.g. Bernheim and Garrett, 1996; Lusardi, 2004; Mooslechner *et al.*, 2003; Braunstein and Welch, 2002). Programmes should particularly focus on knowledge and information, sense of urgency and self-confidence. It seems likely that only a part of the population is susceptible to such efforts. Further development of price comparison websites may also be very helpful but, again, such sites only serve part of the population, albeit a gradually increasing part.³²

Heterogeneity is another structural weakness that can be addressed. A possible step forward is to promote more homogeneous or standardised products. A good example has set by the FSA in the UK, which a few years ago provided a detailed definition of a normalized private pension plan. Further, they opened and maintain a website with prices of the financial institutions which offered such prescribed pension products. These products are included only after a thorough examination to check whether they meet the standards. This approach helps to solve the heterogeneity problem and to avoid the exploitation of semi-monopolistic power. Similarly, in the Netherlands, a basis package for health care insurance has been defined (so standardized) which is a precondition for government support (NMa, 2006).³³ This standardized product enables competition, also where health insurance policies are complicated and many consumers are not well-informed or willing to investigate the various offers.

Payment systems typically face serious network property problems. National cooperation has increased efficiency significantly, but at the cost of impairing competition. In the EU, the Single European Payment Area (SEPA) framework, in effect since January 25, 2008, aims at the introduction of several competing, cross-border payment systems, which may benefit from the large, euro area-wide scale (NMa, 2006; Boot, 2007). The problem of the high costs involved in switching one's payment account over to another bank can be solved if bank clients are allowed to transfer their unique payment account number, including the linked automatic payment and collection services, to any other bank. Of course this would require large IT investments for banks and international coordination to enable cross-border transmission.

³² A problem is further that it remains difficult to compare complex conditions of financial products.

³³ Around 50% of the cost is covered by a particular income dependent tax, levied by the government. Insurers may also offer supplementary packages.

Price competition on new tailor-made and complex wholesale banking services is likely to be more limited than in traditional intermediation. The prices and quality of such services are much more opaque than those of standardized consumer services. This problem creates a major challenge for, among others, competitive authorities, particularly as these new products increasingly dominate the income of (large) banks.

In the banking market, the regulatory regime of the Basel Committee on Banking Supervision (Basel I and II) aims at creating an international level playing field by establishing minimum capital requirements which are identical for internationally operating banks across all joining countries, enabling fair cross-border competition. Similarly, international supervisory regimes for the insurance industries and pension funds would greatly encourage cross-border competition in those sectors. In the EU, Solvency II is under development for insurance firms, leaving still room for a world-wide regime. Further, functionally equivalent products should have similar regulations, as far as possible, in order to enhance competition between banks and other financial institutions.³⁴

In many consumer markets intermediary agencies are important in providing support to financially illiterate clients. In order to avoid conflicts of interest such agencies need to be independent from financial institutions and their fee structure needs to be transparent to their clients. Such independence would be best served by a fixed hourly rate to be paid by the client. In practice, however, consumers are generally less rational and dislike paying for such independent advice. They prefer receiving 'free' advice from financial institutions or intermediaries where, of course, similar costs are hidden in product prices while the advice may be less in line with their own preferences. Such irrational behaviour hampers the disciplinary power from the demand side, which is a sound condition for competition.

Although many financial market failures are difficult to solve, the discussion above explains that there are many –general and specific– possible steps in the right direction, which would help to foster competition.

4. How to measure competition

Given the trade-off that competition in the financial markets should be strong enough to support welfare and economic development, but that

³⁴ This is far from simple. For instance, a long-term mortgage may increase the interest rate risk of a bank (having a low duration), while it generally reduces the interest rate risk of an insurance firm (having a high duration).

competition should not be too high so that it may threaten financial stability, innovation and unhindered access to credit, an optimal level of competition exists. In order to be able to judge the current level and to compare that with the (not necessarily known) optimal level, we need to measure competition. Though competition is a clear concept in economic theory, we need a precise definition, if we want to measure it. The dictionary explains competition as “the effort of two or more parties acting independently to secure the business of a third party by offering the most favourable terms”, “active demand by two or more organisms or kinds of organisms for some environmental resource in short supply” and “a contest between rivals”. While precise enough in themselves, these definitions offer no clues on how to *measure* competition.

In many economic theories, competition is related to the (relative) size of a mark-up on the cost price as a component of the output price. However, data on the price-cost margin (PCM) are generally not available in the financial markets. Whereas prices are observable on a number of banking or insurance submarkets, one seldom finds data on the cost prices of individual products. Therefore, we have to measure competition indirectly. Many measurement approaches are closely linked to the PCM.³⁵ Bikker and Bos (2005, 2008) derive a formula for the equilibrium PCM from a general framework of a profit maximizing bank under oligopoly behaviour:

$$\text{PCM} = \text{HHI} \times \text{PED} \times (1 + \text{CV}) \quad (1)$$

where HHI is the Herfindahl-Hirschman index of concentration (that weights banks' market shares with their own market shares), PED the price (or interest) elasticity of demand and CV the conjectural variation, that is, the bank's expectations about the reactions of its rivals in terms of output quantities or prices.³⁶ Particularly the conjectural variation is difficult to observe.

Competition has often been proxied by simple measures, both in theory and in practice. Examples of proxies are: the number of banks, the HHI, the interest rate margin and efficiency measures such as the cost-income ratio. Although some proxies could bear a certain relationship to the PCM (e.g. the interest rate margin) or to components of it (HHI), others are only vaguely connected. Therefore, we prefer model-based measures that are closer in line with Equation (1). The literature provides a number of such measures, such as Panzar and Rosse (1987),

35 Although such PCM is a plausible measure, in practice, this definition has also its shortcomings (Boone *et al.*, 2007).

36 Under certain conditions, conjectural variation is zero under perfect competition and 1 under monopoly or a perfect cartel.

Bresnahan (1989) and Boone *et al.* (2007),³⁷ which while derived from Equation (1), are based on different simplifying assumptions (Bikker and Bos, 2005, 2008). This is one of the reasons why different measures may produce divergent estimates of competition.

The literature provides a large number of empirical studies on banking competition. The number of publications on measuring insurance competition is very small, due to limited data availability. A few examples are Bikker and Van Leuvensteijn (2008), who use the Boone indicator for life insurance firms, Bikker and Gorter (2008), who study scale economies of non-life insurers, and Bikker, Spierdijk and Miro (2008), who apply the P-R model to the non-life insurance industry.

This paper gives a survey of measures of competition of over 100 countries based on the Panzar-Rosse (P-R) model. This model has a sound theoretical basis, uses data which are readily available³⁸ (so that the model can be applied to many countries) and has been applied frequently.³⁹ This approach measures how total interest revenues of banks in a country or market react to changes in input prices. A firm's competitive behaviour in the market is reflected by the degree by which input price changes are passed through to output prices and to changes in output volume. The P-R model produces a certain H-statistic which under certain conditions reflects the degree of competition with $H=1$ pointing to perfect competition and $H \leq 0$ indicating monopoly or a perfect cartel. The range $0 < H < 1$ denotes monopolistic competition or oligopoly of some sort. Hereby, this P-R approach defines 'competition' as a certain competitive behaviour, measured as an average over all banking products. For each country, one H value has been estimated.

5. Empirical results for banks

Bikker *et al.* (2006a) use the P-R model to provide H values for 101 countries over 1986-2004, based on 25,000 banks, see Table A.1 and Charts A.1 and A.2 in the appendix.⁴⁰ Chart A.1 present the estimation results of H in alphabetical order of the respective country names and Table A.2 arranges the estimates from low to high values of H. The world-wide average value if H is 0.50. Chart A.2

³⁷ See also Bikker and Van Leuvensteijn (2008) and Van Leuvensteijn *et al.* (2008).

³⁸ Required data include observations on input prices. Commonly they are unavailable so that proxies are used.

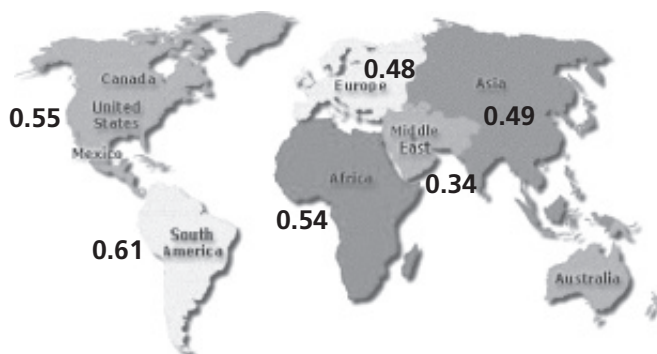
³⁹ A drawback may be that the P-R approach considers the total banking output as one single product, so that it ignores the existence of many products, and hence of many submarkets, with own levels of competitive pressure. However, the required data to measure competition of single products are hardly ever available.

⁴⁰ The charts include only the 80 countries where equilibrium has been observed, a prerequisite for a reliable competition measure. H is the sum of the input price elasticities in the P-R revenue equation.

shows that the level of competition varies strongly across countries. Around 30% of the countries have values of H that correspond to monopoly (H is zero or negative) or are close to those values (left part of the chart). Formal testing reveals that monopoly cannot be rejected for 29 countries. Further, this chart shows that around one-third of the countries have H values, corresponding with (near-) perfect competition ($H=1$; right part of Chart A.2). The formal tests cannot reject perfect competition in 39 countries. At the same time, monopolistic competition cannot be rejected in all countries but one. This divides the countries in three groups with low, medium and high competition. It should be kept in mind that these competition estimates apply to all of a country's banking activities. Competition on sub-markets (individual product, local areas) may deviate from this overall picture.

Chart 1 gives averages of H for each continent. Remarkably, we do not observe any systematic difference between developed and developing countries. The figures are all around the average of 0.50. Banking competition in the Middle East appears to lag somewhat behind the rest of the world, whereas, in terms of competition, banks in South America are leading the other continents.

Chart 1: Average degree of competition in the various continents



6. Explaining banking competition

What are the main factors that determine the level of competition? This is an important question, particularly with a view to the development of an optimal competition policy and policy recommendations. The survey of Claessens (2008) and the discussion on the structure of the financial factors above provide many potential drivers of competition. However, many of these factors are not directly observable. Traditionally, the market structure—generally measured by the number

of banks, banking concentration or average bank size— takes a pivotal position in explaining competition. Other theories focus on the impact of new entrants or on the contestability caused by potential (new) entrants, the efficiency of banks and the influence of the business cycle. A number of empirical studies⁴¹ assess the impact of other determinants on banking competition, such as measures of interindustry competition, indicators of contestability (e.g. actual foreign entrants and barriers to entry such as tighter entry and activity restrictions) and aspects of countries' overall institutional framework (e.g. regulatory and supervisory practices, entry restrictions, and barriers to foreign investment).

The seminal study of Claessens and Laeven (2004) is the first extensive investigation into the factors that drive competition, based on the P-R model as the measure of competition. The approach includes two steps. First, they estimate H as measure of competition for 39 countries using data from the 1994-2001 period. Second, they explain H by several sets of competition drivers. The number of countries in this second step varies from 22 to 39 countries. Bikker *et al.* (2007) extend their study by assessing the determinants of banking competition for a much larger set of countries (76 in total), using data from the 1995-2004 period. They apply a wide range of tests to assess the robustness of their approach, so as to ensure that their results do not depend on subjective choices regarding their model specification. The following summarises their study. The first step is the estimation of H, as presented above and as reported in Table A.1. The second step is explaining these H-values, using the potential determinants introduced below.

Potential determinants of competition

To explain banking competition, Bikker *et al.* (2007) consider a number of potential determinants of competition. These variables have been predicted to affect competition in the theoretical literature or have been used in one or more of a number of other empirical cross-country studies that analyse the performance and competitiveness of the banking system. They consider five types of factors: variables with respect to market structure, contestability, inter-industry competition, institutions en macro-economic conditions.

1. Market structure variables

Traditionally, the market structure was considered as a major determinant of competition.

⁴¹ Angelini and Cetorelli (2003), Maudos and Nagore (2005), Fernández de Guevara *et al.* (2005), Carbó Valverde and Rodríguez Fernández (2006) and Fernández de Guevara and Maudos (2007), using the Lerner index, and Bikker and Haaf (2002a) and Claessens and Laeven (2004), using the P-R model.

- Bank concentration ratios. The five-bank concentration ratio (CR5) as a first measure of banking market concentration, defined as the total market share of the five largest banks in a particular country, based on total assets. As an alternative concentration ratio, the HHI has been considered.
- Number of banks. The above concentration indices show a strong negative correlation with the number of banks, due to a well-known weakness of concentration indices, namely their dependence on the size of a country or banking market. This shortcoming has been dealt with by taking the number of banks into account as well as an explanatory variable.⁴² The number of banks itself is also a commonly used variable to describe the market structure.
- Foreign ownership of banks. This is a measure of the degree of foreign ownership of banks calculated as the fraction of the banking system's assets that is in banks that are 50% or more foreign owned. It takes into account the fact that foreign banks may behave differently from domestic banks.

2. Contestability variables

Since the contestability theory predicts a direct relation between entrance barriers and the competitiveness of the banking industry, variables measuring contestability of the banking sector have been included.

- (Cross-sector) activity restrictions. An activity restrictions variable has been included that measures the banks' ability to engage in the businesses of underwriting, insurance and real estate, as well as the regulatory permission for banks to own shares in non-financial firms. A higher value of the activity restrictions variable indicates that more restrictions are imposed on cross-sector activities in the financial industry.
- Restrictions on foreign investments. The more restrictions exist on such investments, the higher the score of this index will be.

3. Inter-industry variables

Possible competitive pressure banks face from other sectors are also included.

- Capital markets. This variable reflects the country's stock market capitalization as a fraction of GDP.

42 Another reason to include the number of banks is that the concentration ratio is a one-dimensional measure taking account of two dimensions: the number of banks (reflecting the density of the banking market) and their size distribution (reflecting skewness). By including, for example, both the HHI and the number of banks as explanatory variables in the regression model, this two-dimensionality has been restored (see Bikker and Haaf, 2002b).

- Insurance firms. The annual volume of life insurance premiums as a fraction of GDP is a proxy for the competition coming from the non-banking part of the financial sector, assuming that life insurance premiums not only reflect the demand for life insurance products but also for more sophisticated financial services in general.

4. Institutional variables

To account for national institutional differences, three indices are included that relate to economic freedom in the style of the 'laissez-faire' model.

- Property rights index. This index includes ten indicators of property rights. The lower the score of this index is, the better is the protection of property rights.
- Regulation index. The higher the score of this index is, the tighter are the regulations on investments and on starting up a business.
- Banking freedom. The higher the score of this index is, the less banking freedom exists.
- EU dummy. To account for EU-specific effects not captured by the other determinants, a dummy variable for the EU-15 countries has been included.
- Socialist history dummy. A dummy for countries with a socialist history (e.g. the previously centrally planned economies in Eastern and Central European countries that constituted the Warsaw Pact and the republics of the Soviet Union) takes account of the fact that banks in these countries are expected to be affected by economic and institutional conditions prevailing in earlier decades.

5. Macro-economic conditions

Also, differences in the countries' general economic development are considered.

- GDP *per capita*. This variable has been used as *proxy* for economic and financial development.
- Real annual GDP growth. The annual GDP growth (or GDP in deviation from its trend) can be taken as a proxy for the business cycle. The pattern in the H-statistic may be affected by the response of banks to business cycle dynamics.
- Inflation rate. This variable has been based on the GDP deflator.

Data on these variables for 2004 could be obtained for 76 countries, so that the explanation of competition (measured by H) is restricted to these countries.

Exceptions are the ‘foreign ownership of banks’ and ‘insurance firms’ variables, each of which would, if included, reduce the sample by ten countries. They are added to the sample in only two variants. After testing on multicollinearity,⁴³ five determinants are excluded (HHI, number of banks, property rights index, banking freedom, and inflation rate), so that a smaller set of drivers of competition remains, see Table 2.

A remarkable result is that the dominant determinant in the theoretical literature, banking market concentration, does not have a significant impact on competition. The traditional literature suggests that market concentration impairs competition (assuming a static relationship), whereas a more modern and dynamic interpretation of this variable is that competition may force banks to consolidate, so that competitive banks end up in a concentrated market. However, no evidence has been found for either of these theories, perhaps because opposite effects cancel each other out. This outcome also holds for other concentration variables such as the HHI and the number of banks. This result confirms the respective findings of Claessens and Laeven (2004).

Table 2: Explaining competition in 76 countries (2004)

Variables ^a	Coefficient	t-value	SPC ^b
1. Bank concentration CR5	-0.001	-0.8	0.009
2. Activity restrictions	-0.000	-0.7	0.007
3. Ln (Market cap./GDP)	-0.016	-0.4	0.002
4. Foreign investment index	-0.132	-3.2	0.133
Regulation index	0.128	2.5	0.084
EU-15	-0.129	-1.4	0.029
Socialist legal history	-0.435	-5.6	0.320
5. Ln (GDP per cap)	0.011	0.3	0.001
Real growth GDP	-0.023	-2.8	0.109
Sum			0.694
Adjusted R ²	0.82		
Number of countries	76		

^a The variables are defined in the text; ^b SPC stands for squared partial correlation and reflects the contribution of the respective explanatory variable to the variation in the level of competition or, in short, the economic effect.

Also a next market structure variable, foreign ownership, does not play a significant role (as Table 2 shows), though in contrast to Claessens and Laeven

43 That is, the phenomenon that two variables reflect roughly the same property.

(2004), where this variable turned out significant. Of course, where the effect is absent for the entire sample, it may be present in a number of countries, particularly where foreigners bring in different competitive behaviour. All in all, none of the selected market structure variables seem to play a significant role as determinants of competition.

As expected, contestability does play an important role as a determinant of competition. The more attractive a country's investment climate is for outsiders, the more competitive its banking sector will be. Apparently, the possibility of foreign investors entering the country adds to the competitive pressure. Although activity restrictions are not significant in the full-sample estimates reported in Table 2, they do play a significant role in more restricted analyses where only large banks are included. Apparently, competition among large banks, in particular, is likely to suffer from cross-sector activity restrictions, presumably because otherwise they would be quicker to enter the insurance market than smaller banks.

Neither of the two inter-industry variables appears to be significant. Conversely a country's institutional framework is a major determinant of banking competition. Extensive regulation, particularly antitrust policies (it may be assumed), improves the competitive environment significantly, of course, fully in line with expectations. Competition is substantially weaker in countries with a socialist history, *e.g.* in Eastern and Central Europe. Apparently, in terms of banking competition, the transition towards a market economy has not been fully completed there.

Finally, collusion mark-ups of banks are significantly cyclical in the sense that they follow the movements in GDP growth rate that act as a proxy for the business cycle. Evidently, competitive pressures weaken when the economy booms.

The last column of Table 2 shows how important the determinants are in explaining competition. A socialist history is by far the dominant factor, followed by foreign investment restrictions, the business cycle and the regulation index. Bikker *et al.* (2007) apply a large number of robustness tests to examine how stable the results are: replacing HHI and number of banks for CR5, adding one or two extra explanatory variables (foreign ownership and life insurance sector size, thereby reducing the sample size), estimating with OLS instead of WLS, applying 2SLS (as market structure variables might be endogenous) and, finally, requiring a higher minimum number of banks per country. All results are similar so that the conclusions remain unaffected. The analyses are also repeated for large and small banks, respectively. Here, activity restrictions become significant for large banks, as mentioned above. Further, the EU dummy becomes significant, probably due to

the larger share of more developed sophisticated banking products, a submarket where competition is weaker.

The policy recommendations from this paper are straightforward:

- more regulation reducing competitive obstacles
- no obstacles for foreign investment
- reduce cross-sector restrictions

Although this advice seems quite obvious, one should keep in mind that in the current situation, the differences across countries are that large that they explain no less than 82% of differences in competitive pressure across countries (see R^2 in Table 2). According to our interpretation of the results, they contain a warning. Developments of new, sophisticated products may reduce competition, due to their opaque nature. If this would hold true, more regulation or competition policy is required.

7. Impact of consolidation

One of the most prominent developments in the banking industry has been the strong worldwide consolidation observed during the past decades. This is reflected by a sharp fall in the number of banks, increased concentration, and the grown size of the largest (five) banks both in absolute terms and relative to the smaller banks. Table A.2 in the appendix illustrates these developments for the major economies during 1990-2005. The changes in market structure raise the question how and to what extent competition is affected by the expansion of the largest banks. Several studies predict a positive relation between bank size and market power, which they contribute to, for instance, the more dominant position of large banks relative to their smaller competitors.⁴⁴ An alternative view holds that smaller banks tend to operate primarily on local markets where competition is often seen as weaker, whereas larger banks tend to operate more on national and international levels, where competition is generally assumed to be stronger due to the pressure from foreign banks (see Gilibert and Steinherr, 1989). The latter view is supported by the empirical literature based on the P-R model, which establishes a negative relation between bank size and market power.⁴⁵

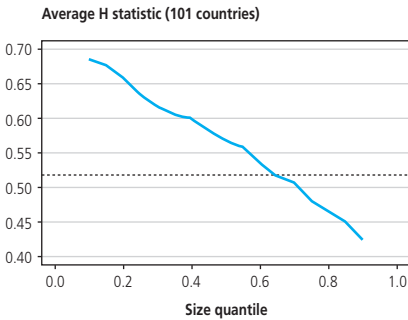
44 See e.g. Monti (1972) and Klein (1971), Jappelli (1993), Freixas and Rochet (1997), and Bikker and Bos (2005).

45 For instance, Bikker and Groeneveld (2000), De Bandt and Davis (2000), Bikker and Haaf (2002a), Hempell (2002), Bikker (2004), and Staikouras and Koutsomanoli-Fillipaki (2006) all find that bank competition increases with bank size. We ascribe this to misspecification (Bikker *et al.*, 2006b).

With the contradictory results in the theoretical and empirical literature in mind, Bikker *et al.* (2006b) explore a novel approach to assessing the relation between bank size and market power. They extend the P-R model by introducing a direct role for bank size, using quantile regression as an alternative to splitting up the sample into size classes of large and small banks. For 42 out of 101 countries they find that competition decreases significantly with bank size, including the world's major economies. These countries cover 85% of all 18.500 banks in their sample. For the remaining countries, H is fairly constant over the range from small to large banks, or the number of observations in the sample is too low to draw reliable conclusions.⁴⁶ The average H value corresponding to large banks (90th quantile) equals 0.42, while the H value of small banks (10th quantile) averages 0.68. Chart 2 pictures how the average H estimate substantially changes with bank size.⁴⁷

Formal testing on the market structure confirms this pattern: monopoly or a perfect cartel in the small bank submarket is rejected for only 12 countries, while it is rejected for 32 national submarkets with large banks, confirming that large banks operate more often under monopoly. Similarly perfect competition is less often rejected for small banks (42 countries) than for large banks (28 countries), confirming that small banks operate more often under perfect competition.

Chart 2: Average H statistic as a function of bank size



Their findings confirm the theoretical strands of literature that predict a positive relation between bank size and market power. At the same time, their

⁴⁶ Costa Rica is the only country for which a substantially positive relation has been established between bank size and competition.

⁴⁷ Note that this outcome is not quite consistent with the earlier finding that market structure measured by concentration ratios did not affect the level of competition. Apparently, the concentration indices do not fully reflect the impact of large banks.

outcomes contradict the conventional view in the P-R literature that the level of competition increases with bank size. They distinguish two possible drivers behind the market power of large banks. The first is that size itself plays a major role. Large banks are likely to be in a better position to collude with other banks. Large banks may also benefit from their more established reputation. Furthermore, large banks are presumably more successful in creating fully or partly new banking products and services than small banks, *e.g.* because of economies of scale in product development. This enables them to exploit their monopolistic power, as is common in markets where monopolistic competition is the prevailing market structure. This outcome implies that small firms face high thresholds when they try to enter the banking market.

The second explanation is that large banks tend to operate partly on different product submarkets (more wholesale than retail) and geographical submarkets (more international than local). The wholesale market is characterized by tailor-made products and services supplied by only a limited number of large banks, which enables them to exert a degree of monopolistic power.

The world-wide trend towards consolidation combined with this observation of more market power for larger banks increases the need for appropriate antitrust policies on the affected submarkets.

8. Changes over time

Over the past decades, both new developments in information technology and continued liberalization and harmonization of the financial markets have strongly affected the financial environment in which banks operate. Developments in ICT have changed banks' production technologies, products and distribution strategies, as well as size of financial markets. The Second Banking Coordination Directive, as part of the single European market project in 1992, and the establishment of Economic and Monetary Union (EMU) in 1999 have removed important obstacles to cross-border competition. The creation of large and transparent euro capital markets has promoted competition within the European banking world. Advantages in the management of equity and debt issuance, investments and mediation for banks in their own national currency compared to foreign banks, have been sharply reduced since the euro replaced the respective national currencies. Similarly, several changes have drastically altered the banking landscape in the United States. For instance the Reigle-Neal Act of 1994, allowing national banks to operate branches across state lines as of 1997. Another important change was the 1999 Gramm-Leach-Bliley Act, which eliminated the

restrictions of the 1933 Glass-Steagall Act on affiliations between commercial and investment banks and allowed banks to engage in underwriting and other dealing activities. These contributions to international integration, together with the entry of new types of competitors using the Internet, are likely to have contributed to banks' competitiveness, particularly in the EMU area. The transition from centrally planned economies to market economies in Eastern and Central Europe also had a major impact on bank competition in that area. Increased competition may force banks to improve their efficiency, on pain of being pushed out of the market.

On the other hand, efficiency has also been among the many drivers of the consolidation wave in the banking industry observed during the past decades. This prominent development is reflected by a sharp fall in the number of banks, by the increased banking concentration, and by the rise in the market share of the largest banks. The consolidation process has impaired competition, reducing the improvements in competitiveness mentioned above. Informational technology may have added to fixed costs in the banking industry, resulting in larger (unused) scale economies, particularly for smaller banks. Such increased scale economies would contribute further to market power and, hence, to a reduction in competition. Other important developments in the banking industry are also likely to have affected the competitive developments over time. The continuous shift from traditional intermediation to new, more sophisticated and complex products may have reduced competition. Price and quality of modern bank services are more opaque and wholesale banking often deals in tailor-made products. Consequently, price competition in these markets is presumably more limited than in traditional intermediation. Hence, competition may be expected to be weaker on the growing non-interest markets.

Given this multitude of major developments with respect to competition, Bikker and Spierdijk (2008) investigate whether and how banking competition has changed over time. They apply the P-R approach to measure banks' market power over time in three different ways.

- First, explorative yearly and rolling-window estimates of the H statistic for eleven major industrial economies and two regions (where sufficient data were available) are obtained to assess how the competitive climate changed during the 1989-2004 period.⁴⁸

⁴⁸ Rolling-window or recursive estimates of the H statistic start with estimates of the first few years, continue with estimates of the first years, and successively add data of a next year to the sample, using ever larger subsets of the data.

- Second, the linear trend in banking competition during the 1986-2004 period has been assessed for 101 countries. For the aforementioned eleven countries and two regions enough data are available to estimate several parametric models that offer various degrees of flexibility to capture possible nonlinear changes in the competitive climate.
- Finally, structural breaks in competition over time are detected using econometric tests for structural stability. These tests do not impose *a priori* fixed break dates, but are able to detect breaks endogenously. As a robustness check, a wide range of additional macro-economic factors are included to ensure that the changes they assess, and the breaks that are detected, are genuine and not merely due to e.g. business cycle movements.

Bikker and Spierdijk (2008) establish significant changes in banking competition over time. Chart A.3 in the appendix shows graphs of (recursive) annual estimates for eleven major industrial economies in two regions. In France, Germany, Italy, Luxembourg, Switzerland, and the US (after 1998) competition seems to have declined over time. This is particularly clear for the entire EU-15. The remaining nations, being Austria, Denmark, Spain, the UK, Japan, and Eastern-Europe, show a more stable H statistic or a slight increase over time. Particularly, the competition in Eastern Europe shows an upward trend.

Significantly negative trends in competition were found for 39 of the 101 countries, while the trend is significantly positive for 22 countries. For the emerging markets in the 101 country sample, the average value of the trend coefficient equals 0.007 (*i.e.* an annual rise in H of 0.7 percentage points), reflecting that emerging economies are generally in a transition process of becoming (slightly) more competitive. The remaining nations have a negative average value of the trend coefficient equals to -0.018 (*i.e.* an annual decline in H of 1.8 percentage points). For both the EU-15 and the group of nine Eastern European countries the trend coefficient is significantly negative. On average, the changes in competition over time are small. The average value of the H statistic ranges from 0.55 at the end of the eighties up to 0.50 in 2004. For the EU-15, the H statistics drops from 0.87 in 1989 to 0.55 in 2004. In Eastern and Central Europe the H statistic has been decreasing over time as well, from 0.61 in 1994 to 0.55 in 2004. Apparently, the average levels of competition in Eastern and Western Europe converged over time.

Applying structural break tests to eleven countries and two regions revealed that, with the exception of Italy, all countries considered that have joined EMU feature a significant structural break in either 2001 or 2002, initiating a period of

weaker competition. For the non-EMU countries Denmark and the UK there is no significant break, whereas in Switzerland a significant break emerges in 1995. For the US a break has been established in 2001, starting a low-competition period. For Japan a break was found in 2003, which was followed by several years of increased competition. The results above are based on the P-R approach. For the last decade, Van Leuvensteijn *et al.* (2007) used a different approach to measure banking competition, namely the Boone indicator, but they observed the same significant downward trend in the level of competition on the European loan markets.

It seems unlikely that the 2001-2002 breaks and the subsequent decline in banking competition in the EMU countries were caused by a lagged response to the establishment of EMU and the introduction of the 'virtual' (non-cash) euro in 1999. The euro may have played an indirect role, due to the change in banking services after its establishment in 1999. The newly created euro capital market has boosted corporate capital market financing at the cost of direct bank lending. This significant shift did not occur in non-euro countries such as Switzerland, the US and Japan.⁴⁹ In the euro area it has reduced traditional intermediation by banks, whereas it has favoured the service of banks relating to equity and debt issuance. We expect that competition on debt issuance services, where pricing and quality figure less prominently than reputation, is significantly weaker than in the lending market. The introduction of the euro has significantly reinforced the efficiency of corporate capital market funding. At the same time, it may have impaired the average competitive pressure among euro area banks through the shift from lending to equity and debt issuance.

Further, the predominantly downward trend in competition is attributed to the process of consolidation, which generally creates larger banks with more market power (see Bikker *et al.* (2006b)). Another explanation for the decline in competition is the continuous shift over time from traditional intermediation towards more sophisticated and complex banking products. Price and quality of modern bank services are more opaque and the services themselves are more tailor-made than those based on traditional intermediation markets. Therefore, modern services are likely to give banks an advantage in exploiting their market power. In order to find evidence supporting this hypothesis, the P-R model's H parameter has been allowed to depend on the ratio of other income to total income. A significantly

49 During the period 1999-2007, the capital market financing of non-financial companies increased by 400% in the euro area, much faster than bank lending. In the non-euro countries in Europe the change in capital market financing varied between -23% (Switzerland) and 150% (Sweden). In the US, Japan and Canada the growth was between -10% (Japan) and 70% (Canada).

negative coefficient for other income as a share of total income would be a first indication that more sophisticated and complex products do indeed reduce competition. A relative increase in the share of other income appears to reduce banking competition in the EU-15. The same effect has been found for seven individual EU-15 countries, but no evidence occurs for a number of countries outside the EU-15, such as the US, Eastern Europe, Japan, Switzerland and the UK.

9. Conclusions

The first part of this paper investigates the financial market by analyzing its structure. We observe quite a number of potential market failures, on both the supply and the demand side, which may tempt financial institutions to exploit market power. Opaqueness hinders the correct perception of pricing and quality of (complex) financial services and acts as a major obstacle to fierce competition. As the share of traditional bank intermediation in total banking activities is currently declining in favour of more complex and tailor-made services, this opaqueness may over time gain in importance and reduce competition. Other market failures found are informal entry barriers, strong product differentiation, cross-ownership, bank productions' network properties, high search and switching costs, lack of substitution possibilities, insufficient consumer power, weak-functioning intermediaries and consumers' financial illiteracy. Many of these structural weaknesses that harm competition are not unique for financial markets, but occur also in many service industries.

A number of solutions are provided to make it harder for financial institutions to profit from these market failures, including financial education, standardization of financial products, implementation of the right incentive structures for intermediaries, consumer empowerment, etcetera. Specific issues are likely to require tailor-made measures. While many of these actions will help, they will not suffice to remedy the market weaknesses fully, let alone permanently. Some market failures may be impossible to eliminate or even relieve. In some markets, failures are better solved by structures without (full) competition.

The second part of this paper deals with measuring and explaining banking competition. Although every measurement approach may have its shortcomings, the literature provides a number of useful methods. We report results for 101 countries based on the Panzar-Rosse approach. Competition appears to vary strongly across countries, as for a third part of the countries we cannot reject monopoly or a perfect cartel, while for another third part we cannot reject perfect

competition. Monopolistic competition applies to almost all countries. We do not observe differences across continents. On average, the value of our measure of competition, H , equals 0.5, exactly half-way between monopoly and perfect competition. This outcome indicates that, for most countries, the observed structural market failures did not keep financial institutions from behaving competitively. Of course, our measurement concerns the entire banking business: competition may still vary strongly across submarkets. In any case, there remains ample room for the further enhancement of competition.

The wide range in competitive levels across countries raises the question what determinants are responsible for these differences. Explaining the measured competition by a large set of potential determinants reveals that competition in many countries would be higher with: (i) more (anti-trust) regulation, (ii) fewer obstacles to foreign investment, and (iii) fewer cross-sector restrictions (particularly for larger banks). Further, mark-ups of banks on cost prices appear to be significantly cyclical in the sense that they follow the movements of the business cycle, measured as GDP growth. Finally, a socialist legal history, also counts as transition appears not to be completed yet. These factors determine 82% of the differences in competition across countries. A remarkable outcome is that traditional market structure variables, such as concentration and number of banks, seem to have no impact at all. These outcomes provide clear guidance for competitive policy: more strength for anti-trust regulation, free entry of foreign investment and abolishment of cross-sector obstacles.

One of the major trends in the financial markets is consolidation. For banking, there is evidence that in the major industrial economies larger banks have more market power than smaller ones. Size itself plays a major role, as large banks are likely to be in a better position to collude with other banks and may benefit from their more firmly established reputation. Further, large banks are presumably more successful than small banks in creating innovative banking products and services, for instance, because economies of scale in product development enable them to exploit their monopolistic power. A second explanation is that large banks tend to operate partly on different product submarkets (more wholesale than retail) and geographical submarkets (more international than local). The wholesale market is characterized by tailor-made products and services supplied by only a limited number of large banks, which enables them to exert a degree of monopolistic power.

Despite ongoing liberalisation, harmonization, internationalisation, financial integration and IT developments, we observe a downward trend in competition

in many major economies. Apparently, in recent years other factors have dominated actual competitive conditions. Possible drivers may be consolidation, given large banks' increasing use of market power, and the relative decline in traditional intermediation, in favour of complex, tailor-made banking services, for consumers and, especially, wholesale customers. No simple remedies to counter these developments seem to offer themselves. For the coming years, these trends present a challenge to financial market regulators.

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Appendix

Table A.1: P-R measures (H) of banking competition and other statistics

Country	Member State of G-20 ^a	H value (Bikker <i>et al.</i> , 2006a) ^b	Market structure ^c	Change over time ^d	Lower H for larger banks ^e	H value (Claessens and Laeven, 2004) ^f
Algeria		0.25	Mon/PC			
Andorra		0.89	PC	Incr		
Argentina	X	0.41		Incr		0.73
Armenia		0.51				
Australia	X	0.56	PC			0.80
Austria		0.07	Mon	Decr	Y	0.66
Azerbaijan		0.11	Mon	Decr		
Bahamas		0.53				
Bahrain		0.52	Mon/PC	Decr		
Bangladesh		0.98	PC	Decr	Y	0.69
Belgium		0.49		Decr	Y	0.73
Bermuda		0.76		Decr		
Bolivia		0.99	PC			
Botswana		0.08	Mon	Incr		
Brazil	X	0.32		Incr		0.83
Canada	X	-0.11	Mon	Decr		0.67
Cayman Islands		0.59	Mon/PC			
Chile		0.95	PC	Incr		0.66
China PR	X	1.57				
Colombia		0.56	PC	Incr		0.66
Costa Rica		1.08	PC		N	0.92
Croatia		0.44		Decr	Y	
Cyprus		-0.11	Mon	Decr	Y	
Czech Republic		0.77	PC	Incr		0.73
Denmark		0.33			Y	0.50
Dominican Republic		0.71	PC	Decr		0.72
Ecuador		0.63	Mon/PC			0.68
El Salvador		0.41		Decr		

Table A.1: P-R measures (H) of banking competition and other statistics (concluded)

Country	Member State of G-20 ^a	H value (Bikker <i>et al.</i> , 2006a) ^b	Market structure ^c	Change over time ^d	Lower H for larger banks ^e	H value (Claessens and Laeven, 2004) ^f
Estonia		0.45	Mon/PC			
Finland		-0.27	Mon		Y	
France	X	0.60		Decr	Y	0.69
Germany	X	0.65		Decr	Y	0.58
Ghana		0.65	PC		Y	
Greece		0.51			Y	0.76
Hong Kong		0.00	Mon			0.70
Honduras		–				0.81
Hungary		0.17	Mon	Incr		0.75
Iceland		-0.14	Mon/PC	Incr	Y	
India	X	0.48			Y	0.53
Indonesia	X	0.07	Mon	Decr	Y	0.62
Ireland		1.11	PC	Decr		
Israel		0.12	Mon	Incr	Y	
Italy	X	0.09	Mon		Y	0.60
Ivory Coast		0.39				0.56
Japan	X	0.50		Incr	Y	0.47
Jordan		0.27		Decr	Y	
Kazakhstan		0.25	Mon	Decr		
Kenya		0.79	PC	Incr	Y	0.58
Korea, South	X	0.51	Mon/PC	Decr		
Kuwait		0.70	PC	Decr		
Latvia		0.57			Y	0.66
Lebanon		0.44		Incr	Y	
Liechtenstein		0.71	PC	Decr		
Lithuania		0.45	Mon/PC			
Luxembourg		0.31		Incr	Y	0.82
Macau		0.37		Decr	Y	
Macedonia		1.08	PC			
Malaysia		0.73		Decr	Y	0.68
Malta		-0.22	Mon	Incr		
Mauritius		0.58	PC			
Mexico	X	0.85	PC			0.78
Moldova		0.64		Incr		
Monaco		0.38			Y	
Morocco		0.20	Mon	Decr		
Mozambique		0.52	PC			
Nepal		0.59	PC			

Table A.1: P-R measures (H) of banking competition and other statistics (concluded)

Country	Member State of G-20 ^a	H value (Bikker <i>et al.</i> , 2006a) ^b	Market structure ^c	Change over time ^d	Lower H for larger banks ^e	H value (Claessens and Laeven, 2004) ^f
Netherlands		0.78	PC		Y	0.86
New Zealand		0.35	Mon	Decr	Y	
Nigeria		0.68		Incr	Y	0.67
Norway		0.47			Y	0.57
Oman		0.39				
Pakistan		0.47			Y	0.48
Panama		0.58				0.74
Paraguay		0.62		Incr	Y	0.60
Peru		0.63		Incr	Y	0.72
Philippines		0.66		Decr		0.66
Poland		0.08	Mon	Decr	Y	0.77
Portugal		-0.15	Mon		Y	0.67
Romania		0.64	PC		Y	
Russian Federation	X	0.40				0.54
Saudi Arabia	X	0.47		Decr		
Senegal		1.06	PC	Decr		
Singapore		0.33	Mon/PC			
Slovakia		0.27		Decr	Y	
Slovenia		0.38		Decr		
South Africa	X	0.88	Mon/PC		Y	0.85
Spain		0.87	PC	Decr		0.53
Sri Lanka		0.69	PC	Decr		
Sweden		0.44		Decr		
Switzerland		0.86	PC	Decr		0.67
Taiwan		0.93	PC	Incr		
Thailand		0.52		Decr		
Trinidad & Tobago		0.08	Mon	Decr	Y	
Turkey	X	0.38	Mon/PC	Incr	Y	0.46
Ukraine		0.47				0.68
United Arab Emirates		0.46		Decr		
United Kingdom	X	0.77	PC	Decr	Y	0.74
United States	X	0.49		Incr	Y	0.41
Uruguay		0.52			Y	
Venezuela		0.79	PC	Decr		0.74

Table A.1: P-R measures (H) of banking competition and other statistics (concluded)

Country	Member State of G-20 ^a	H value (Bikker <i>et al.</i> , 2006a) ^b	Market structure ^c	Change over time ^d	Lower H for larger banks ^e	H value (Claessens and Laeven, 2004) ^f
Vietnam	19	0.74	29 Mon 39 PC	Decr 22 Incr 39 Decr	42 Y 1 N	0.67
Zambia		0.50				
Averages/		0.50				
Totals						

^a The 20th member is the EU; ^b Estimation period 1986-2004; ^c Mon means 'monopoly not rejected', PC indicates 'perfect competition not rejected', Mon/PC implies both monopoly and perfect competition not rejected (Bikker *et al.*, 2006a); ^d 'Incr' means that the H statistic increases significantly over time and 'Decr' refers to a significant decrease, both based on a one-sided t-test (Bikker and Spierdijk, 2008); ^e Y means significantly lower H values for larger banks, reflecting more market power, N signifies a significantly lower H value (Bikker *et al.*, 2006b); ^f Estimation period 1994-2001.

Table A.2: Number of banks and concentration ratios over the period 1990-2005

This table reports the number of banks, the Herfindahl-Hirschman index (HHI), and the five bank concentration ratio (CR5) (all based on total assets) for various countries during the period 1990-2005. A blank indicates that no data are available.

EU	#bank					HHI				CR5			
year	1990	1995	2000	2005	% decrease 1990-2005	1997	2000	2005	% increase 1997-2005	1997	2000	2005	% increase 1997-2005
Austria	1,210	1,041	923	873	28	831	548	560	-33	48	43	45	-6
Belgium	115	143	118	101	12	699	1,505	2,108	202	54	75	85	57
Denmark	189	114	99	98	48	1,431	863	1,155	-19	70	60	66	-6
Finland	523	351	342	338	35	2,307	2,359	*2,664	15	89	87	83	-7
France	1,981	1,453	1,108	814	59	449	589	*737	64	40	47	53	33
Germany	3,913	3,500	2,575	1,949	50	114	151	174	53	17	20	22	29
Greece	15	18	17	21	-40	885	1,122	1,096	24	56	65	*65	16
Italy	1,138	959	827	770	32	306	190	230	-25	31	23	27	-13
Luxembourg	177	220	202	155	12	210	242	312	49	23	26	31	35
Netherlands	180	174	87	72	60	1,654	1,694	1,796	9	79	81	*84	6
Portugal	33	37	42	43	-30	600	1,000	*1,164	94	46	59	69	50
Spain	327	318	281	269	18	496	874	**773	56	45	54	**51	12
Sweden	12	13	23	26	-118	2,040	1,975	**2,196	8	87	88	**91	5
United Kingdom	47	40	44	30	36	207	278	*413	100	28	30	*37	33
total # bank EU	9,860	8,381	6,688	5,559	44				43				18
average % change EU													
year				2003							2001		
Switzerland	457	382	335	301	34						65		
United States	12,369	9,982	8,361	7,825	37						21		
Japan	154	149	136	131	15						31		

These figures are taken from different sources. *Number of institutions*: OECD bank profitability 2004 (1990-2003); thereafter: ECB, the numbers in the table are corrected for a definitional break). *Concentration indices*: ECB, Structural analysis of the EU banking sector 2002; ECB, EU Banking Structures October 2006; Switzerland, USA and Japan: World Bank 2001. Regarding the correction for the definitional break, (*) indicates that a small correction has been made, (**) reflects a substantial correction.

Chart A.1: H estimates of competition in 80 countries in alphabetical order of country names

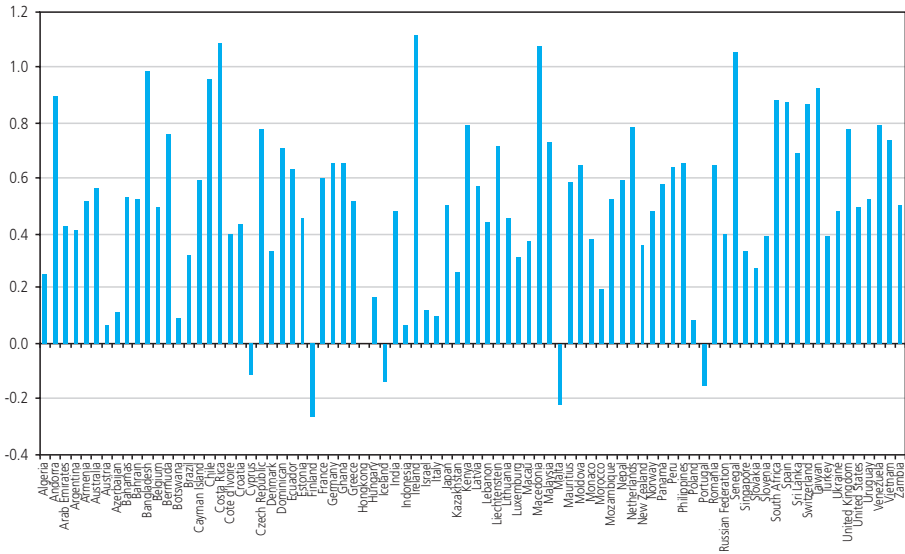


Chart A.2: H estimates of competition in 80 countries arranged from low to high

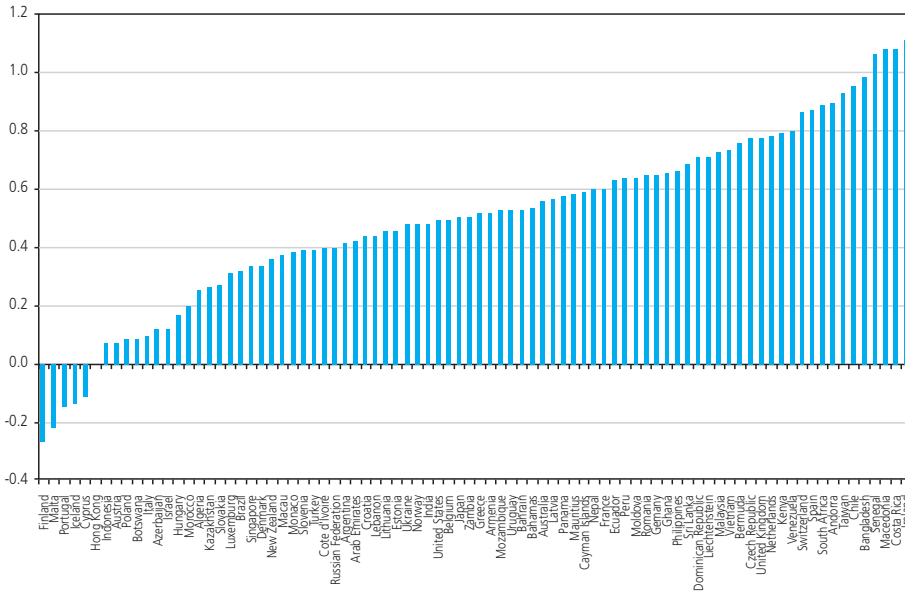
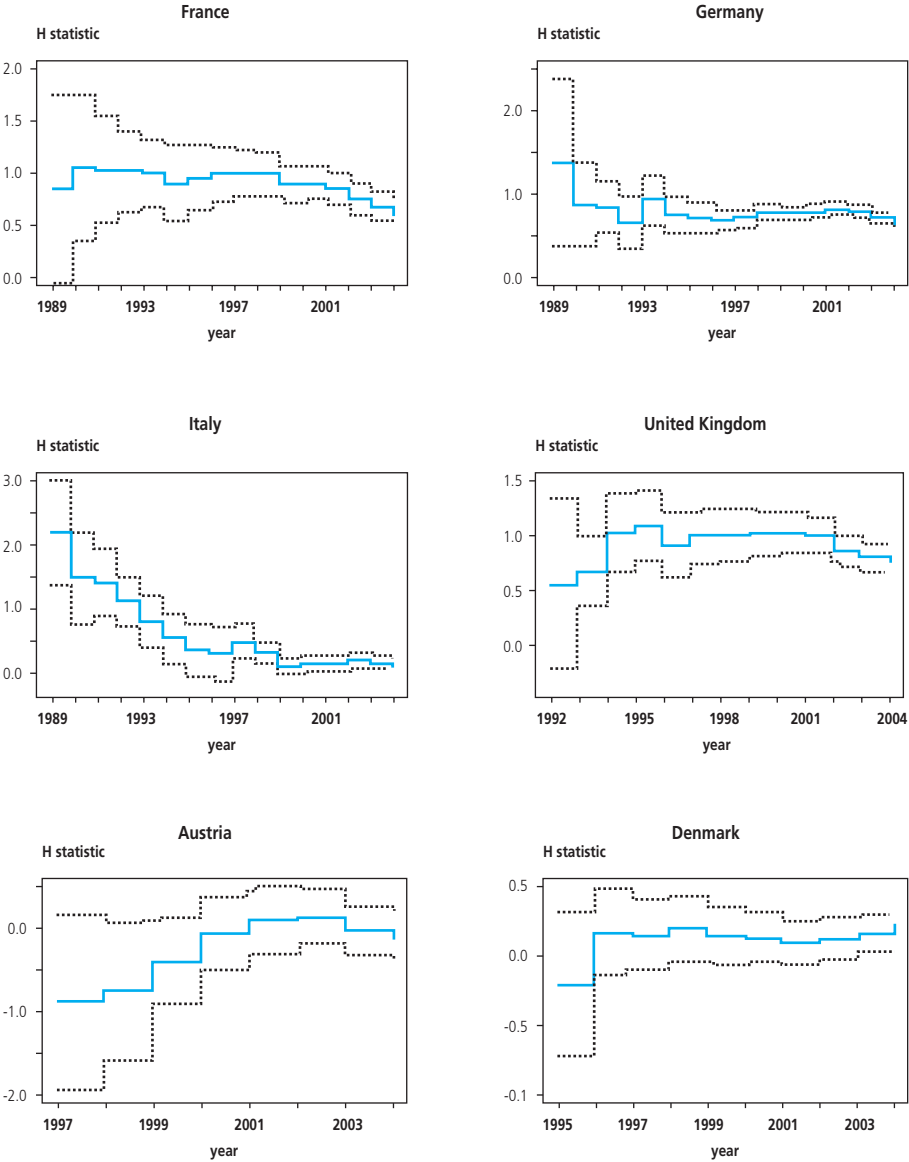
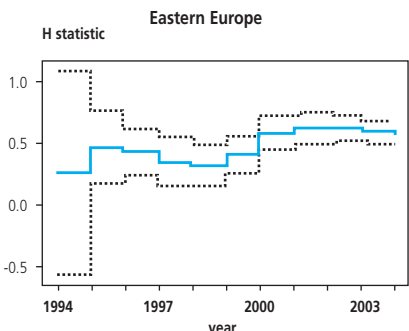
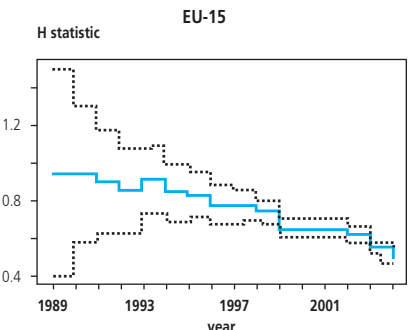
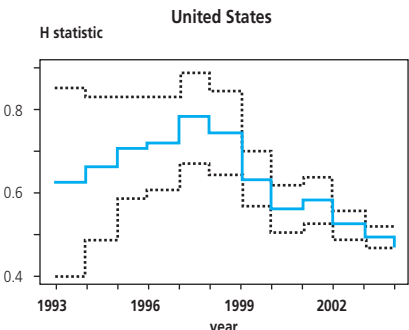
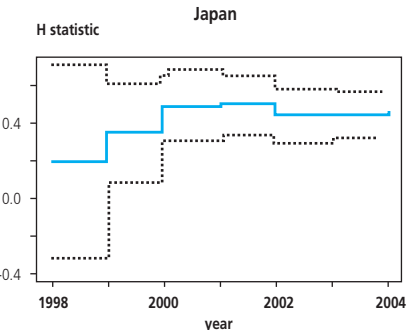
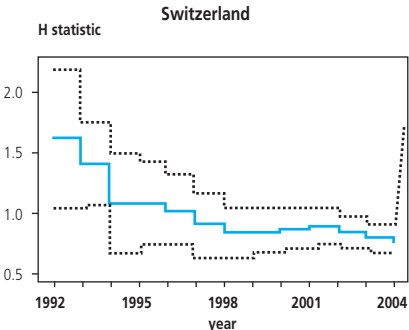
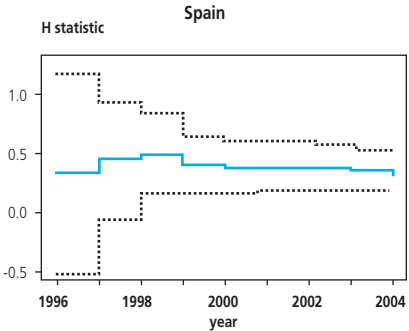
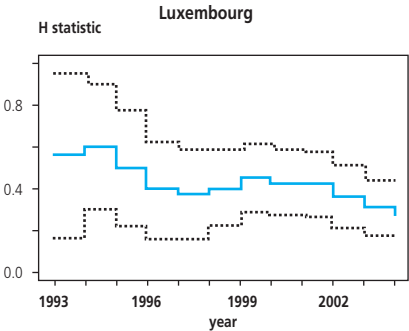


Chart A.3: Recursive least squares estimates of the H statistic⁵¹



51 Rolling-window or recursive estimates of the H statistic start with estimates of the first few years, continue with estimates of the first years, and successively add data of one extra year to the sample, using ever larger subsets of the data. Confidence bounds have been shown by dotted lines.

Chart A.3: Recursive least squares estimates of the H statistic (concluded)



Discussant

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My first general assessment is that both are excellent papers. They are comprehensive, broad in scope (as the subject requires) with food for thought everywhere. These papers are especially useful for an audience like today's comprising academics, government officials, and practitioners.

The main points that are addressed in both papers are the following:

- a) They both discuss what is special about competition in the financial sector. There is a trade-off between access and competition, a trade-off between financial stability and competition, the role of asymmetric information, network properties, etc.
- b) They've also reviewed the literature on such issues.
- c) They discuss how to measure competition, which is a very complex issue.
- d) They present the main driving forces of banking competition, which are grouped in variables that can be related to market structure, contestability, inter-industry competition, institutions, and the macro-economic environment.
- e) They report changes in the financial industry, changes related to deregulation, technology, globalization, and consolidation.
- f) They also say something about competition policy; how we can think on this issue, alongside approaches, institutional arrangements and different tools.
- g) They finally deal with financial sector competition issues specific for emerging countries.

I don't have too much to say about the papers. I just, if I may, would like to make two small suggestions to the authors. I think both of them drew most of their conclusions from cross-country studies. I would like to remind that there is also a very large pool of micro-literature that may convey some useful information on this subject. As they highlighted, the competition is, basically, supply on one side and demand on the other. If we look at micro-studies that look at both sides of the story, I think we can learn something.

I think that contestability is one of the things that have been mentioned here. I would say that alongside contestability, asymmetric information is another

very important thing. All of the examples that I am mentioning here, through my eyes, shed some light on the role of asymmetric information.

Looking at performance, price-cost margins, etc., I think the speakers correctly highlight that it is sometimes very difficult from performance to make inference on conduct or even on structure; to make inference on competition itself.

When you add asymmetric information, the picture becomes even more blurred because you may have high price-cost margins and that may not be due to market power itself but to asymmetric information. So I just give some examples here.

There is evidence for the relevance of asymmetric information from credit cards (e.g. Lawrence Ausubel), and from insurance (e.g. Pierre Chiapoorri). In terms of micro-finance, there is this whole centre at MIT (J-PAL) using quite a different methodology. Not econometrics but rather experiments. Like the way Ausubel did for credit cards. I think they have a wonderful paper on South Africa on this subject. Another example is relationship banking. Most on the SME finance literature deals with this point.

Furthermore, there is evidence from village finance. Bob Townsend is the main name here. I recall papers written by him and co-authors for Thailand and for Malaysia but I'm not sure about Indonesia.

My second suggestion is more specific to Professor Bikker's paper. I would like to see, perhaps, an effort to produce a more integrated view of the subject. I recognize that this is easier said than done. However, frequently in the paper evidences from different papers are just scattered or assembled. Perhaps with an effort to integrate the sections better we might have a more coherent view of the subject. For example, in a particular section of the paper the main drivers of bank competition are reported. In a second separate section the author reports a positive relation between bank size and market power. In yet another section, changes in competition over time are discussed. So, a reader could ask to what extent are these findings related? For example, can the temporal patterns identified be related to regulatory changes, or to consolidation in the industry.

Now I would like to make my final remarks focusing on the Brazilian case. The Brazilian experience can be useful, not only because I live there, but mainly because I think it can illustrate many of the points raised by the speakers. For example, in the institutional arrangement, I think Brazil is a good example of how the competition authorities, on one side, and the bank supervisory authority on

the other, which is the Central Bank, were making an effort to work together. Thus, the competition authority performs mainly conduct issues. With regard to mergers and acquisitions, a recent change in law delegates this kind of decision to the competition authority, unless systemic risk is an issue, in which case the Central Bank will perform the analysis. There is also a joint effort by the two authorities to deal with issues related to payment instruments, e.g. credit cards, debit cards, etc.

There is one thing that I think may still be relevant or important for emerging countries; the presence of state-owned banks. There is some evidence that in Brazil both state-owned banks, on one side, and the bank regulations on the other, are hampering competition. So in the country there are many schemes of direct credit where both prices and quantities are controlled. Of course, then it is easy to see that there is no competition at all when you control both price and quantity. There is also some evidence that the presence of large state-owned banks make bank entry more difficult in local markets. In the country, there is a very large development bank and the presence of this large development bank may hamper competition, especially in the provision of long-term finance.

As for foreign bank entry, there were very important movements in the late nineties but they have receded a bit in recent years. I would say that their presence has yet to make an impact on competition. For Brazil, there is no hard evidence, or no hard documented evidence, that their presence has somehow helped competition, which I think, by the way, is one of the findings of Professor Bikker.

Another important issue is this trade-off between access and competition. I think Stijn Claessens' paper focuses on the link going from competition to access.

I would say that, in Brazil, there is also evidence of the opposite causation. I mean how access, or how measures aiming at access, can help competition. This is one of the areas where the country has developed quite a lot in recent years.

A partial list of some of the measures that took place in Brazil to broaden access to financial services include: a) simplified bank accounts with more moderate service fees; b) what in Brazil is called bank "correspondent", which is basically a partnership between a bank and a non-financial firm, such as post offices; and c) micro-finance organizations.

Finally, the last thing that I would like to say is about other factors that may be behind what we sometimes consider as being market power. There is some evidence for the country that market failures other than market power *per se* can also explain performance in the financial sector: for example, asymmetric information and high switching costs on one side, and inefficiency of the judiciary,

institutional framework and recovery of collateral on the other. I would end my remarks pointing out that for policy implications, looking at the Brazilian experience, competition policies in the financial sector should be complemented by other measures and other policies to be effective.

Servaas Deroose, Director for Macroeconomic of the Euro Area and the EU in the Directorate General for Economic and Financial Affairs, European Commission

Let me begin by thanking you for the opportunity to contribute to this important workshop. As a representative of the European Commission, I have been asked to make this presentation on behalf of the EU Presidency.

Let me start off with three introductory remarks.

First, I would like to compliment the two lead speakers for providing us with excellent papers. They are very comprehensive, theoretically sound, and are very wide in their empirical analyses. Second, over the past two decades, the financial environment in which European financial markets operate has changed dramatically under the combined impact of mutually reinforcing forces. These forces include de-regulation, liberalization, technological innovations, as well as international integration, and specifically for the EU, the introduction of the euro. As a result of these ongoing structural changes, financial markets in the EU today are characterized by integration, consolidation, and the conglomeration of different types of financial institutions. Third, given the vital importance of competition for economic growth and social welfare, remarkably enough, the economic literature provides only relatively limited information about competitive conduct and positions in the European banking sector, and the financial sector more generally.

Before commenting directly on the papers, it would be useful to indicate how financial-sector competition is fostered at the EU level. I will then examine some of the approaches that can be used to measure the degree of success in fostering EU financial-sector competition. And, I will conclude with some very brief remarks on the complex institutional co-operation that is necessary to ensure that competition in the EU financial sector not only delivers lower costs and wider choice but also safeguards financial stability.

1. Fostering financial-sector competition at the EU level

In line with the conclusions of the lead speakers, the EU sees enhanced competition through market contestability as a main objective in creating a single market for financial services. There are, of course, other objectives in creating a

single financial market, including greater product innovation, lower costs, wider investor and consumer choice, and higher quality. However, it is clear that none of these can be achieved in a satisfactory manner in the absence of a high degree of competition among financial service providers.

A very specific element in the EU is that financial regulation and competition enjoy a symbiotic relationship. The interaction between regulation and competition is quite complex, and it is often argued or suggested that these two drivers for change are mutually exclusive. I would challenge this assumption in an EU context. Admittedly, regulation can, in some circumstances, reduce competition as it may raise barriers to entry for potential new competitors. On the other hand, EU-level regulation is most often beneficial to competition as it creates a level playing field for financial institutions operating within the EU, whatever their country of origin. The relationship between regulation and competition also works the other way. As financial markets become more competitive, partly as a result of increased financial integration, the process of European regulation needs to be continuously adapted.

The main instrument for enhancing financial-sector competition at the EU level is removing cross-border barriers to entry by integrating national financial markets. Market integration is achieved through the creation of a common EU framework for regulation and supervision. The blueprint for this common framework has been the Financial Services Action Plan (FSAP).⁵² The FSAP was adopted in 1999 and was largely implemented by the deadline of end-2005. Implementation of the FSAP already means that major progress has been made in opening markets and creating a level playing field across the EU financial sector, fostering competition in hitherto protected national markets.

Interestingly, the initial impact of the FSAP has been to foster consolidation within domestic financial systems so that banking structures still vary widely across EU Member States. For instance, legal barriers to private investments in public saving banks are still impeding the consolidation of the German banking system, which is characterised by a relatively high number of banks with comparatively low profitability. In fact, one could speculate that the limited availability of attractive business opportunities in the relatively “over-banked” financial systems of the EU-15 may have played a role in the initial slow progress in cross-border competition. This would at least be consistent with the contrasting picture of high foreign investments in the financially less developed financial systems of the Eastern European EU Member States, which supported the catching up process

52 See: http://ec.europa.eu/internal_market/finances/actionplan/index_en.htm.

of these economies and generated high profits for the investors. And, it could also help to explain how interest in cross-border mergers has picked up in the wake of higher returns in the EU-15 banking industry.

Building on the FSAP, the EU's current objectives in the area of financial services policy are set out in a White Paper on Financial Services 2005-2010.⁵³ With major advances already made in promoting integration –and by extension competition– in wholesale markets, this programme focuses more specifically on retail markets. At the retail level, the cross-border provision of financial services remains the exception in the EU, as differences in cultural preferences, in language and in consumer protection laws contribute to market fragmentation along national lines. Accordingly, there are concerns that the benefits of enhanced financial sector competition are not yet fully delivered to EU retail customers. The Commission therefore attaches particular importance to empowering EU consumers to play a bigger role in fostering financial sector competition by measures targeting enhanced financial literacy, market transparency, and reduced switching costs. This is very much in line with the policy recommendations of Claessens and Bikker.

As regards competition policies in financial services in the EU, essentially two approaches can be distinguished.

- In most cases, the approach is indirect and relies on the more competitive environment provided by improved access to national markets. Such indirect approaches tend to be based on EU-wide formal regulation, but not in all cases. For example, the EU has chosen a market-led approach to address integration and competition problems in the clearing and settlement industry, which typically includes service bundling and particularly opaque fees.
- Other approaches have been more direct. For instance, the EU has eliminated differences between the price of cross-border and national (small-value) payments by a regulation that applies to credit transfers, cash withdrawals at cash dispensers (ATM machines), to card payments (debit or credit) and to credit transfers.⁵⁴

Within the framework of an integrated financial market, the EU also enhances competition via competition policy. EU competition policy is implemented on an independent basis by the European Commission. It focuses on the prevention of cartels, collusion or other anti-competitive practices,⁵⁵ as well as monopolies or

53 See: http://ec.europa.eu/internal_market/finances/policy/index_en.htm.

54 See: Regulation (EC) No 2560/2001 on cross-border payments.

55 See: Article 81 - Article 85 - EC Treaty (Maastricht consolidated version) - Article 85 - EEC Treaty.

the abuse of dominant market positions.⁵⁶ In this respect, the Commission also has competences in the approval of mergers with a Community dimension.⁵⁷ It also ensures that any aid granted by a Member State does not distort or threaten to distort competition in the single market.⁵⁸

More recently, the Commission has become proactive in implementing competition policy in the financial sector.⁵⁹ For example, the Commission has already conducted sector inquiries into insurance services and retail banking, which identified large variations in merchant and interchange fees for payment cards, barriers to entry in the markets for payment systems and credit registers, obstacles to customer mobility and product tying.⁶⁰ Investigations were also carried out in the area of clearing and settlement and government bond trading to examine the causes of market fragmentation and to highlight barriers to competition. This more proactive approach is an essential complement to the removal of entry barriers through the process of financial integration.

2. Measuring competition in the EU financial sector

Whatever approach to enhancing competition is adopted, there is a need to monitor progress in achieving the desired objective of open and fully contestable markets. This brings me to the second part of my intervention, which relates to measurement issues and empirical results of competition in the EU financial sector.

Competition cannot be observed directly. And apart from a blatant lack of sufficient accurate and relevant data, there are also considerable measurement problems. This fact is fully recognized by the two lead speakers, who have presented an impressive range of possible indicators of financial sector competition. They have also identified their respective strengths and weaknesses, based on solid and interesting theoretical and empirical findings.

The model-based approach used by Jacob Bikker yields surprising results in terms of variation across countries and non-systematic differences across regions. It is not so surprising that differences exist, but it is surprising that these differences appear to be independent of variations in the degree of financial development. Even more interesting is his analysis of the potential determinants of banking

⁵⁶ See: Article 82 - Article 86 - EC Treaty (Maastricht consolidated version) - Article 86 - EEC Treaty.

⁵⁷ See: Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation).

⁵⁸ See: Article 87 - Article 92 - EC Treaty (Maastricht consolidated version) - Article 92 - EEC Treaty.

⁵⁹ See: http://ec.europa.eu/comm/competition/sectors/financial_services/overview_en.html.

⁶⁰ See: Communication from the Commission - Sector Inquiry under Article 17 of Regulation (EC) http://ec.europa.eu/comm/competition/sectors/financial_services/inquiries/retail.html.

competition, which confirms the importance of market contestability, foreign-bank entry, the functioning of other markets and the general business environment, while market concentration does not seem to have a significant impact on competition.

From a more specific EU perspective, I noted his conclusion that the degree of competition in major markets within the EU15 has declined over time. This finding is seemingly attributed to the fact that financial integration has induced greater consolidation in many Member States. His approach does not seem to take into account that the concentration effect has been offset by greater contestability of national financial markets. At the same time, it would seem that competition in the more recently acceded Member States –which are often perceived as dominated by a small number of foreign-based banks– has increased.

These findings are counterintuitive and need to be investigated further. For instance, I understand that the model-based approach has the important drawback of assuming total banking output as one single product. One can legitimately question whether it is adequate to measure competition in this way in highly developed financial systems such as the EU15, with their differentiated products and sub-markets.⁶¹ More empirical work would be required on the complex interplay of cyclical, structural and regulatory factors that underlie his results and differentiate between market segments. Furthermore, it is quite likely that the full effect of deregulation, liberalization and integration in the EU will only become visible after a considerable time.

In contrast to this model-based approach, analysis of financial-sector competition by the European Commission typically relies on a number of relatively simple indicators.⁶² Examples include the numbers of institutions and concentration ratios,⁶³ cross-border mergers,⁶⁴ market shares⁶⁵ or the share of

61 Moreover, it would be interesting to know if the model adjusts for “level effects” –e.g. one could probably assume that both input and output price variations are typically higher in developing than in already highly developed financial systems.

62 For all subsequent data references see: European Commission: European Financial Integration Report 2007 (EFIR); http://ec.europa.eu/internal_market/finances/fim/index_en.htm.

63 For instance, the total number of EU credit institutions decreased by 12 per cent from 2001-2005 while their assets increased by 33 per cent. Conversely, concentration in the EU banking market has increased by 16.9% over the period 2001-2006, as the weighted average of the Herfindahl-Hirschman Index (HHI) rose from 504 to 589. However, the concentration varies significantly across countries, with relatively low concentration in countries like Germany, Spain, France, Italy, and Poland and fairly concentrated markets in Belgium, Estonia, Lithuania, the Netherlands and Finland. The structure of the EU insurance market is somewhat similar to that of the banking market, with lower concentration in the large countries and higher concentration especially in the Baltic and Nordic countries.

64 Insurance groups are substantially more internationally oriented than banks. The value of cross border mergers industry accounted for 30% of the value of all M&As in the industry, while the respective number for banks this was 11% (the period 1990-2006).

65 In 2005, 46 banking groups accounted for 68% of total EU banking assets. In fact, The 14 largest EU banking groups already accounted for almost one-third of total EU banking assets.

foreign ownership,⁶⁶ the importance of different distribution channels⁶⁷ and differences in performance measures.⁶⁸ Moreover, the Commission's annual indicator-based monitoring of the impact of financial sector policies has a broad focus. It not only monitors the evolution of market structures and competition, but also integration and development, efficiency and innovation as well as effects on financial stability.

Furthermore, the Commission's holistic approach relies less on numerical indicators and more on obtaining a deep understanding of industry processes and market behaviour.

3. Competition and stability in the financial sector

Finally, I would like to make some brief remarks on the relationship between greater competition and stability in the financial sector. It is often argued that intense competition in the financial sector can increase risks to stability by encouraging behaviour that accepts higher levels of risk in the search for higher returns. Such an outcome is possible, and one could argue that pressure to increased profits in a more competitive environment might have played a role in the US-subprime investments of some European banks.

I would agree, however, with those scholars that argue that there is not necessarily a trade-off between increased competition and financial stability. A key question is whether the applicable framework for prudential regulation and supervision is fit for purpose, i.e. whether it adequately addresses incentives and transparency requirements.

The possible trade-off between competition and stability in the financial sector is of particular relevance to the EU. As cross-border integration increases, we can expect more competitive pressure on actors within the financial sector. It is essential, therefore, that the EU has arrangements for prudential regulation and supervision, which reflect the reality of a progressively integrated financial sector. Such considerations apply on the global level also, but they are particularly important in the EU, where the financial integration process is more advanced and there is a political commitment to advance even further.

⁶⁶ While the average foreign ownership share in the "old" Member States was still relatively low with 29% in terms of bank assets, the respective share in the "recently acceded" Member States 68% in 2006.

⁶⁷ The percentage of individuals in the EU-27 who regularly use the Internet for Internet banking increased from 16% in 2004 to 21% in 2006, but data vary largely across the EU.

⁶⁸ Again, there is significant variation across countries, e.g. with an average return of equity (RoE) by Member State (2006) ranging between 10% for Germany and over 25% for Latvia. This variety is confirmed for other market segment (e.g. insurance) and indicators (e.g. cost to income ratios, insurance premiums, production and distribution costs of investment funds, etc. See EIFR (2007).

Reflecting enhanced financial market integration, the EU has gone significantly beyond international standards in developing cross-border supervisory convergence and co-operation. EU member States have put in place various multilateral entities, EU specific home-host arrangements and a network of multilateral and bilateral Memoranda of Understanding that lay down practical arrangements for cross-border supervision. They have also established common principles and frameworks for analysis and developed practical guidelines for dealing with crisis situations. In this way, the benefits of EU financial integration –including increased competition– can be exploited to the full without any increased risk to financial stability. Nevertheless major challenges remain, if the EU financial stability arrangements are to keep pace with the ongoing process of financial integration.

4. Conclusion

To conclude, I would again like to stress that we are dealing with a complex industry, and finding policy responses to competition problems is a challenge. This challenge is compounded by difficulties in obtaining reliable and comparable data for the identification and monitoring of competition policies. Moreover, we must remember that competition is only one element to foster efficiency gains and innovation in the financial sector, while adequate corporate governance, regulatory and supervisory incentive structures play a very important framework role.

Accordingly, we must all continue our work on improving industry standards, which requires intensive cooperation not only at the European, but international level, in order to continuously monitor, evaluate and improve the national, regional and international financial architecture.

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SESSION 2A

Changes in the Financial Services Industry: Consolidation and Financial Conglomeration

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1. Introduction

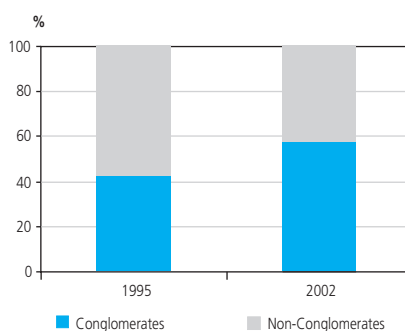
Financial conglomerates are corporate groups that include regulated financial entities such as banks, insurance companies, and securities firms. In some jurisdictions these groups also include unregulated financial entities, and in others they extend to commercial enterprises (these latter groups are referred to as mixed conglomerates).

This paper addresses some of the competitive aspects of the development of a regulatory framework for financial conglomerates that has been evolving since the landmark work by the Joint Forum in 1998.

2. The growing importance of financial conglomerates

Worldwide, the number of financial conglomerates has increased rapidly in the past decade or so (see Chart 1 below). While, in 1995, 40% of the 500 largest financial firms were conglomerates, in 2002 almost 60% of such firms

Chart 1: Largest financial firms worldwide



Source: G. de Nicoló and M. Kwast (2002), "Systemic Risk and Financial Consolidation: Are they Related?", Washington, DC, IMF Staff Papers 02/55.

1 Paper prepared for the G20 Workshop on Competition in the Financial Sector, 15-17 February 2008, Bali, Indonesia.
2 Chief Executive Officer, Promontory Financial Group Australasia.

were conglomerates. Several studies have found that the trend towards conglomeration applies not just to developed economies but also to an increasing number of emerging market economies.

The growing importance of financial conglomerates poses serious challenges for regulatory authorities. Risks become more difficult to monitor, not just because conglomerates operate across various segments of the financial system—including the banking, securities, insurance, and pension fund industries— but also because they carry out an increasing amount of business across multiple national jurisdictions, each with its own legal and regulatory framework.

The regulatory risks can be classified into three main groups: those arising from conflicts of interest, those arising from regulatory arbitrage, and those arising from potential contagion. Whereas the first two give rise to problems related to both competition and prudential concerns, contagion gives rise largely to prudential concerns and will not be elaborated on in this paper.

3. Conflicts of interest

Conflicts of interest arise where the interests of the financial group may run counter to the interests of the bank (or other more heavily regulated members of the conglomerate) within the group, and thereby counter to the interests of the depositors, as well as to those of the broader community that banks are expected to service.

The most obvious regulatory concern arising from conflicts of interest within a financial conglomerate is that the member bank could be used as a central source of funding for the entire group. While it is clearly commercially attractive for the owners of the conglomerate group to use cheap deposit funding for activities throughout the group, prudential concerns arise where intra-group lending occurs without proper assessment of risks, proper pricing for risk, and proper consideration of exposure concentrations.

From a competitive perspective, conglomerate groups create the potential for conflicts where the group includes commercial businesses as well as financial businesses. These conflicts include provision of finance on non-commercial terms, under-servicing of competitors, and market misperceptions about the regulatory support that might be available to members of the group.

While it is sometimes argued that sibling relationships between banks and commercial businesses provide the bank with superior information about the

commercial business and therefore a stronger basis for lending decisions, in practice these relationships are more often used as an excuse to extend credit on sub-market terms and to make lending decisions without appropriate due diligence. In effect, depositors are used to absorb part of the risk of the commercial enterprises to the benefit of the ultimate shareholders of the group. When finance is provided to related parties at below market rates, commercial interests affiliated with financial conglomerates can be granted an unfair advantage over their unaffiliated competitors.

Mixed conglomerates can also lead to under-servicing of third party borrowers. It is a fundamental advantage of banks that they provide funding without the need to publicly disclose information that could be commercially sensitive to competitors. The banker is, in a sense, a confidant of the borrower. Where a conglomerate group includes commercial interests that compete with broad sectors of the business community this advantage can be circumvented.

Finally, where commercial businesses are involved with regulated financial entities in financial conglomerates there is a potential for the market to misperceive the extent to which financial support may be available to the group in times of crisis. The same argument also applies to different regulated subsidiaries that might be subject to different support regimes that are not well understood by the market. To the extent that these misperceptions lead creditors and counterparties to perceive the group members as “safer” than they are in reality, the group members will enjoy a competitive advantage in the market over their unaffiliated competitors.

4. Regulatory responses to conflicts of interest

Regulatory responses to the challenges posed by conflicts of interest in financial conglomerates have varied from country to country. The following is a summary of the most common international responses.

Limits on participation in conglomerate groups

Since the primary source of prudential and competitive concerns in a financial conglomerate arise from the relationship between financial and commercial operations, many countries have limited this potential by prohibiting such groups from including commercial enterprises as members. Some countries have further restricted financial conglomerate groups by also excluding unregulated financial institutions.

Limits on ownership of conglomerate groups

As with all regulated financial institutions there is a need to impose some limitations on the ownership and control of financial conglomerates. At a minimum, controllers of financial conglomerates should satisfy fit and proper person requirements comparable with those imposed on the controllers of regulated entities. Beyond this, many countries impose a requirement that, consistent with requirements for ownership of banks, ownership of financial conglomerates should be diversified in order to minimize the risk that the conglomerate will be used improperly to fund the commercial enterprises of the owners.

Limits on the structure of conglomerate groups

The ability of supervisors to assess the risks in a conglomerate group and to ensure that regulatory restrictions are being observed is directly related to the transparency of the group. In many countries the transparency of groups is enhanced by imposing restrictions on the corporate structures that financial conglomerates may take. The most common of these is limiting or prohibiting cross-shareholdings within the group, other than direct parent/subsidiary holdings.

Limits on intra and extra group exposures

Another method of limiting the potential for abuse through intra-group transactions and exposures is to impose limits on intra-group exposures that are more restrictive than those imposed by the regulations applying to the individual financial institutions. For example, if the banking law or prudential standards impose a single large exposure limit to individual borrowers (or groups of related borrowers) of say 25 percent of the bank's capital, the intra-group large exposure limit might be set at 20 percent. It is normal to set a limit on exposures of regulated financial members of the group to other members on a stand-alone basis as well as to impose an aggregate exposure limit on the entire group.

As noted above, in many countries the law restricts the ownership concentration of regulated financial institutions to a relatively small percentage in order to establish a diversified ownership base. In such cases the risk of excessive exposures to related parties outside the formally-defined group are not great. However, in some countries where financial institutions and financial groups may be owned partly or wholly by a commercial company, single investor, or group of related investors, there is a much greater potential for conflict. In effect, allowing concentrated ownership of a financial conglomerate facilitates "virtual" mixed

conglomerates, even where legal mixed conglomerates may be prohibited. In this case, the supervisor should have the power under law to extend the limits on intra-group exposures to include those to related parties of the group that lie outside the formal definition of the group for supervisory purposes.

Arm's length transactions

Where commercial entities and/or unregulated financial entities are permitted within financial conglomerates it is common for the regulator to impose a requirement for all transactions with related parties to be at arm's length. The implementation of this requirement is something that supervisors should regularly test during on-site inspections.

Prohibition on tying arrangements

A particular concern that arises with financial conglomerates is the potential for anti-competitive tying arrangements. For example, a bank extending home loans might require borrowers to insure the property with a related insurer. While the extent of the competitive impact of such practices is contingent on the structure and competitiveness of the market, they are nevertheless regarded as anti-competitive and undesirable. Many countries prohibit tying arrangements between affiliated financial enterprises.

Restrictions on sharing of names, services, and facilities

The risk of regulatory misperception (as well as contagion) is greatly increased where members of the financial conglomerate share labeling of their services and activities, premises, and services. In many cases, members of a conglomerate may share common board members, management and infrastructure. While the regulatory risks may be reduced significantly by banning such sharing, one of the primary commercial benefits of membership of a conglomerate is usually the exploitation of brand recognition and the cost efficiencies that follow from sharing expensive services. Regulatory responses have generally attempted to find a balance between the benefits and risks from sharing.

The main regulatory requirement of allowing such sharing is usually that there is no misrepresentation to consumers of the provider of any particular service. This may be addressed through required disclosures to consumers about the relationships involved and the extent to which other members of a group may or may not support the service in question. Where disclosures are inadequate,

or where the risks are assessed to be unacceptable, the supervisor should have the power under law to prohibit sharing or any advertising or promotion that implies a relationship of support beyond that which the supervisor is prepared to allow.

5. Regulatory arbitrage

Capital requirements are the cornerstone of financial regulation. Under the recommendations of the Basel Committee on Banking Supervision, financial conglomerates containing banks should face capital requirements at two levels: at the individual bank level (known as the “solo” level, also known as Level 1) and at the consolidated banking group level (known as Level 2). This same principle is increasingly being extended to groups containing other regulated financial institutions, including to financial groups that do not contain banks.

The application of capital requirements to a financial conglomerate (known as a Level 3 capital requirement), however, raises significant challenges not faced by conglomerates of single entity types. The most fundamental challenge is that the component entities of a financial conglomerate are invariably subject to different capital regimes, both in the way capital requirements are constructed and the way in which capital is measured. Thus, treating a given conglomerate as a bank is likely to yield a materially different outcome in terms of capital adequacy than treating it as a securities firm, a general insurer, or a life insurer. Even in regions such as Australia and the EU where there has been a push to harmonize the regimes, material differences remain.³

The fact that a financial conglomerate headed by a bank may be subjected to a different capital regime than a similar group headed by an insurance company, or a group where the members sit as siblings within a broader holding company structure, creates a competitive imbalance and raises the potential for regulatory arbitrage.

To date there is no single, internationally-agreed solution to this problem. The following subsections outline the four most common approaches.

No consolidated capital regime

From a philosophical perspective it is possible to question why a Level 3 capital requirement is needed at all. It is generally conceded that creating a Level

³ See, for example, two recent studies by the EU: CEBS, Quantitative Analysis of Eligible Own Funds in the EEA, June 2007; and CEBS, Comparison of the Sectoral Rules for the Eligibility of Capital Instruments into Regulatory Capital, January 2007.

3, group-wide capital framework is justifiable primarily as a “solvency backstop” for the underlying regulated entities. The need for a backstop, however, can only be justified if there is some concern about the adequacy of the underlying solo regulatory frameworks. The argument goes that, if there are such concerns, they would be better addressed by strengthening the underlying frameworks rather than imposing an additional cost on the group.⁴

Such an argument is deceptively attractive. The problem is that an unregulated parent of a financial conglomerate is able to dilute the capital requirements of the stand-alone regulated entities by double gearing. Consider the following example.

Table 1 below illustrates a conglomerate consisting of a bank, and a life insurer (LI), each with the same broad balance sheet structure, including 100 units of assets and 5 of capital (assumed for simplicity to be all shareholders equity). In each case, it is assumed that the capital held exceeds the regulatory capital required. In the example, the bank is assumed to own the general insurer. For simplicity it is assumed that the LI subsidiary was purchased at its book value, so that there is no goodwill on consolidation.

Table 1: Capital consolidation

	Bank	LI	Group	Eliminations		Consol.
Investment in subsidiaries	5	5	10		(5)	-
Other assets	95	95	190			190
Total assets	100	100	200			195
Total liabilities	95	95	190			190
Capital	5	5	10	(5)		5

Each of the regulated entities appears to be adequately capitalized in its own right and the group as a whole, with 10 units of capital, also appears to be adequately capitalized. However, the consolidated position of the group shows that the 5 units of capital in the parent bank are used to support the capital requirements of both the bank and its life subsidiary.

In the absence of a consolidated capital framework for the financial group, the potential for double gearing, and capital upgrading, where the parent issues

4 See Howell E. Jackson, “The Regulation of Financial Holding Companies –New Palgrave Dictionary of Law and Economics”, October 1997.

debt to fund equity in the subsidiaries (as is done in the above example), remains a risk.

It should be noted that capital upgrading is always possible for individual investors. That is, an investor may gear his/her investment in an already highly-leveraged financial institution. Provided the shares of the institution are widely held this is not generally a concern. If one or more investors encounters financial difficulty, they can exit their holdings without imposing undue strain on the regulated entity. However, where the regulated entity or entities are held by a single corporate owner (such as a holding company or another regulated entity) there is the potential for the parent to come under strain if the burden of servicing its debt is excessive. A single parent under strain is a much greater prudential concern than a single investor among a broad group of investors. A parent under strain is more likely to put pressure on the subsidiaries to undertake transactions to help the survival of the group - even where these may be in contravention of the regulations. It is for precisely this reason that regulators look for financial strength in granting licences to the owners of banks and other regulated financial institutions.

The deduction model

In principle, countries that observe the Basel Core Principles for banking regulation should apply a consolidated capital framework in situations where the group is headed by a bank –such as the one illustrated in Table 1. In practice, the application of consolidated banking capital frameworks is much less well developed than might be expected.

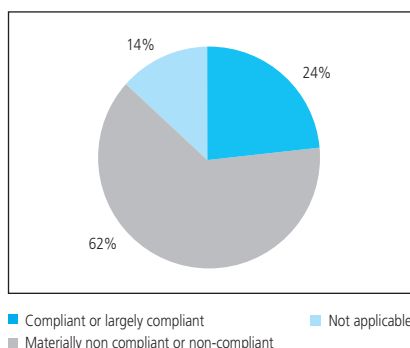
According to the Financial Sector Assessment Program (FSAP) conducted jointly by the World Bank and the International Monetary Fund, only 24% of the 80 countries that were assessed under this program between 1999 and 2004 were rated compliant with Basel Core Principle No. 20 on consolidated supervision (see Chart 2 below).⁵ Among the major weaknesses found across countries in terms of regulation and supervision of conglomerates were:

- the absence of an adequate framework for information-sharing and policy coordination among supervisory agencies;
- the absence of prudential norms for conglomerates (minimum capital and risk exposure limits on a group basis);

⁵ See: "Implementation of the Basel Core Principles for Effective Banking Supervision, Experiences, Influences, and Perspectives", Washington, DC, World Bank and IMF, 2002. Available at: <http://www.imf.org/external/np/mae/bcore/2002/092302.pdf>.

- inability to deal with opaque ownership structures in conglomerates;
- weak authority of supervisors to monitor risks in all entities belonging to a financial group; and
- the lack of consolidated accounting.

Chart 2: Country compliance with consolidated supervision



Source: World Bank data.

Implementation of consolidated capital frameworks beyond banking are even less well developed.

Where countries have applied a consolidated capital framework for banks and banking groups they have tended to apply the deduction model as proposed by the Basel Group.

Under the deduction model the bank must reside at the top of the financial conglomerate and the capital for the group is calculated on the basis of the banking rules as applied to the deconsolidated bank balance sheet, with the investment in subsidiaries deducted from both sides of the balance sheet. Thus, a bank's total capital adequacy ratio is calculated as:

$$\text{CAR} = \frac{\text{RWA} - \text{investment in subsidiaries}}{\text{Capital} - \text{investment in subsidiaries}}$$

Recent changes to the Basel framework in moving from Basel I to Basel II, and the introduction of international financial reporting standards (IFRS) have significantly changed the impact of the deduction model for banks that head financial conglomerates. In particular:

- a) Under IFRS, the accounting bodies in many countries have concluded that they should treat the value of in-force business of life insurers (VBIF) as an intangible asset, rather than its previous treatment as a tangible asset. VBIF represents the present value of future net income from endowment policies that are under contract at the time of acquisition.
- b) Under the new Basel II rules, goodwill and other intangibles are deducted from net Tier 1 capital rather than from gross Tier 1 capital. Thus, these assets can no longer be partially funded by residual Tier 1 capital instruments such as irredeemable, non-cumulative preference shares, and other hybrid capital instruments.
- c) Under the new Basel II rules, the net tangible assets (NTA) of unconsolidated subsidiaries (such as an insurance company) are to be deducted 50% from Tier 1 capital and 50% from Tier 2 capital, rather than 100% from Tier 2.

These changes have potentially significant competitive implications.

Consider the following example, using the changes as implemented in Australia, effective January 1, 2008. Assume that a bank with the balance sheet shown in Table 1 acquired a life insurance subsidiary in 2005. At the time of acquisition, assume that the outlay of 5 units for the subsidiary represented 1 unit of NTA, 1 unit of VBIF, and 3 units of goodwill.

Table 2 below compares the minimum Fundamental Tier 1 capital (Tier 1 excluding the residual Tier 1 items mentioned above) required of the bank before and after these changes. Note that there is no change in the total capital required. There is, however, a material redistribution of the burden of the required total capital between Fundamental Tier 1 and Tier 2. In practice, while regulators focus on regulatory concepts such as total capital, firms in the marketplace focus almost exclusively on Fundamental Tier 1 capital since it equates most closely with shareholders' equity.

Table 2: Impact of IFRS and Basel II on banking capital deductions

(Bank as Parent)	2005	2008
Goodwill	2,4	3,0
VBIF	-	1,0
NTA	-	0,5
Required fundamental Tier 1 (Shareholders' equity)	2,4	4,5
VBIF + Goodwill	1,6	-
NTA	1,0	0,5
Required total capital	5,0	5,0

The competitive impact of these changes is most starkly illustrated by considering the contrast between a bank as an acquirer of a life insurance subsidiary and another life company as an acquirer of the same subsidiary. Under the IFRS and Basel II rules an Australian bank acquiring the above insurer would be required to fund the acquisition using at least 4.5 units of shareholders' funds and at most 0.5 units of Tier 2 capital, against an underlying implied solvency requirement for the life insurer of 1 unit.

Since life insurance companies in Australia are currently not subject to consolidated supervision,⁶ the life insurer could, in theory, fund the acquisition entirely with debt. The impact of this difference on the rate of return on equity of the parent from such an investment is potentially dramatic.

Importantly, these recent changes have introduced additional international arbitrages as countries have taken different options in implementing the changes. The subsections below summarize the approaches to the IFRS and Basel II changes taken by a sample of countries.

a) VBIF

While the approach to VBIF varies, as summarized in the table below, the most common approach of the European regulators has been to continue with its historical treatment as a tangible asset. Other regulators have been less explicit in their treatment.

Table 3: Approaches to the treatment of VBIF

Country	Treatment of VBIF
Australia	In Australia, the VBIF issue has been determined largely by the Australian Accounting Standards Board which has determined that, from an accounting perspective, VBIF should be treated as an intangible asset. As an intangible, the prudential standards require it to be fully deducted along with other intangibles.
UK	The UK Accounting Standards Board issued a statement that continues the <i>status quo</i> with respect to VBIF. Consequently UK banks that own insurance companies are currently not required to deduct VBIF from Tier 1 capital.
Belgium	Under IFRS the Belgians continue to treat VBIF (which they call "Value of Business Acquired") as a tangible asset.

⁶ It is likely that life insurance groups will soon come under the regulatory net in Australia.

Table 3: Approaches to the treatment of VBIF (concluded)

Country	Treatment of VBIF
The Netherlands	The Dutch have not specified a rule for the treatment of VBIF (also called Value of Business Acquired). They have left it to the individual licensed entity to determine whether the asset is tangible or intangible. If classified as an intangible, the parent bank would be required to deduct it from Tier 1 capital.
The United States	The US does not permit banks to own insurance companies. Further, the US banking regulators have no policy on VBIF (which they call "Present Value of Future Profits"). Where banks own regulated subsidiaries (e.g. a securities dealer) the bank is required to deduct 50% of the investment from Tier 1 and 50% from Tier 2, regardless of the tangible/intangible composition of the investment. The Fed also allows a component of "identified intangible assets" such as servicing assets to be included as Tier 1 capital up to the lesser of 90% of fair value or 100% of book and subject to limits. The identified assets include items such as trademarks and mortgage servicing rights and could reasonably include VBIF.
Canada	Canada does not have an explicit policy on VBIF. However, OSFI allows a component of "identified intangible assets" up to 5% of Tier 1 capital to remain in the capital calculation, with the balance to be deducted from Tier 1. The identified assets include items such as trademarks and mortgage servicing rights and could reasonably include VBIF.
Singapore	Paragraph 18 of Notice 637 issued by the MAS specifies that all goodwill and VBIF of insurance subsidiaries are to be deducted from Tier 1 capital.

b) 50/50 deduction of intangibles

The *EU Directive 2006/48/EC*, dated 14 June 2006, is the primary reference document for the implementation of Basel II in Europe. Paragraph 154(4) of that Directive states that:

"Until 31 December 2012, the competent authorities of each Member State may allow credit institutions to continue to apply to participations of the type set out in Article 57(o) acquired before 20 July 2006 the treatment set out in Article 38 of Directive 2000/12/EC as that article stood prior to 1 January 2007."

The participations referred to in Article 57(o) are in *"(i) insurance undertakings (ii) reinsurance undertakings and (iii) insurance holding companies"*.

The effect of this Article is to allow member States a transition period to end 2012 to continue to deduct participations (i.e. NTA) of insurance subsidiaries acquired before July 2006 from total capital, instead of deducting 50% from Tier 1 and 50% from Tier 2.

In a quantitative survey of eligible own funds, the Committee of European Banking Supervisors found the following member countries elected to use the discretion:⁷

- Austria (AT)
- Belgium (BE)
- Cyprus (CY)
- Greece (EL)
- Spain (ES)
- France (FR)
- Ireland (IE)
- Italy (IT)
- Luxembourg (LU)
- Netherlands (NL)
- Sweden (SE)
- United Kingdom (UK)
- Slovakia (SK)

The most significant omission from this list is Germany. With the possible exception of Germany, the countries that elected to apply the discretion include the bulk of those in which insurance subsidiaries are significant.

The same survey identifies a wide range of eligibility limits placed on hybrids as a proportion of Tier 1 capital. At the high end of the range, the UK and the Netherlands permit banks to include hybrids up to a total of 50% of eligible Tier 1 capital. Both countries put a limit of 15% on innovative instruments. At the tighter end of the range, Latvia and Norway put a limit of 15% on hybrids as eligible for inclusion in Tier 1 capital. Some member countries currently put no limit on perpetual non-cumulative preference shares as these are not defined in their laws as hybrids.

Notwithstanding the relatively generous limits permitted by some countries, in practice the survey found that, on average, where hybrids are permitted, they account for roughly 15% of Tier 1 capital before deductions and around 18%

⁷ See CEBS, Quantitative Analysis of Eligible Own Funds in the EEA, June 2007.

after deductions. These figures are, of course, prior to the implementation of the Basel II changes which are likely to prompt a higher utilization of available limits for those banks that face a material increase in Tier 1 requirements under the changes.

The 50/50 deduction of investments in insurance subsidiaries is generally treated generously outside Europe.

- As noted above, the US does not allow banks to hold insurance subsidiaries. They have nonetheless adopted the 50/50 deduction approach to investments in non-insurance regulated subsidiaries, with the variation that they do not distinguish between the extent to which the investment is represented by intangible as opposed to tangible assets.
- Like the countries listed above, Canada issued an advisory entitled *"Transition for certain Definition of capital Elements of Basel II"* (effective 1 January 2008) in which it stipulates that investments in insurance subsidiaries made prior to 1 January 2007 may continue to be deducted from Tier 2 capital until the beginning of the fiscal year 2012, at which time they will be deducted 50% from Tier 1 and 50% from Tier 2. It should also be noted that Canada takes a more generous approach to the use of residual Tier 1 capital instruments in that it defines net Tier 1 as Tier 1 minus just goodwill and identified intangibles. The 50/50 deductions that are introduced under Basel II are deducted as part of adjusted net Tier 1. Since the limits on residual Tier 1 capital instruments applies to net Tier 1 rather than adjusted net Tier 1, the Canadians allow a greater use of residual items for banks that have significant investments in non-consolidated subsidiaries and securitisation programs.
- The MAS has included a provision in its Guidelines (see footnote 15 of paragraph 6.1.10 of MAS Notice 637) that *"Until 31 December 2012, the Authority may allow less than 50% of a capital investment in an insurance subsidiary to be included as deductions from Tier 1 Capital and the rest of the capital investment to be included as Deductions from Tier 2 Capital."*

The banking model

The United States has an explicit capital framework for bank holding companies (BHCs) that follows closely the style of the bank capital adequacy framework but with some important variations.⁸

⁸ The primary reference document for the capital adequacy requirements in the US is, Board of Governors of the Federal Reserve System, Capital Adequacy Guidelines, May 2006.

- First, since banks are not permitted to invest directly in insurance subsidiaries, a financial conglomerate wishing to undertake both banking and insurance activities can do so only through a BHC.
- Second, unlike the approach taken elsewhere, the US regulator of BHCs (The Federal Reserve Bank) risk-weights the assets of any insurance and other subsidiaries in establishing a bank-like capital framework for conglomerates at Level 3.
- Third, unlike the approach taken in the EU Directive on Conglomerates (see below), the US applies multiple (risk-weighted and unweighted) capital adequacy ratios.

The strong bank orientation of the approach to BHCs in the US appears to be a result of the fragmented regulatory architecture in the US and the fact that regulatory responsibility for BHCs rests with the Federal Reserve, which is fundamentally a banking regulator.

The key features of the US Level 3 capital framework for financial conglomerates are the following:

- a. BHCs are required to meet 2 risk-weighted capital ratios, as well as 3 unweighted leverage ratios.
- b. Capital for the risk-weighted ratios is defined to include two tiers, broadly consistent with the Basel definitions of Tier 1 and Tier 2 capital.⁹
- c. Whereas banks and BHCs are treated much the same way for the risk-weighted ratios, BHCs are given a more favourable treatment in calculating the straight leverage ratios (where they are not required to deduct intangibles).

The Non-Operating Holding Company (NOHC) model

The most developed framework for financial conglomerates is in the EU. This is not surprising given that the EU has the most examples of financial conglomerates and the majority of the few conglomerate groups headed by non-operating holding companies (as distinct from groups headed by banks).

The capital treatment of financial conglomerates is set out in *EU Directive 2002/87/EC* dated 16 December 2002 (known as the EU Directive on Financial Conglomerates). This Directive sets out three alternative bases for calculating the “supplementary” capital adequacy of the group.¹⁰

⁹ For definitions of eligible capital and eligibility limits see p.39 of the Fed’s Capital Adequacy Guidelines, 2006.

¹⁰ The requirement is referred to as “supplementary” since it is additional to any solo or level 2 requirements imposed on intermediate authorized institutions or groups of authorized institutions.

Method 1: Accounting consolidation method

The supplementary capital adequacy requirements shall be calculated as the difference between:

- (i) the own funds of the financial conglomerate calculated on the basis of the consolidated position of the group; the elements eligible are those that qualify in accordance with the relevant sectoral rules;
- and
- (ii) the sum of the solvency requirements for each different financial sector represented in the group; the solvency requirements for each different financial sector are calculated in accordance with the corresponding sectoral rules.

Method 2: Deduction and aggregation method

The calculation of the supplementary capital adequacy requirements of the regulated entities in a financial conglomerate shall be carried out on the basis of the accounts of each of the entities in the group.

The supplementary capital adequacy requirements shall be calculated as the difference between:

- (i) the sum of the own funds of each regulated and non-regulated financial sector entity in the financial conglomerate; the elements eligible are those which qualify in accordance with the relevant sectoral rules;
- and
- (ii) the sum of the solvency requirements for each regulated and non-regulated financial sector entity in the group; the solvency requirements shall be calculated in accordance with the relevant sectoral rules, and the book value of the participations in other entities of the group.

Method 3: Book value/requirement deduction method

The calculation of the supplementary capital adequacy requirements of the regulated entities in a financial conglomerate shall be carried out on the basis of the accounts of each of the entities in the group.

The supplementary capital adequacy requirements shall be calculated as the difference between:

- (i) the own funds of the parent undertaking or the entity at the head of the financial conglomerate; the elements eligible are those which qualify in accordance with the relevant sectoral rules;

and

- (ii) the sum of the solvency requirement of the parent undertaking or the head referred to in (i), and the higher of the book value of the former's participation in other entities in the group and these entities' solvency requirements; the solvency requirements of the latter shall be taken into account for their proportional share as provided for in Article 6(4) and in accordance with Section I of this Annex.

There are several features of this framework that require comment:

- First, the capital requirement refers to "own funds" only which, in the EU terminology, is equivalent the Basel concept of Total Capital. Thus, the framework does not explicitly extend the banking "tiered" structure of capital requirements to the group as a whole.
- Second, Method 3 is a simplified methodology which compares the available capital of the parent undertaking with the required capital of the parent plus the higher of the parent's holdings in group undertakings and the latter's required capital. The method does not recognise surplus value held in other group undertakings.
- Third, under most circumstances, Methods 1 (fully consolidated) and 2 (unconsolidated) should produce broadly similar outcomes, while Method 3 could produce a materially different calculation for capital adequacy.¹¹ In practice, Method 3 is rarely used and is likely to be removed at some point in the future.
- Fourth, there is considerable ambiguity left in the wording over how the sectoral rules are to be applied, and how they can interact, at the conglomerate level.

6. Remaining challenges

Wide international differences among approaches to setting the requirements for regulatory capital have created regulatory arbitrages both within and between countries. While there has been some progress in the past decade in the development of harmonized regulatory frameworks for financial conglomerates, there is still much to be achieved.

¹¹ This is likely to happen where, for example, a material amount of group capital is raised and/or retained on subsidiary balance sheets compared with where it is raised and retained on the parent's balance sheet.

The European building block approach offers the most logical framework for convergence but, even within this model, there are difficult issues still to be resolved, including:

- Limiting the scope for double gearing from the holding company to the regulated subsidiaries (left open by the focus of the EU Directive on Total Capital);
- Identifying an appropriate limitation on higher-quality capital (Tier 1 or Fundamental Tier 1) at the group level –in particular, until there is a greater degree of harmonization in the definitions of capital among the different regulated entities any form of aggregation will remain problematic; and
- Identifying an appropriate basis for calculating required capital for unregulated members of the conglomerate group (the recent Australian approach of using Economic Capital for the unregulated entities is interesting in this respect).

Perhaps the most fundamental issue is whether the existence or structure of a financial conglomerate should have some bearing on the Level 3 capital requirement of the group. Two arguments have been put forward to support the case for a Level 3 capital imposition that may be lower than the sum of the parts:

- First, it is often argued that a conglomerate group should enjoy some diversification benefits not available to the solo entities that comprise the group. At a minimum, there is a case that fee based activities, such as funds management, should be more stable over the cycle than lending or investing activities. The challenge will be for regulators and industry to agree on an objective basis for measuring the impact of diversification on risk. Until this is agreed it is unlikely that regulators will provide any explicit capital concession for diversification.
- Second, a case can be made that a NOHC structure, in which the various members of the group sit as siblings, rather than as downstream subsidiaries of one of the regulated entities, redistributes the risks in the group at least partly away from the most vulnerable members of the public, such as depositors. If so, it is not unreasonable that a group structured as a NOHC should face a lower overall capital requirement than say a vertically integrated group headed by a bank.

Until these issues are resolved and adopted internationally, financial conglomerates will continue to pose not only prudential challenges for their regulators but also competitive distortions.

1. Introduction

In the space of little more than a decade, the banking sector in the emerging market world has become much more market oriented and open to foreign competition. This makes the focus of this conference on competition a particularly useful one for policy purposes.

But there are at least three reasons why the special character of banks complicates the analysis of competition in the banking sector. The first is contagion: problems in one bank can quickly spread to others, and in the extreme undermine confidence in the whole banking system. In most other industries, by contrast, a problem in a competitor firm is good news for a more efficient company in the same sector. And the exit of a competitor through bankruptcy lifts the profits of remaining firms.

The second is that banks lie at the heart of the modern macroeconomy: they are both heavily reliant on macroeconomic developments (their profits follow the business cycle closely) and exert a powerful influence on such developments (their lending decisions in sum have a major impact on aggregate effective demand). Competition may also accentuate the tendency for individual banks to react in very similar ways to underlying macroeconomic conditions ("herding"). In short, there is potential for very powerful interactions between banking and the macroeconomy.

The third is that the structure of the banking industry and the policies of banks can have a major impact on the transmission of monetary policy. Events in recent months in the financial centres serve to underline how this impact can change as conditions in the banking industry evolve.

12 This paper reflects my own views, and not necessarily those of the BIS. Comments on an earlier version by David Archer, Karl Cordewener, Pablo Graf, Dubravko Mihaljek, Chris Ryan, Sahminan Sahminan, John Veale, Karsten Von Kleist, Bill White and Haibin Zhu are acknowledged with thanks. I am grateful to Pablo García-Luna, Swapan Pradhan and Marjorie Santos for statistical work. Clare Batts provided excellent secretarial assistance.

13 Philip Turner is Head of the Secretariat Group in the Monetary and Economic Department, Bank for International Settlements (BIS) responsible for economics papers produced for central bank meetings at the BIS.

Policy action to promote competition in banking markets must allow for such complications. It must not make the system as a whole less stable. Another implication is that any microeconomic analysis of the performance of banks must take account of the interaction between banks' policies and the macroeconomy, including the transmission of monetary policy. Equally, attempts to suppress competition among regulated institutions can drive financial intermediation into non-regulated channels that are not monitored. As Malcolm Edey explained so well at this conference, this can pose a greater threat to financial stability, even if temporarily hidden.

The next sub section therefore analyses briefly the current macroeconomic context. The plan of the rest of the paper is as follows. Section 2 looks at two major competitive forces: the entry of foreign banks and domestic consolidation. Section 3 looks, in a very quantitative and aggregate way, at the performance of banks over the past decade. The analysis of competition, credit allocation and sustainability in Section 4 is more qualitative. Section 5 looks at a few general challenges for supervisors and central banks. The conclusions are presented in Section 6.

Some macroeconomic context

During the past couple of years, bank credit to the private sector in the G20 as a whole has been growing at around 10–11% a year in real terms –about twice as fast as in the 1990–2004 period. The rate of credit expansion has been particularly rapid in real terms in Latin America, India, Indonesia, Russia and Turkey. In some cases, rapid growth represents a catch up from the crisis depressed years in the late 1990s and early 2000s. In addition, a reduction in bank credit to the government has allowed increased lending to the private sector. The gap in credit growth in the advanced economies and those in emerging market economies (EMEs) appears to have widened.¹⁴

Because credit has expanded most rapidly in those countries which had, at the beginning of the period, comparatively low credit to the private sector/GDP ratios, necessary financial deepening is doubtless part of the story.¹⁵ The banking industry is clearly becoming more dynamic across the global economy.

But there are also unsustainable macroeconomic elements that lie behind the expansion in the past few years. The decline in real policy rates combined

¹⁴ But note that the expansion in off balance credit by major banks in advanced economies is not captured by this statistic.

¹⁵ This is discussed in BIS (2007): see in particular pp 40–42, Graph III.4.

with very strong growth has been very favourable for banks. Intervention in several Asian countries has led to sizeable expansion in the balance sheets of commercial banks and increased the volume of liquid assets (mainly central bank or government bonds) held by local banks (Mohanty and Turner, 2005). These macroeconomic roots need to be kept in mind as more microeconomic issues are explored in the rest of this note.¹⁶

2. Two major competitive forces

As is clear from the graphs shown in the Annex, a very powerful M&A movement swept through banking systems in EMEs in the late 1990s and in the early 2000s (Annex Graph A). And there appears to have been a further wave during the past three years –although this wave was not as large as in 2001. This consolidation involved cross border mergers as well as mergers between domestic firms. In Latin America, mergers tended to be cross border (dominated by Mexico); in emerging Asia, by contrast, domestic mergers have been more important (Annex Graph B). These two aspects are reviewed in this section.

(a) *Entry of foreign banks*

As a senior international banker once remarked, the business of banking is like “walking up a down escalator”. Rapid developments in information technology; deregulation; the growth of capital markets; and freer international trade in financial services –all these factors have served to undermine the profitability of traditional banking business. At various junctures over the past 30 years, therefore, the pundits have labelled banking as a declining industry.

Yet the banking industry continues to prosper. It has done so by developing new areas of business more successfully than the pessimists had expected. One such area over the past decade has been expansion into the emerging markets, an area that offers profitable opportunities for banks. Foreign banks typically set high targets (usually 20-25%) for rates of return in emerging markets, well above what they earn in their home markets (Mihaljek, 2008).

At the same time, the local environment in most EMEs became more welcoming of foreign banks. A series of crises in the 1990s had focused the attention of policymakers worldwide on the paramountcy of competitive and stable banking systems (Turner, 2006). A major policy effort to strengthen banks in the EMEs got underway globally. Encouraging major US and European banks

¹⁶ For an analysis that combines monetary policy issues and the nature of financial sector liberalisation, see Mohan (2007).

to invest in local banking systems in crisis hit countries came to be viewed as a major plank of these policies.

Foreign direct investment (FDI) in the EME banking systems promised: to improve the technical capabilities of local banks; to provide a competitive stimulus that would reduce the cost and increase the allocative efficiency of bank intermediation; to develop local financial markets; and to make the banking system more stabilising by reducing the sensitivity of bank credit to host country cycles and by drawing on the reputation and the resources of strong foreign parents in times of crises (CGFS, 2004).

The greater penetration of EME banking systems by foreign banks was thus propelled by two powerful forces, the search by foreign banks for new business on the supply side and the demonstrated need for strong domestic bank systems on the demand side. The result has been a substantial but very uneven rise in the foreign bank share of assets in EMEs (Table 2). Foreign owned banks have become dominant in the former communist countries of central Europe (where under the command economy regime banks had been little more than book keepers of transactions decided under the central plan); they have been significant in Indonesia and Korea but have made comparatively little headway in the rest of Asia; and in Latin America foreign banks have assumed a dominant role only in Mexico.

Given this development, it is striking that there has been relatively little cross border banking consolidation in industrial countries. Berger (2007) suggests that this is because the technological or other comparative advantages of foreign banks over domestic competitors are much smaller in developed markets and are therefore more than offset by the well known disadvantages foreign firms must grapple with (coordination of subsidiaries with head office; managing from a distance; the lack of “soft” local knowledge etc). This hypothesis is supported by the finding of Claessens *et al.* (2001) that foreign banks make greater profits than domestic banks in EMEs, but smaller profits in developed markets.

In a major shift in business strategy, foreign banks have increased their subsidiary presence in the EMEs. According to BIS statistics, their local lending (in domestic currency) had risen to \$1900 billion by end-2007, compared with only \$250 billion at end-1997. This represents a sea-change in the internationalisation of banking services that requires careful analysis.

Between 1997 and 2002, cross border lending from head offices to EME entities fell. Hence the shift could be interpreted as from cross border lending denominated in dollars (or some other major currency) to direct lending in local currency (Domanski, 2005). This shift brought two major financial stability

advantages: it has reduced currency mismatches on the part of borrowers and it has probably reduced common lender contagion effects (Goldberg, 2007).

Since 2002, however, cross border lending to developing countries has risen substantially. A new development, however, is that the cross-border lending from banks in EMEs has also increased. Because most developing countries are not yet reporters in the BIS international banking statistics, it is not possible to quantify this phenomenon. But aggregating the statistics of the six countries that do report¹⁷ does give an impression of the scale: at end-2007, their total international claims amounted to \$306 billion, up from \$154 billion at end-2004. The integration of domestic banks in the global banking systems is, therefore, increasingly becoming a two-way process as assets and liabilities both rise. This general trend, however, reflects many quite distinct factors which we are not able to quantify with any precision. One force has been increased FDI by big non-financial corporations for EMEs. Another has been increased forward sales of foreign currency by exporters in countries with appreciating currencies.¹⁸ Much more needs to be known about these trends.

(b) Domestic consolidation

A second force affecting the competitive environment has been a wave of consolidation among domestic banks. In many cases, the competitive threat of foreign entry acted as spur to such consolidation. As Mihaljek (2006) notes, the banking systems in most EMEs in the mid 1990s tended to be inefficient (often backward in the use of modern technology), highly segmented and (because of concentrated loan exposures or simply because small size precluded effective diversification) vulnerable. In many cases, a few large (often state owned) banks coexisted with a very large number of regional banks, which were often family owned or dominated by local governments. Few banks were listed on the stock exchange.

A banking system composed of a large number of comparatively small banks is not necessarily inefficient. There is a lot of evidence that large and small banks can operate efficiently in the same market. Why this should be so has been the subject of much research.¹⁹ There is no strong evidence that larger banks

17 Viz, for the BIS's consolidated statistics, Brazil, Chile, India, Mexico, Taiwan (China), and Turkey. Note there are no consolidated statistics for Korea whose banks are playing an increasing role overseas.

18 The counterparty for such transactions are local banks, who typically cover their position by placing deposits with foreign banks.

19 Ryan Stever (2007) finds evidence that small banks, which might have riskier loan portfolios because they are less able to diversify than large banks, are able to secure loans at lower credit risk. This could be because of their better knowledge of borrower risk or it could be just borrower preference for small banks.

bring substantial economies of scale. At any event, it seems clear that the optimal structure of a banking system is likely to depend on local conditions and on the stage of development. It is therefore wise to avoid being dogmatic about the size of a bank *per se*.

The problem in EMEs rather was that it was often serious weaknesses in the system of prudential oversight that allowed small banks to survive even though they were vulnerable to changing market realities. As financial liberalisation proceeded and the regulators corrected such weaknesses, the pressure on small banks to merge or to accept takeovers increased. Consider just four key weaknesses:

- (a) Inadequate levels of capital. As minimum capital levels (ie not just ratios) were increased to make banks more resilient to shocks, banks were induced to merge.
- (b) Connected lending/excessive exposures to a single borrower. The business model of many small banks in effect depended on such practices. This often took the form of lending heavily to a few local companies. As the rules were tightened, the owners of such banks were forced to abandon such strategies.
- (c) Poor accounting and disclosure. As accounting rules are improved, it became harder to conceal losses or to hide cross subsidies with respect to various business lines.
- (d) Weak corporate governance. In many jurisdictions, the board was not sufficiently independent of management to exercise effective oversight.

Much of the consolidation among domestic banks seen in the past decade in the emerging markets was, then, the direct consequence of reforms to the oversight (by the market as well as by regulators) of banks that were desirable in their own right.

Nevertheless, Mihaljek (2006) reports that central banks' responses to a recent BIS questionnaire revealed a significant difference between official attitudes in Latin America and those in Asia. Mergers in Latin America have been by and large market driven in the context of regulatory reform. In these countries, he writes,

"The central bank, the supervisory authorities and the competition authorities generally have a neutral stance vis-à-vis mergers and acquisitions in the banking sector, which are considered to be private business deals. The authorities ... assess the impact on competition and concentration in the banking industry ... but take a neutral stance towards the broader impact of such deals on financial market

development and the economy” –market forces are presumed to work, and the satisfaction of standard prudential and competition criteria is regarded as sufficient to assure favourable effects on the market and fiscal development.”

In emerging Asia, by contrast, the authorities have more actively pursued consolidation, partly motivated by an official wish that domestic banks be large enough to compete with foreign entrants. Malaysia implemented rapid government led consolidation to hold down the post crisis fiscal costs of bank restructuring.²⁰ Policy in Thailand has been guided by a Financial Sector Master Plan. Indonesia has also pursued the consolidation of the domestic banking industry. One common impediment to consolidation is that small banks tend to be owned by families who are very reluctant to give up ownership (Goeltom (2006), Guinigundo (2006)).

In assessing this consolidation, several questions need to be asked. A first question is whether **Board oversight** of the management of the bank has been improved by consolidation. The problem with small banks was often that the management of the banks and the board were in practice indistinguishable. As banks grow bigger, the separation between board and management becomes more important. There is a large literature on the measures that can be taken to reinforce this. Bank regulators can require banks to have a minimum number of genuinely independent directors and can require they meet a minimum number of times a year. The CEO should not be the chairman of the Board. Bank directors could face criminal and civil penalties if they become party to attempts to hide information or mislead the supervisory authorities.

A second and related question is whether **external market discipline** has been effectively enhanced. Because they were family owned and operated regionally, many small banks were either not listed on the local stock exchange or had share ownership concentrated in a few hands. The incentives for shareholder oversight were thereby weakened and the threat of takeover –the usual impetus for ensuring the efficient use of resources– did not exist. Many more EME banks, particularly in Asia, are now listed on stock exchanges than was the case in the mid 1990s, so that a market for corporate control has developed. In some cases, however, the government still appoints the management of certain listed but state controlled banks.²¹

20 By 2002, Malaysia had consolidated 71 institutions to 30 domestic institutions organised in 10 domestic banking groups. The fiscal costs of restructuring were held below 5% of gross national product (GNP): Zamani (2006) attributes this achievement to “the timely, prompt and holistic approach ... that prevented an adverse situation from worsening further”.

21 See Nasution (2007).

In contrast to domestic consolidation, however, foreign acquisition has often led to the de-listing of large local banks, and so weakening external discipline: this is considered further below.

A third question is whether **increased concentration** has weakened competition in financial services. The market share of the largest banks has risen in most EMEs and is generally higher than seen in the major industrial countries. Nevertheless, there is, so far, little evidence that the consolidation of the banking industry in major EMEs has undermined competition. Kim *et al.* (2006) note that such competition is fierce; but they also note that the authorities in Korea intend to keep “a close eye on significant changes in the financial landscape brought about by ... the birth of megabanks ...”. This cautionary note is justified in view of the empirical evidence from industrial countries that increasing bank market concentration tends to drive up loan rates (Carletti *et al.* 2001).²²

A second reason for caution is that a concentrated banking system can inhibit the development of effective interbank money markets. In many EMEs, such markets remain illiquid and quoted benchmarks do not truly reflect market conditions. The Ferguson Report voiced the concern –in the context of major industrial countries– that consolidation could internalise “what has previously been interbank transactions [and so] reduce the liquidity of the market for central bank reserves, making it less efficient in reallocating balances across institutions and increasing market volatility.” Recent liquidity crises in the interbank markets of developed countries –which proved much less tractable than almost anyone expected– suggest that central banks in EMEs need to think carefully about the possible links between consolidation and money market functioning.

3. An aggregate view of bank performance in EMEs

In order to examine more closely the impact of these trends on performance in the banking industry it is useful to examine the income statements and the balance sheets of banks in the EMEs. The quality and quantity of such data have improved significantly since the mid 1990s. Regulators have put increasing pressure on banks to publish comprehensive balance sheet data. Financial statements have been made subject to more rigorous auditing, increasingly according to

22 An additional aspect (not considered here) is the relationship between consolidation and stability. There is no consensus among researchers on the sign of such a relationship. On the one hand, greater size creates diversification of risk possibilities that should make banks safer. On the other hand, the aggregate risk exposures of large banks are difficult to manage or to supervise. On evidence that increasing return correlations on the equities of large and complex financial institutions in the United States could indicate heightened systemic risk in the banking sector, see the paper by de Nicoló and Kwast in the Ferguson Report (Group of Ten, 2001).

international standards. This has often been supported by stronger rules on corporate governance, including the creation of compliance units which seek to ensure that accounting rules are properly followed. The collection of such data by Fitch's Bankscope has helped outsiders get snapshots of banking systems that were not available in the mid 1990s. The regular publication of key financial soundness indicators in the IMF's Global Financial Stability Report ensures that such data are widely available.

The summary analysis in this section draws on these data. Measured by return on assets, it is clear that banks worldwide have become more profitable: the most remarkable improvements have been Brazil, Indonesia and Mexico (Table 3). The return on equity in contrast has risen more sharply in the banks in advanced economies, presumably reflecting greater leverage. Even so, banks in both emerging Asia and in Latin America have become more profitable than banks in the advanced economies.

Substantial differences in net interest margins across the main areas persist. Several recent studies do indeed confirm that net interest margin have remained high after cross-border mergers; but there is no consensus about the causes.²³ Correa (2007) finds that overhead costs have tended to rise post-acquisition; Beccalli and Frantz (2007) find that cost efficiency improves after a merger. In any event, margins in Latin America have remained high even though a major improvement in credit quality has led to a significant scaling back in provisioning (Graph 1).

Just why the dispersion of average net interest margins across countries has remained so wide is a major puzzle. This question was much debated in a CGFS workshop in 2004. Two explanations were offered at that time (CGFS, 2005). The first was simply perceived risk given the region's recent history of instability: the expectation was that spreads would narrow as growth picked up and macroeconomic stability was enhanced. The second was that the incompleteness of financial markets made it more costly or (even impossible) for banks to hedge their exposures.

How convincing have these explanations proved to be? At first sight, not entirely convincing since spreads in Latin American banking markets have remained wide even as a more stable macroeconomic environment has become better established in the region. The developments in bank share prices also suggest some scepticism. If high profits, wide interest margins etc simply reflect the costs

23 I am grateful to Pablo Graf for drawing my attention to these papers.

of doing business in an unstable region they should not give any boost to share prices. But the share prices of banks have risen substantially in real terms (Table 4). In addition, the volatility of bank share prices in crisis hit countries has, from the 1998–2002 period to the 2003–07 period, fallen in Indonesia, Korea, Mexico, Russia and Turkey.

It is possible that the better macroeconomic environment and more complete financial markets led to a quantum jump in the effective demand for bank loans, making banks more profitable. This is indeed a plausible story: lower real interest rates (as risk premia decline) and more stable growth should be good for the banking business. If this were true, then one might expect that bank share prices would have risen more in those countries that experienced the biggest shift in the demand for bank loans.

There is indeed some evidence that better macroeconomic performance has led to an increase in the bank credit/GDP ratio. But there is no relation across G20 countries between the change in this ratio over the past decade or so and the performance of bank share prices. The only case where profits may have been generated by a substantial increase in bank credit appears to be Brazil where both relative share prices and the ratio of bank credit to GDP have risen (Table 5).

What then explains the wide cross country spread of bank profitability? What bankers themselves say is simple: there are good profits to be made by expanding in those markets where the banking industry is underdeveloped. A simple way of testing this is to see whether the cross country pattern of bank profitability in the G20 is related to various measures of the size of the banking industry. The obvious measure of this is simply the bank credit/GDP ratio. Because banks are also engaged in capital market activities, a second ratio is the value of outstanding securities (bonds and equities) as a percentage of GDP.

The regression to test this, run over 18 countries (not data were available for Saudi Arabia), for 2006, was (t statistics in parentheses):

$\ln(\text{PROF})$	=	$2.90 - 0.79 \ln(\text{cred}) + 0.09 \ln(\text{eq} + \text{bond})$
		(3.1) (0.3)
Adjusted R^2	=	0.48
where PROF	=	Net income of banks before tax as a % of total assets
cred	=	Bank loans to the private sector as a % of GDP
eq	=	Stock market capitalisation as a % of GDP
bond	=	Debt securities outstanding as a % of GDP

There was no evidence that this relationship reflected simply differences in economic development: *per capita* GDP (measured at PPP exchange rates) was not significant when added to this equation and the coefficient on $\ln(\text{cred})$ was unaltered. The variables $\ln(\text{cred})$ and $\ln(\text{eq} + \text{bond})$ are correlated; but the relationship between $\ln(\text{eq} + \text{bond})$ and $\ln(\text{profit})$ is not strong.

The conclusion is that bank profitability appear to be higher in those markets where the bank/credit GDP ratio is lower; but there is no similar relationship with the size of securities markets.²⁴ As Graph 2 of this relationship shows, the different G20 countries lie rather close to this regression curve. Of course it is not difficult to think of other variables that could be added to such an extremely simple regression. For the purposes of this paper it is enough to demonstrate that, *prima facie*, the international bankers are right: banks can make profits for many years by expanding in those markets where the banking industry is underdeveloped.

Yet if competition in the provision of bank credit were really highly competitive in EMEs, then one would not expect a positive relationship between profits and the bank credit/GDP ratio to last for long. The size and persistence of cross country differences in profitability over time suggests that competition is not eliminating “exceptional” profits very quickly. This feeling that banks in many EMEs are not as competitive as in industrial countries in seeking new business is reinforced by much anecdotal evidence.

At the same time, the macroeconomic facts suggest a quite different picture. The growth in bank credit in many EMEs is currently very rapid. This suggests that –on macroeconomic and financial stability grounds– banks may be “too” eager to expand credit. So which signal should policymakers pay more heed to? Strengthening competition between the banks in the EMEs so that banks lend more and their exceptional profits are reduced? Or should they focus on slowing bank credit expansion and ensuring that system stability is maintained? The old dilemma of efficiency *versus* stability is very much alive in the EMEs today.²⁵

24 It would be interesting to explore why the size of securities markets does not affect bank profitability. One possible explanation is that the variable $\ln(\text{eq} + \text{bonds})$ includes securities that are not traded (eg bonds bought at issue by domestic institutional investors, private or public and held to duration). Hence it is not the size of the outstanding stock of equities that creates profit opportunities for banks.

25 As noted above, rapid credit growth is probably more an issue of macroeconomic policies than of the competition drive banks. Intervention to exchange rate appreciation and the associated big increases in central bank balance sheets is leading to excessive credit expansion in some countries.

4. Competition, credit allocation and stability: a qualitative analysis

It would be very useful to go deeper than the very aggregative outline presented in the previous section by looking at more micro statistics on banking services. But such statistics do not exist—at least on any comprehensive international basis. This statistical lacuna deserves more attention than it has received to date. As one author put it, analysis in this area is like chasing a black cat in a dark room, blindfolded (Cornford, 2006).

Nevertheless, it is perhaps possible to make some qualitative analysis of main trends. Three specific elements of the impact of foreign banks on the performance of the banking industry have attracted attention: competition; the allocation of credit; and stability in the system. The impact in each area depends on the structure of the domestic industry and the reaction of domestic banks.

(a) *Competition*

The nature of foreign bank entry has a major influence on how much competition foreign banks bring to the local market. One aspect of competition is common to all markets: market concentration. Other things equal, the competition enhancing effect is least when foreign firms simply acquire large existing banks that already enjoy a degree of market power. Such banks will be more reluctant to cut margins to attract new business because they will not want to undermine the profitability of existing business.²⁶ For this reason, there may be a role for vetting potential entrants for the competition they are likely to bring. Before recent GATS agreements to open banking markets, some countries tended to explicitly favour the entry of foreign firms only when they brought something **new**. Fraser (1994), for instance, noted that Australia expected foreign applicants for banking licenses “to add something of significance ... to the Australian market”.

Once foreign banks have entered a concentrated market (Mexico is a good example of this), however, competition in the banking industry may need to be enhanced. Given the special position of banks, the challenge is to find ways of doing this without creating financial stability risks. One way would be to encourage new entrants into non-deposit-taking areas of bank business—for instance, mutual funds, investment advice, etc.—while being very cautious about permitting new entrants to take deposits. To prevent banks using their dominant position to—

²⁶ Gizycki and Lowe (2000) explain that the Australian mortgages market became competitive only after the entry of mortgage managers who “were able to offer lower margins without concern for the effect of this on the profitability of existing loans”.

“starve” potential non bank competitors the fees banks charge for bank-to-non-bank transfers may need to be regulated (see below for a discussion of network charges more generally).²⁷ Another approach would be to be more liberal in the granting of a banking licence to non bank entities that are strong enough not to create major financial system risks. Perhaps partly for this reason, Mexico granted a banking licence to Wal Mart’s subsidiary in Mexico –something the US authorities have so far withheld from its parent.²⁸

A second aspect is the extent of common ownership of banks. If a single investor or holding company owns several banks in one market, then competition between those banks can be impaired. This can become an issue, for instance, when a foreign bank which already controls one local bank seeks to buy a controlling stake in another bank. In this spirit, Bank Indonesia in 2006 launched its Single Presence Policy: any entity can become a controlling shareholder (defined as holding 25% of the equity) of no more than one bank.

A third aspect of competition that is particularly relevant for the banking industry is the dependence of banks on networks –interbank transfers, credit card payments, electronic retail networks. The levels of network transactions costs differ widely across countries, and they remain high in several EMEs.²⁹ There is no reason that the entry of foreign banks will necessarily bring down high network charges to the low levels prevailing in the main financial centres. It is true that foreign banks, with better technology, can put pressure on costly and inefficient payment networks dominated by a few large domestic firms. But the inherent advantages of established networks may still be very difficult to overcome. As Claessens (2008) in his paper for this conference notes, competition policy in many infrastructure industries (electricity, railways, water, etc) has been adapted to make the provision of network services more competitive. The issue of networks in the financial industry is now attracting greater attention from policymakers. As such networks are at the heart of the payment system, the central bank may need to be vigilant about any anti competitive practices of large banks.³⁰

27 See Hizkiyahu (2007) for an explanation of how Israel has attempted to instil greater competition whilst maintaining stability: “the answer to concentration and the problem of competition stems from further development of the non-banking financial market. ” Fischer (2007) reports that the Bank of Israel is examining how “to bring in new players into the banking system. ” See also Davis (2007) who finds that greater competition does not improve financial stability.

28 See Chopra (2007): this paper provides an excellent survey of the impact on foreign banks.

29 The Banco de México (2007) reports evidence that interchange fees in debit and credit card transactions tend to be higher in EMEs than in industrialised countries.

30 Using the framework of “two sided” markets (eg a credit card must simultaneously satisfy the demands of businesses which accept such payments and those of people who make such payments), Banco de México (2007), pp 88–90, provides an illuminating analysis of interbank fees and of measures to reduce such fees.

A fourth aspect is that incumbent banks have an interest in preserving their own informational advantages –by keeping to themselves the credit histories of clients. The efficiency and the stability of the system as a whole, however, is improved when all banks have access to such information. To help ensure this, the authorities may need to encourage the development of credit bureaus.

(b) Allocation of credit

The discussions at CGFS workshops a few years ago (reported in CGFS, 2005) found that the comparative strength of foreign banks in the standardised techniques of quantitative credit assessments meant that the entry of foreign banks had a major impact on the allocation of bank credit across sectors. Foreign banks have tended to focus more on the household sector (where they could apply their “hard” credit scoring statistical technology and spread their risks over a large number of borrowers). This has often induced domestic banks to narrow their spreads on lending to households. Conversely, foreign banks have been weaker in those lending areas where credit assessments depend on “soft” local knowledge or long term customer relationship. Lending to small and medium sized enterprises (SMEs), whose accounts were not subject to audit, may have therefore suffered.

(c) Financial stability

A necessary, but not sufficient condition –macroeconomic factors are also important– for a stable banking system is the effective “micro” assessment and management of lending risks. The advent of foreign banks, and perhaps even the threat of their entry, has stimulated a widespread improvement in risk management in EMEs. A recent BIS survey (reported in Moreno (2006)) found that the use of various quantitative risk management techniques by banks in emerging markets has expanded significantly. Valuations are increasingly based on market prices; market risks are quantified, mainly using VaR calculations; scoring models are used to assess the credit risks of households and of small business borrowers; portfolios are stress tested for various adverse scenarios; in addition, both the pricing of, and the provisioning for, credits are increasingly based on quantitative risk assessments. The Board of a bank in the emerging markets increasingly focuses on detailed quantitative reports in the oversight of its bank’s risk exposures.

Stability also has important macroeconomic elements. In small economies, total dependence on indigenous banks means that local bank lending can become very procyclical. CGFS (2004) therefore argued that the greater presence of foreign banks can reduce the sensitivity of bank lending to economic cycles: the ability to

manage credit risk, together with access to market or parent funding and diversification of the parent's risks, tends to make foreign banks less sensitive to both home and host country business cycles. Evidence that foreign banks have tended to stabilise banking systems in Latin America is given in Crystal, Dages and Goldberg (2001). Goldberg (2000) found that foreign banks helped to stabilise the supply of credit after the crises in Argentina and Mexico.

Finally, there are some reasons for thinking that the presence of foreign banks is likely to lead to an improvement in local supervisory capacity. This can be true technically: supervisors can learn much from the risk management practices of efficient foreign banks and from the contracts developed with home country supervisors. Equally important, it can be true politically, because it becomes harder for local political or commercial elites to undermine the necessary independence of supervisors (Mishkin (2006), p 257 cites evidence supporting this).

5. Challenges for the supervisory authorities/central banks in host countries

The undoubted potential benefits of foreign banks do not, however, relieve the local authorities of important responsibilities. As experience with running systems with a very large foreign presence has accumulated, there has been greater recognition of the importance of this point. In recent years, indeed, it has been the governors of central banks of countries with a dominant foreign banking presence that have stimulated much of the public debate.³¹ The following paragraphs draw heavily on work done in their institutions.

(a) *Competition policy vital*

The first observation relates to government policies on mergers. Strong competition from foreign banks (or even the threat of entry) can induce governments to induce their domestic banks to merge. Foreign bank entry and mergers need also to be assessed from the perspective of their impact both on competition and on financial stability. On occasions, these two objectives can diverge. For instance, a weak foreign bank facing difficulties in funding itself in international wholesale markets may be tempted to enter new markets and offer high interest rates to attract retail deposits.

If separate agencies are responsible for these objectives (eg one authority to ensure competitive market behaviour and a bank supervisor for financial stability), then some coordination mechanism between these two bodies will be

31 Alan Bollard of the Reserve Bank of New Zealand and Guillermo Ortiz of the Banco de México.

required. An alternative might be to ensure the relevant supervisory authority is charged with assessing competition issues.

Lurking behind this choice is one important, if rather thorny, issue related to international trade in banking services. The General Agreement on Trade in Services (GATS) enshrines a “prudential carve-out”: countries can in effect prevent the main provisions of the agreement applying to the banking industry by taking prudential measures designed to ensure a financial system’s integrity and stability.³² (This would also presumably apply to government or central bank subsidies to a bank facing a crisis). How to prevent countries abusing this “carve-out” to protect domestic banks remains unresolved. Some argue that separating the local responsibilities for supervision (making the prudential call) and for competition could reduce the risk of such abuse.

The second observation is that governments (faced with a given ownership structure) may need to be proactive in injecting greater competition into domestic banking markets and ensuring wider public access to bank credit. It was argued above that the entry of foreign banks by itself cannot be relied upon to do this - particularly where the domestic banking industry is rather concentrated. Indeed, this paper has provided evidence of the persistence of higher than normal profits, which attracts foreign banks. This means that the local authorities need to develop an active competition policy to prevent any bank –foreign or domestic– from exploiting oligopolistic power.

A third, more cautionary, observation is that it can be very dangerous to give a banking licence to a new entrant that is too weak to continue normal operations if faced with adverse financial market circumstances. The first call of such a bank in a crisis would be on the local central bank for liquidity support. This provision of such support would often require quick and effective coordination with supervisory authorities, at home and abroad.

In those EMEs with comparatively limited institutional capacities, the responsibility for ensuring competition in the financial industry might be best discharged by a well respected central bank. Mexico is a good example of this. In May 2006, the Mexican central bank required lenders to disclose the Total Annual Costs (CAT), similar to the Annual Percentage Rate laid down in the UK’s Consumer Credit Rate. Steps have also been taken to reduce commission charged in banking

³² Cornford (2004) provides useful account of what this means. James Barth’s paper for this conference also provides some fascinating insight into how countries’ actions have fallen short of their commitments under GATS, a discrepancy that he notes has been more marked among developed than developing countries.

transfer networks. Ortiz (2006) in reviewing the various measures adopted stressed that direct regulation was avoided. Instead, the policies aimed at improving transparency and helping the man in the street understand in simple terms financial contracts they were signing.

(b) Effective oversight of subsidiaries

The second aspect, much mentioned in the CGFS workshops on this question, is that the interests of the shareholders of the parent bank are unlikely to maximise the value of the individual subsidiary for the host country (Graf and O'Dogherty, 2006; Ortiz, 2006). Nor are they likely to minimise the volatility of such subsidiaries: a few years of strong profits followed by divesting (or even closure) may well be the optimal strategy for large banks operating in small (by their standards!) countries. Finally, the management of the parent bank is unlikely to be well placed to avoid excessive procyclicality in their lending policies –because economic cycles will diverge across the different countries in which it does business.

The interests of those who depend on banks in the host country are unlikely to command the central attention of the parent's home country supervisors –because losses in one small subsidiary even in a worst case scenario will not be material to the profitability of the parent.³³ An important responsibility of host country supervisors in their oversight will be to ensure that sufficient account is taken of local macroeconomic conditions.

The host country supervisors need to think through carefully what they need to require –both in routine business as usual mode and in potential crises. They cannot just rely on assurances from major foreign banks that risk exposures are being properly managed. Local supervisors of course will need to coordinate carefully with home supervisors who are responsible (under the subsequent revisions of the 1975 Basel Concordat) for consolidated supervision for the whole banking group.³⁴ As banking has become more global, much more effort has to be spent on nurturing effective coordination between home and host supervisors. The Basel Committee is actively working on this, notably through its Accord Implementation Group. It has to be recognised that there is no one size fits all template. The minimum responsibility of host country supervisors is to bring any concerns they have to the attention of home country supervisors.

³³ But they will of course pay more attention to any strategies of the parent that entails similar exposures across a large number of small subsidiaries.

³⁴ The home–host issue has long been controversial. Jackson (2006) provides a useful summary of the issues, paying attention to industry as well as official views.

What else can the authorities in host countries do to ensure the management of foreign banks takes full account of local interests? One possibility is that home supervisors require that the subsidiaries of banks incorporate locally. New Zealand requires this of all systemically important banks³⁵, giving it a powerful lever over the conduct of local directors. This arrangement works in part because the foreign banks operating in New Zealand come from Australia –with which it shares a common legal tradition. In addition, Australian banks have about 15% of their group assets in New Zealand and comparatively little in other countries. Nevertheless, the issues that have arisen in the trans-Tasman banking relationship are of general interest because of the commitment of both countries to find mutually acceptable solutions that are compatible in the market reality.³⁶ Exactly what should be required of local directors would depend on local conditions.

One feature of this common legal tradition is a separation between the Board and the management. It was argued above that the process of consolidating a fragmented local system in EMEs into a much smaller number of larger, more efficient units could well work better when this Board/management separation is reinforced. This is additional reason for giving local directors on the Board greater responsibilities.

Foreign banks with business in many different countries, however, would probably find the local incorporation requirement too onerous. They would argue that branches could well perform more competitively than subsidiaries because they can exploit the capital and ratings of their parent. An alternative would be to require local banks to have some resident non executive directors (ie independent of management and not related to the parent bank).³⁷ The presence of such directors, with full inside information of the local operation, could significantly enhance the effectiveness of supervisory oversight. Kane (2007) notes that this is an important mechanism in New Zealand, where directors are under strong obligations to uncover and pass on to supervisors unfavourable information.

A second avenue (also pursued in New Zealand) is to impose a limit on outsourcing. Such a rule could seek to ensure that a bank can continue operating

35 Defined as those whose New Zealand liabilities exceed \$15 billion. In addition, retail deposit takers must incorporate locally if they are from a jurisdiction which has legislation that gives preference to local depositors in winding up (eg Australia, United States) or if disclosure or supervision is inadequate in the home jurisdiction.

36 See Bollard (2004) and Ryan (2007).

37 Fraser (1994) advocated this in Australia and reported strong opposition from foreign banks. He said in reply that *"it is reasonable that there be some independent minds on the board prepared to speak up, should it be necessary, for the interests of the local depositors. While the independent directors will usually be in the minority and can be outvoted, in extreme cases they may well take more radical steps, such as resigning and explaining their positions to the central bank. I see nothing wrong in that situation"*.

even if its parent is unable to do so. Economies of scale, however, can make outsourcing attractive to a bank and thus lead to lower cost banking services. In practice, much depends on the nature of the activity under consideration. Routine computer operations are regularly outsourced, and this may present no particular difficulty. But elements that have a key bearing on bank risk exposures (eg settlements, risk management) are a different matter: effective supervision can be undermined if core risk management functionality is migrated offshore (Bollard 2004). The nature of specific geographic location also matters.

Other possible avenues are fuller disclosure of the performance of the subsidiaries and some form of locally-based market discipline. Pillar 3 of the Basel II applies in principle the top consolidated level of the banking group: individual subsidiaries are not in general required to fulfil the disclosure requirements set out in Basel II.³⁸ Some supervisors in host countries may require fuller disclosure of the performance of subsidiaries. A related issue is the existence of market instruments whose prices reflect market opinions about the health of the subsidiary. In this context, Ortiz (2006) has drawn attention to an important market gap that arises when large banks are de-listed from local stock exchanges when acquired by global financial firms. Other papers prepared for this conference address these important issues of disclosure and market discipline.

Other mechanisms could be explored. For the purpose of this paper, the main point is that host country supervisors cannot abdicate supervision to the home country. But in deciding how far to go and what exactly to do they will have to address the familiar efficiency/stability trade offs. They will also have to take account of how domestic banks are supervised. Similarly placed foreign and domestic banks should be treated in a similar way.³⁹ And the specifics of particular cases will inevitably colour judgements.

(c) Reactions to contagion

The consequences of their choices for their ability to respond to crises coming from –or magnified– abroad will also require consideration. The mounting difficulties confronting global banks since July 2007 illustrate the importance of this. In some cases, the credit rating of the parent institution has been downgraded. This exposes their subsidiaries to similar downgrades, which could raise their cost

³⁸ See paragraph 822 of the BCBS (2004). Information about the capital ratios of significant bank subsidiaries, however, may be required.

³⁹ This does not of course mean banks should be treated identically independent of their capacities: in particular, capital requirements should differ according to the quality of risk-management systems (see Neumann and Turner (2005) for a fuller exposition of this argument).

of funding. Bollard (2004) has argued that the areas of potential divergence between home and host supervisors are likely to become most apparent in a situation of distress when the stakes are highest.⁴⁰

The IMF has recently drawn attention to the dangers created by the large negative foreign positions of foreign-owned banks in the Baltics and in south eastern Europe. Because their parent banks (as do mid-sized European banks) obtain a substantial part of their funding on international wholesale markets, continued pressures in key funding markets could force those parent banks to contract credit in this region (IMF, 2008).

A more general phenomenon is that many global banks have in recent months been using their subsidiaries in EMEs to extract liquidity from EME money markets, often with the local central bank as counterparty. The disturbances to local markets have fortunately proved short lived. But matters would be different were the viability of an international bank to come under question. On occasions, central banks have expressed different views on their ability/willingness to provide Emerging Liquidity Assistance. Many regard a certain amount of “constructive ambiguity” in this area essential on moral hazard grounds. Nevertheless, such divergences could impede a rapid and effective response in a potential crisis.

Evaluating systemic risks is particularly difficult. Banks in EMEs and their supervisors need to pay particular attention to contagion effects—particularly when capital flows highly correlated across EMEs have the effect of leading to expansionary monetary policies. In previous crises, it was shocks shared by many EMEs that created great problems. This requires judgment and supervisory discretion. Stefan Hohl and others worry that this will require a high degree of assertiveness on the part of supervisors which, for historical reasons, may be lacking in Asia (Hohl *et al.* 2006).

6. Conclusion

The past decade has been one extraordinary change in the banking systems in most major EMEs. It is not easy to disentangle the powerful forces acting: macroeconomic; post-crisis reforms; and the strong push of major global banks to expand.

⁴⁰ “In times of stress, the allocation of capital and risk within the group can be crucial... the home and host countries may have very different views on the choice of techniques for responding to bank distress... and quite different perceptions of when a crisis is systemic”.

The macroeconomic forces acting have worrying elements of unsustainability: massive forex reserve accumulation and its domestic financing counterpart have, when not disguised by measures that impede banking sector efficiency, led to rapid credit expansion that requires watching. The microeconomic forces stimulating greater competition have also been very powerful. Yet the fact that profits remain so high (reflected in a substantial improvement in the prices of bank equities) suggests this process still has further to go. It also suggests a need to look more closely at policies to enhance competition.

The public policy dilemmas all this raises are major and very complex. First, there is the interaction between the macroeconomic and the microeconomic. What we observe about credit expansion and the standard performance indicators of banks reflect both macroeconomic and microeconomic drivers. Policymakers need to be careful to distinguish between these forces and yet be aware of how they interact.

Secondly, there is the question of competition *versus* stability with the associated issue of how to assign responsibility for differing objectives to various domestic agencies. There are domestic pros and cons to evaluate in making such a choice –and differently placed countries may well rationally make different choices. Such choices may well have international ramifications.

This leads to the third observation. There are the two big policy issues that require much more work: nurturing freer international trade in banking services under GATS; and exercising the shared responsibilities of home/host supervision. The data available at an international level on banking services are not particularly good –so it is difficult to monitor the degree of competition with precision. There is no simple solution to the home/host issue, but it is becoming clearer that host supervisors in several countries need to deepen and to extend their oversight of foreign banks operating in their jurisdictions.

Current policy frameworks and arrangements do not deal in a fully satisfactory way with any of these issues. There is much work to do. Nevertheless, the development of a more competitive and efficient banking industry in many emerging markets over the past decade has produced substantial benefits.

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Annex

Table 1: Growth of bank credit to the private sector

In real terms, in per cent per annum

	1990–99	2000–04	2005	2006	2007
G20 ¹	4.9	5.3	8.9	10.4	10.0
Advanced economies ²	2.4	2.2	5.9	5.8	5.4
Emerging Asia ¹	10.5	11.8	10.7	13.2	13.2
China	13.9	12.5	7.4	11.2	12.0
India	6.0	11.1	21.2	19.6	16.9
Indonesia	0.3	12.1	3.3	5.1	14.8
Korea	11.2	8.6	4.6	12.3	8.5
Latin America ¹	6.8	–1.7	13.9	23.7	24.4
Argentina	4.3	–15.0	17.2	23.9	26.3
Brazil	8.4	2.2	12.8	21.8	31.3
Mexico	5.6	–0.6	13.7	26.2	13.6
Other emerging ¹	4.5	16.9	24.0	28.0	24.2
Russia	3.7	26.0	21.9	36.1	34.9
Saudi Arabia	7.0	14.3	37.2	6.1	14.0
South Africa	5.4	5.0	13.0	18.5	11.9
Turkey	4.0	8.2	31.3	31.3	16.6

¹ Weighted average of the economies shown based on 2000 GDP and PPP exchange rates. ² Australia, Canada, France, Germany, Italy, Japan, United Kingdom and the United States.

Sources: IMF International Finance Statistics.

Table 2: Foreign bank penetration in G20 countries¹

	0–10%	10–20%	20–40%	40–70%	70–100%
Emerging market economies	China India Russia	Brazil	Argentina Indonesia South Africa	Korea	Mexico
Advanced economies	Canada Germany United States	Australia France Italy		United Kingdom	

¹ Foreign bank share of total assets.

Source: Chopra (2007).

Table 3: Bank profitability: two measures

As a percentage

	Return on assets			Return on equity		
	1997	2002	2006 ¹	1997	2002	2006 ²
G20 ³	0.8	0.7	1.2	9.8	8.0	15.2
Advanced economies ^{3,4}	0.9	0.7	0.9	11.1	6.3	13.3
Emerging Asia ^{3,5}	0.3	0.9	1.0	-12.8	15.1	15.3
Latin America ^{3,6}	0.6	-0.0	2.6	6.5	5.2	23.7

¹ 2005 data for Australia and France. ² 2006 data for Australia, France and Germany. ³ Weighted average of the economies based on 2000 GDP and PPP exchange rates. ⁴ Australia, Canada, France, Germany, Italy, Japan, United Kingdom and the United States. ⁵ China, India, Indonesia and Korea. ⁶ Argentina, Brazil and Mexico.

Source: IMF Global Financial Stability Report, various editions.

Table 4: Bank share prices

	Bank share price index in real terms ^{1,2}			Bank share price relative to general share price index ¹			Volatility of bank share price ^{3,4}		Memorandum: Concentration ⁵
	1997	2002	2007	1997	2002	2007	1998-2002	2003-2007	
G20 ⁶	101	69	163	113	99	93	8.4	5.2	51
Advanced economies ⁷	94	75	105	107	104	82	6.2	4.0	37
Emerging Asia ⁶	113	61	246	134	90	95	10.7	7.6	69
China	131	65	233	136	87	94	9.7	7.8	78
India	64	57	345	99	101	114	9.6	7.7	48
Indonesia	193	20	54	170	59	42	17.0	7.5	62
Korea	85	74	170	200	93	84	16.2	6.4	73
Latin America ⁶	80	63	240	95	100	105	10.1	5.7	65
Argentina	147	38	115	131	61	81	12.3	8.2	53
Brazil	81	62	270	115	91	100	6.9	5.7	60
Mexico	45	78	261	50	133	124	13.6	4.6	78
Other emerging ⁶	157	42	313	104	84	185	19.6	6.9	61
Russia	199	35	423	98	88	249	24.8	7.4	45
Saudi Arabia	...	...	...	...	...	...	...	...	...
South Africa	92	67	161	128	80	76	8.8	4.6	94
Turkey	119	37	195	93	78	136	17.4	7.7	67

¹ 1997–2007 = 100, in local currency terms; end of year. ² Deflated by consumer prices. ³ Calculated based on monthly percentage changes. ⁴ Standard deviation over the whole period. ⁵ Top five banks' share of assets in 2006.

⁶ Weighted average of the economies shown based on 2000 GDP and PPP exchange rates. ⁷ Australia, Canada, France, Germany, Italy, Japan, United Kingdom and the United States.

Sources: Datastream; Fitch Ratings Bankscope; national data.

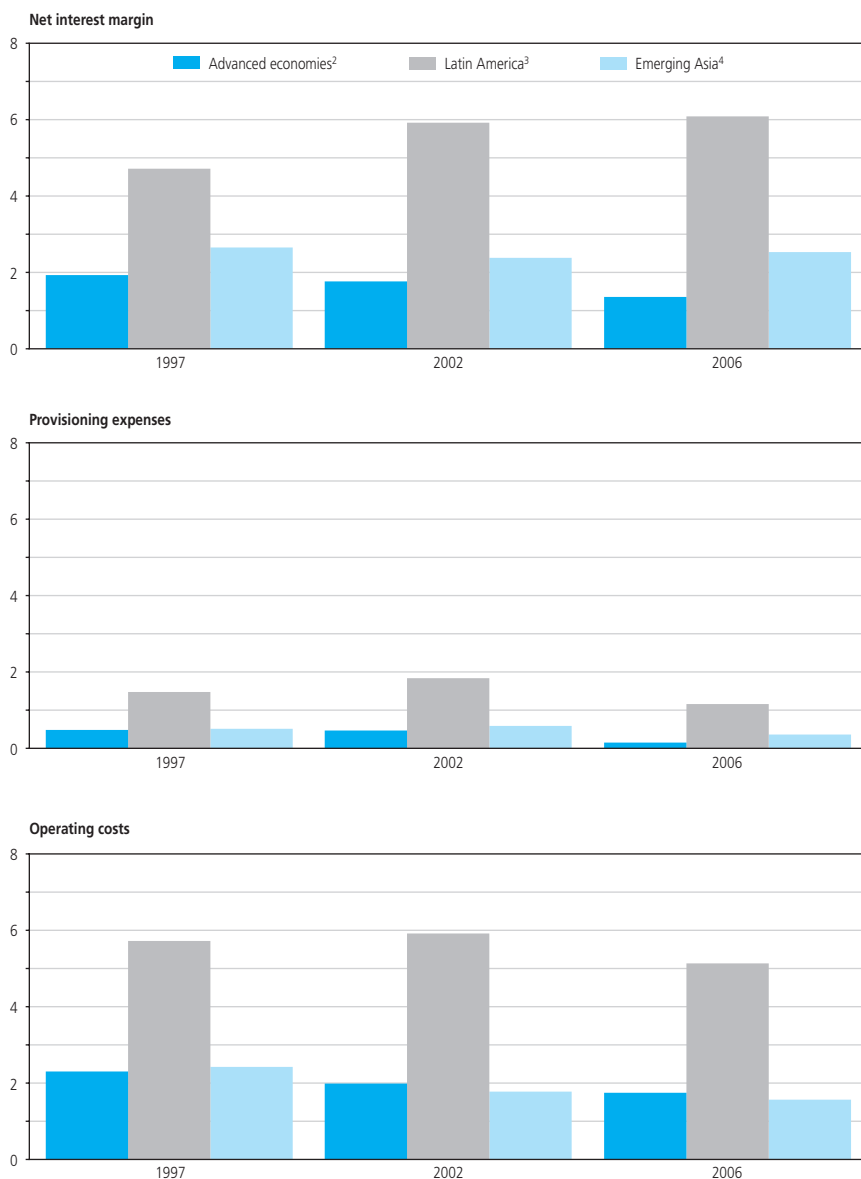
Table 5: Financial system development¹

	Total domestic bank credit			Domestic debt securities outstanding			Stock market capitalisation		
	1997	2002	2007	1997	2002	2007	1997	2002	2007
G20 ²	96	113	117	76	92	109	54	52	97
Advanced economies ³	114	127	135	113	130	147	77	72	103
Emerging Asia ²	80	110	110	13	33	52	11	16	93
China	101	143	138	9	24	52	6	11	88
India	48	62	70	18	31	42	22	20	117
Indonesia	54	52	41	2	30	20	10	12	41
Korea	64	94	112	29	98	116	5	36	90
Latin America ²	52	62	65	25	36	54	22	17	58
Argentina	30	62	28	12	33	29	20	7	14
Brazil	59	76	95	40	43	72	16	22	86
Mexico	53	43	39	10	28	40	31	15	40
Other emerging ²	36	40	41	24	21	19	38	39	92
Russia	29	25	25	16	2	3	27	29	90
Saudi Arabia	31	41	18	...	...	...	...	40	115
South Africa	66	71	87	55	49	43	82	92	140
Turkey	26	47	48	12	40	33	21	13	36

Note: Bank credit includes credit to the government (Table 1 covers only bank credit to the private sector).

¹ End of period, in per cent of GDP. ² Weighted average of the economies shown based on 2000 GDP and PPP exchange rates. ³ Australia, Canada, France, Germany, Italy, Japan, United Kingdom and the United States.

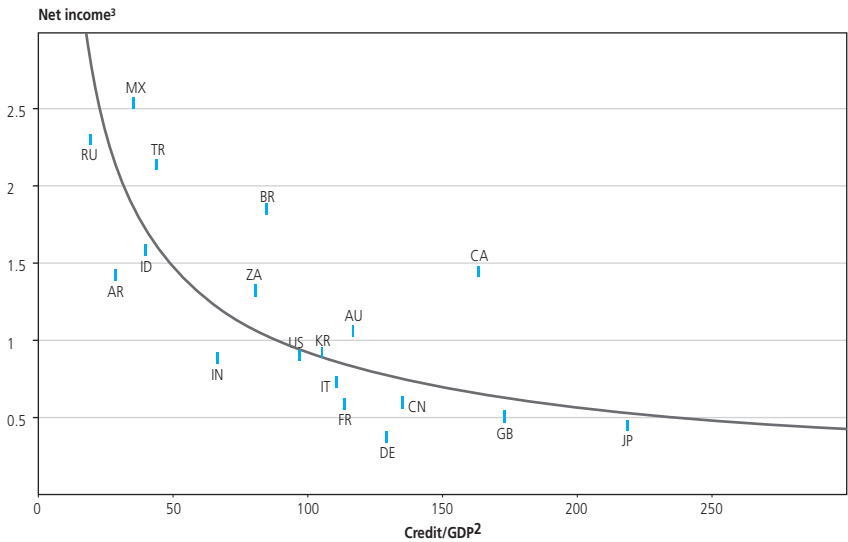
Sources: BIS; IMF; Datastream; S&P Emerging Markets Database.

Graph 1: Bank operating ratios in G20 countries¹

¹ As a percentage of total assets; regional aggregates are weighted averages based on 2000 GDP and PPP exchange rates. ² Australia, Canada, France, Germany, Italy, Japan, United Kingdom and the United States. ³ Argentina, Brazil and Mexico. ⁴ China, India, Indonesia and Korea.

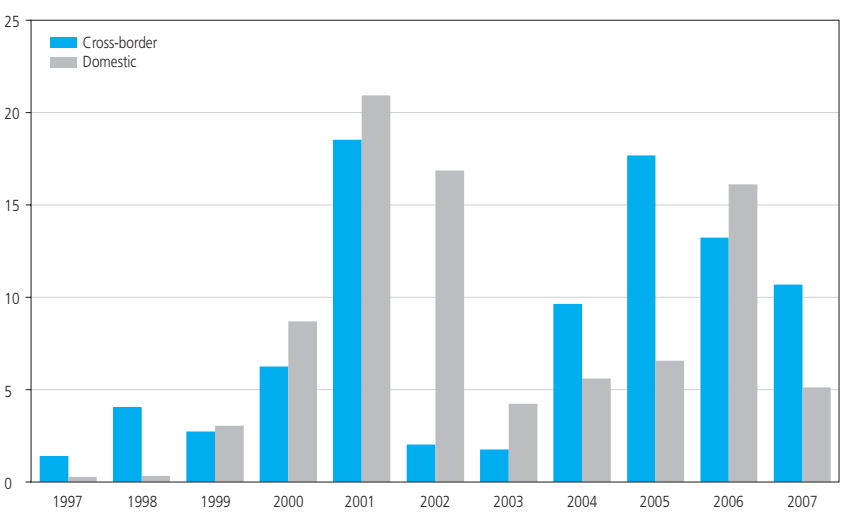
Source: Fitch Ratings Bankscope; BIS calculations.

Graph 2: Bank profitability and credit/GDP¹



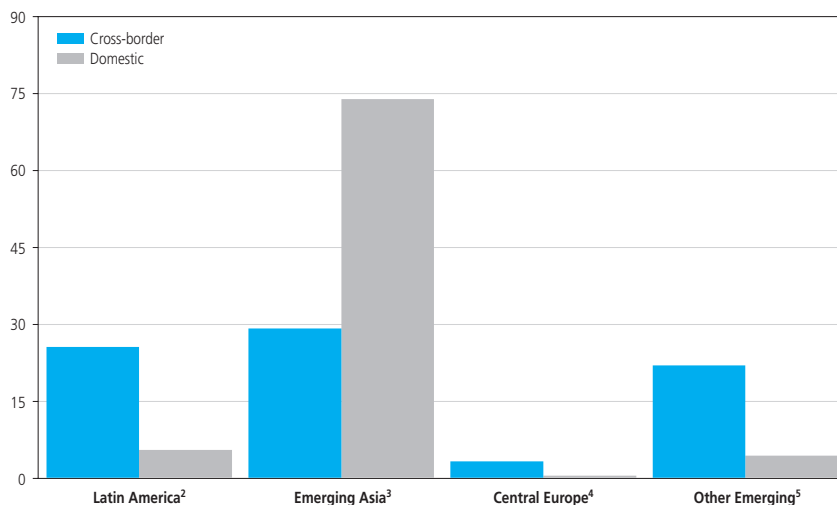
¹All data refers to 2006. ²Bank credit as a percentage of GDP. ³As a percentage of total assets.
Source: IMF; Fitch Ratings Bankscope.

Graph A: M&A in the banking sector¹



¹Value of completed M&A deals, in billions of US dollars. Sum of Argentina, Brazil, Chile, China, Colombia, Czech Republic Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Singapore, South Africa, Taiwan (China), Thailand, Turkey and Venezuela.
Source: Bloomberg.

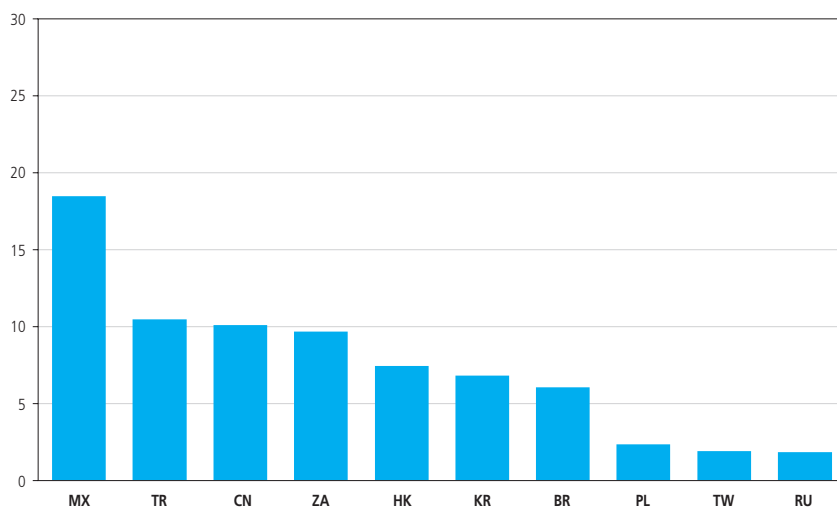
Graph B: M&A in the banking sector, 2000-07¹
by region



¹Value of completed M&A deals, in billions of US dollars. ²Argentina, Brazil, Chile, Colombia, Peru, Venezuela. ³China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. ⁴Czech Republic, Hungary and Poland. ⁵Russia, South Africa and Turkey.

Source: Bloomberg.

Graph C: M&A in the banking sector, 2000-07¹
Cross-border mergers by country

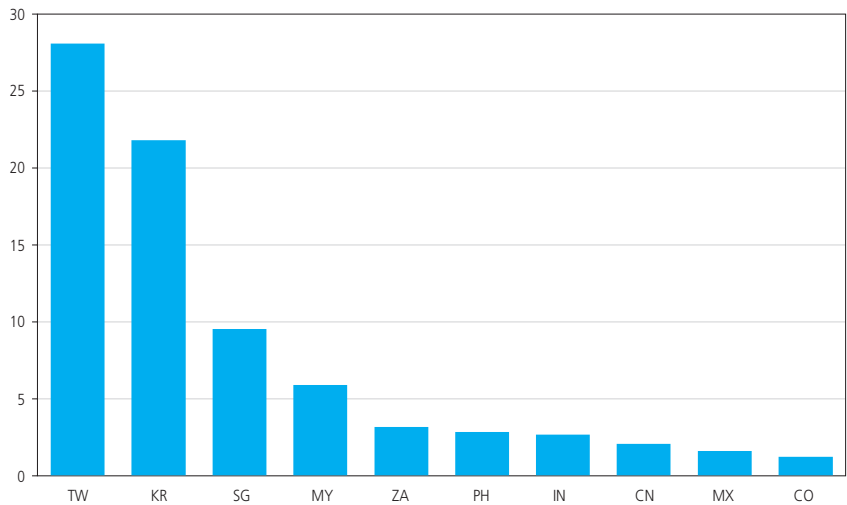


BR = Brazil; CN = China; HK = Hong Kong SAR; KR = Korea; MX = Mexico; PL = Poland; RU = Russia; TR = Turkey; TW = Taiwan (China); ZA = South Africa.

¹ Cumulative sum of completed cross-border M&A deals by target nation between 2000 and 2007; in billions of US dollars.

Source: Bloomberg.

Graph D: M&A in the banking sector, 2000-07¹
Domestic mergers by country



CO = Colombia; CN = China; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PH = Philippines; SG = Singapore; TW = Taiwan (China); ZA = South Africa.

¹ Cumulative sum of completed cross-border M&A deals by target nation between 2000 and 2007; in billions of US dollars.

Source: Bloomberg.

Discussant

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First of all, I would like to gratefully thank Bank Indonesia and Banco de México for organizing this workshop with a focus on very important and timely issues, which may feed a very fruitful and relevant policy discussion in the G20. The hospitality as well as the technical preparation provided by the co-hosts was excellent.

I also highly appreciate the opportunity to comment on the two thoughtful presentations by Jeffrey Carmichael and Phillip Turner on their respective documents. Both provided numerous insights and food for thought even though I will focus my comments primarily on the issues raised by Phillip Turner, which are closer to the broader policy perspectives of Finance Ministries.

On the other hand, the very detailed presentation by Jeffrey Carmichael on the challenges to effectively regulate and supervise a financial conglomerate and on the different ways to go about this task gives me the opportunity to emphasize a very important policy issue, namely, the importance of ensuring an international level-playing field.

Jeffrey Carmichael focused his presentation on how to devise capital requirements for a conglomerate, in a way that is consistent and effective both for the entire conglomerate and for its individual components. We heard that four main approaches are possible, all yielding somewhat different results with a variety of advantages and drawbacks.

It is reasonable to say that there is no one-size-will-fits-all approach to the different institutional, legal and market conditions prevailing in different countries. However, if competition in financial markets is to take place on a global basis –and I believe it should in order to enhance general welfare and efficiency– there should be efforts on a cooperative basis amongst our different jurisdictions to minimize competitive distortions arising from different supervisory approaches to financial conglomerates. To the extent that consolidation in financial markets, which is taking place very rapidly and intensively, will involve cross border mergers, this issue will become even more relevant in the future.

Ensuring consistency across countries, or even some degree of harmonization, of regulation and supervision (for conglomerates as for many other issues) is a complex task as we have experienced over the years in the European

Union. However, the advantages in the medium term deriving from having a more integrated and competitive environment for financial markets, make such efforts worth pursuing. This is also true at a global level even though in this case the approach will have to be different than in the EU where the common institutional and legal framework is being consolidated.

Let me now turn to Phillip Turner's paper and presentation, which –despite focusing mainly on banks in emerging market economies– offers the opportunity to discuss a number of general policy issues from a broader perspective and apply them, in some cases, to advanced economies.

The first of such issues is whether it is better from the point of view of a country if consolidation takes place domestically (as has been the tendency in emerging Asia) or on a cross border basis (prevailing in Latin America and Eastern Europe). It is reasonable to say that no prior answer can be given to such a question because different forces may countervail each other. The fact that no trend is clearly superior to the other reinforces the notion that it could not be wise for public authorities to adopt a stance of direct intervention to establish one tendency as opposed to another.

In general, the main advantage of consolidation through the entry of foreign banks is the greater competition and expertise that international banks can bring to the domestic market. In addition, the possible entrance by foreign players enhances the market for corporate control and increases the efficiency of domestic banks. However, a drawback that is sometimes recalled with respect to cross border consolidation is the reduced concern that such international banks may have with respect to the domestic economy. However, this has to be seen against the background of the benefits of lower correlation between the state of the domestic economy and activities of the international banking group, which implies that the risks and procyclicality features of the local subsidiary may not be so accentuated as otherwise would be the case. More of a concern could be the need to reconcile the financial stability concerns of the home country as opposed to those of the host country, which I will touch upon later.

On the other hand, consolidation amongst domestic banks features a mix of pros and cons. On the positive side, domestic consolidation does not give rise to concerns that the interests of local banks may be misaligned with those of the domestic economy and, at the same time, it enables domestic banks to compete globally on a firmer footing. On the negative side, consolidated nationally-based banks may be more prone to excessive influence by public authorities and, most of all; the increase in concentration may reduce competition.

In this last respect, the relationship between concentration and competition is actually quite difficult to establish because of the universal nature of modern banking and the difficulties in pin-pointing the correct reference market on the basis of which the concentration coefficient is meaningful. In other words, universal banks are engaged in a variety of different activities and business lines, each of them having a different reference market: be it local, national or international. For example, the relevant market for most retail activities will be the national sphere, such as lending to SMEs or deposit taking. Wholesale banking and capital market activities are instead much exposed to international competition so that domestic concentration in these segments will probably have no major implications in terms of competition.

The issues just discussed also evoke the long-standing debate over the relationship between competition and stability in financial markets, which according to some might conflict with each other. While it is undeniable that the two aspects must be carefully and jointly considered, it would be dangerous to consider competition as a threat to stability for two main reasons. First of all, the policy concern lies on the stability of the financial system as a whole and not necessarily on the stability of individual financial institutions. Therefore, a competitive process that may entail the exit of banks, which are not able to live up to it, should not necessarily be considered a threat to financial stability. To the extent that systemic concerns do not arise or can be addressed appropriately through other tools, there is no reason to shield banks from a healthy competitive process. In addition, without the incentives engendered by competition a banking system may well be stable from a static point of view but dynamically its stability will be undermined by a lack of efficiency and innovation, which can only be effectively enhanced under the forces of a competitive market.

That being said, especially in assessing the process of banking consolidation, competition and prudential stability should be dealt with in tandem; with various institutional arrangements being possible. Probably, having separate authorities dealing with the two policy dimensions could be a way to make clearer choices with a greater degree of accountability and superior outcomes. Of course, for this to hold there must be a sufficient degree of cooperation between the two authorities concerned, each having autonomy in discharging their own mandate.

Another issue that the presentation by Phillip Turner highlighted is the apparent paradox that liberalizing capital movements and the financial system as well as opening up the banking system requires no lesser a role by public authorities. Indeed, the latter must endeavor to upgrade and adapt the regulatory and

supervisory apparatus in the financial field, which should not be mistaken as a way to unduly influence the efficient allocation of credit.

Integrating the domestic banking system in the international context implies that risk management at a firm level must be significantly enhanced and that regulation and supervision should make sure that this takes place in a proper way, at the same time circumventing possible macro-prudential risks that individual banks' risk management systems are not fully able to capture. In addition, as recalled by the paper, greater international exposure and the consolidation process also imply that corporate governance must evolve from more basic models, which can fit family-owned or small banks; but not the new prevailing scenario.

Another aspect that is also relevant in this context, even though somewhat beyond the scope of this session, is the importance of the exchange rate regime. Financial liberalization carries significant implications for the stability and dynamics of the exchange rate. Private banks and financial institutions should be prepared to withstand possible shocks on an ongoing basis with adequate risk management. The recent trend of increased business in local currency by international banks, backed by their local retail activities, is a positive factor. On the part of public authorities, apart from considerations regarding the macroeconomic compatibility of certain exchange rate arrangements, it should also be considered that excessively rigid exchange rate regimes may give rise to mounting currency mismatches in the domestic banking system that may add to a country's vulnerability in case fixed rates come under attack.

One significant challenge faced by supervisors and public authorities when dealing with the cross border consolidation of the banking system is also how to effectively reconcile financial stability concerns of the home-country as opposed to those of the host-country. In the EU, for example, this issue is important in particular for a few, mostly Eastern, countries whose banking system is heavily foreign-owned. The primary source of concern lies in the asymmetric nature of local subsidiaries, which may be very well of a systemic size to the host country but not to the international banking group to which they belong. In this case, there is a concern that possible systemic issues in host-countries may not be sufficiently taken into account by the head-quarters of the bank and even by the home supervisor, especially if the international bank in question does not have a systemic role in the home financial system.

Conflicts of interests or a lack of sufficient incentives to cooperation are indeed real possibilities that explain the great attention devoted to home-host cooperation in the new framework of Basel II. The corresponding implementing

Directive on Capital Requirements (CRD) assigns the role of lead supervisor to the home authority to simplify supervision arrangements and ensure a lower regulatory burden on international banking groups, however, it foresees adequate cooperation procedures of the lead supervisors with host authorities. In addition, the latter maintain some specific prerogatives and, in perspective, this cooperation will be further reinforced by the strengthening of the so-called colleges of supervisors. These groups gather the authorities of home and host countries and already exist by virtue of several informal Memoranda of Understanding amongst supervisory authorities.

Revising a number of issues discussed thus far, it is apparent that, while foreign bank penetration can bring significant benefits, there are a number of reasons that may create incentives for local authorities to shield their domestic banks from cross-border acquisitions and mergers. In some ways, there may be legitimate reasons for such a cautious stance. The notion of “prudential carve – out” recognizes that liberalization commitments taken under WTO agreements, in particular the General Agreement on Trade in Services (GATS), do not prejudice adhering countries to take all the measures needed to protect the stability and integrity of the financial system on prudential grounds.

Phillip Turner’s paper recalled the risk that national authorities may abuse the mechanism of prudential carve-out and adopt protectionist measures under the guise of safeguard interventions based on prudential grounds. While counterproductive for all parties, especially in the medium term, such a possibility is real and even when some prudential concerns might arise there is the risk that public intervention does not abide by the criteria of transparency and proportionality of the measures taken to address prudential concerns. Against this background, it could be wise to devise ways to enhance Dispute Resolution Mechanisms which already operate under the WTO and which are frequently resorted to in other fields of international trade.

Finally, I would like to end my comments with a remark going beyond the presentations made in this session, which focused on consolidation of financial institutions and banks, in particular. While the latter often dominate the financial systems of emerging market economies, economic and financial deepening should lead to greater diversification of financial intermediation, developing fully direct capital markets and the related infrastructure. This often requires upgrading the institutional, legal and operational framework to ensure that disclosure of information by borrowers is adequate and that there exists a sufficiently wide investor base.

A first step is certainly that of developing a market for local currency government bonds that can create an initial critical mass for wider capital market intermediation as well as providing a benchmark interest rate, which is vital to the functioning of financial markets.

A financial system that operates on the basis of various channels of intermediation provides an additional layer of competition. In addition, a broader financial system allows not to over-rely on banks only and, thus, represents a way to diversify and alleviate risks that emerge when opening up to international financial markets.

Jim Haley, General Director, Ministry of Finance, Canada

Thank you, Mr. Chairman. I too want to thank the chair and our hosts – this workshop features an important issue, a great agenda, and an idyllic venue.

Let me say, however, that speaking last in a session such as this is a challenge –it is difficult to say something that is both insightful and new. My task is especially challenging given the excellent papers by Jeffrey Carmichael and Phillip Turner, which pretty much say it all. And my unease is only heightened by the fact that I am the only thing standing between you and lunch!

Fortunately, I can be relatively brief.

As Javier mentioned in his introduction, the two papers in this session nicely complement each other: Phillip provides a useful and thorough overview of the macroeconomics of consolidation; Jeffrey reaches down to the micro-level to illustrate some of the very real challenges that are involved in regulating the financial conglomerates that emerge from consolidation.

Part of the job of a discussant is to hold authors' feet to the fire in terms of whether they addressed the question posed for the session. In my view, Jeffrey and Phillip did a good job in this regard.

At the same time, however, I am conscious of the fact that, while these are the right questions, they can not be answered in isolation of the issues addressed in other sessions. For example, the benefits and costs of financial sector consolidation can only be assessed with references to the effect of consolidation on economic growth over time, which will be addressed tomorrow. As a result, our responses will necessarily be "partial".

So, where do our authors stand on the issue of consolidation?

In thinking about how best to comment on the two papers, as I read them I started a list of the “pros” and “cons” of consolidation they identify (Table 1). There are real benefits and costs involved here, such as the decrease in currency mismatches that consolidation can facilitate; and the fact that increased concentration can drive up loan rates. These examples are pretty clear cut. But for the most part, this is very much an “on the one hand; on the other hand” story:

- On the one hand, Phillip notes that consolidation can lead to the more efficient use of information within a corporate structure, facilitating the “bridging” of information asymmetries, leading to clear welfare improvements.
- On the other hand, Jeffrey’s paper identifies the potential conflicts of interest that might arise as information is misused within a corporate structure.
- Similarly, Phillip argues persuasively that consolidation can promote significant improvements to regulatory regimes as supervisors can enforce higher capital adequacy standards, stricter prohibitions on connected lending, strengthened accounting standards, and stronger corporate governance.
- At the same time, Jeffrey has raised some real concerns about the risks of regulatory arbitrage and other supervisory challenges that can arise as a result of consolidation.

Table 1: Benefits and costs of consolidation

Benefit	Cost
Possible some efficient use of information within the organization	Conflicts of interest
Reduced currency mismatches from foreign bank entry and reduced common lender contagion effects	
Improved regulatory regime: <ul style="list-style-type: none">• Inadequate capital bases• Connected lending• Poor accounting• Weak corporate governance	Regulatory arbitrage and other challenges
Increase in market discipline (as former closely-held banks listed)	Possible reduction in external market control with foreign bank entry as domestic banks are de-listed.
	Concentration potentially drives up loan rates

This is I think a fair, balanced assessment of the benefits and costs of consolidation. Yet, it leaves me wondering about the “bottom line”. Just to be clear: I am sensitive to the empiricists’ lament noted by Phillip –more data would indeed be helpful in terms of adding some quantitative assessments to the qualitative story and would help us assess the relative importance of benefits and costs. Getting more data will take time, however; meanwhile policy makers need to make decision in real time. After all, the forces that are driving consolidation –what I call the “Ferguson Four”⁴¹: technology, financial deregulation, globalization and increased pressure for financial performance– are all likely to continue.

To some extent, the difficulty of assessing the net effect of consolidation stems from the complexity of the issues and, possibly, the conflicting public policy objectives we are seeking to promote –competition, efficiency, and stability. Let me explain.

We want to promote competition and efficiency to reduce spreads and increase services to sectors that may be under-serviced, such as the small- and medium-sized enterprises which are a key driver of economic growth.

Similarly, given the importance of the financial system to the macro economy and the risks of reputational externalities, we want to ensure a stable banking system. However, too much stability can undermine economic efficiency. In the wake of the S&L crisis in the U.S. over twenty years ago, many argued persuasively in favour of the so-called “safe bank” model in which deposit-taking institutions providing payment services for the economy would be required to hold a limited range of secure assets.

This would, it is true, provide stability to the payments system. But, as former Chairman Greenspan is fond of saying: *“a safe bank doesn’t do the economy any good”*. I presume that what he means by this is that a “safe” bank isn’t “bridging” the information asymmetries that are inherent in financial markets and thereby are not enhancing economic performance.

As a result, governments have to decide where they stand on the competition, efficiency, and stability trade-off. One way of thinking about the issues involved is to assume a welfare function with efficiency and stability as its arguments. The dilemma for governments is that this function is not necessarily monotonically increasing in competition.

41 Roger Ferguson, G-10 Report on Consolidation in the Financial Sector.

Moreover, the way in which the financial system evolves over time is likely to affect the nature of this trade.

In this respect, in drawing up my table on Jeffrey and Phillips' Benefits and Costs of consolidation, I was struck by how just similar it was in some respects to the Ferguson Report. For me, the key points raised there are the risks that consolidation may:

1. Induce some firms to shift toward riskier asset portfolios;
2. Increase operating risks and managerial complexities;
3. Increase the complexities of firms, making them more opaque; finally, and I quote,
4. *"Lead to a significant shift of risk from inter-bank settlement systems, where risk management may be more robust and transparent, to customer banks and third party service providers, where risk management practices may be harder to discern."*

Unfortunately, the Ferguson Report was remarkably prescient; and we have realized some of these risks over the past six months with the result that financial markets have "rediscovered" volatility. As Marcos intimated in his opening comments: *"what a difference a decade makes!"*. Ten years on, we are not worried by financial crises at the periphery of the international financial system, but the countries at the very core of the global economy.

Now, for me, the key question is: "What are the policy lessons to be drawn from this recent experience?" First of all, we have to acknowledge that the effects of this turbulence have been felt primarily in the major industrial countries with the most developed financial; emerging markets have been less affected. This may reflect a "flight to plain vanilla" –as investors got out of structured derivative products that are opaque and difficult to price, they sought liquid investments that were not tainted with a connection to SIVs. To some extent, therefore, countries with less developed financial markets were insulated from the risks identified by the Ferguson Report.

The lesson here, though, is not that emerging markets should give up on efforts to develop their financial systems. That policy advice reflected the difficulties that many countries around this table experienced in the financial crises of a decade ago. And all of the arguments that have been raised about the need for financial development remain valid. Ten years later, a new financial crisis centred in industrial countries provides valuable lessons about the need to ensure that our

regulatory and prudential supervision regimes keep pace with changes in financial markets.

Indeed, the recent financial “troubles” once again underscore the fact that the usefulness of this group stems from the fact that it provides a forum for its members to learn from others’ successes and failures. And it reinforces our shared commitment to international financial stability.

Thank you.

SESSION 2B

Changes in the Financial Services Industry: Foreign Bank Entry

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1. Introduction

It is a great pleasure to be here today at this meeting and I wish to thank the organizers for their kind invitation to come to Bali to be at this event. As I was present at the birth of the G20, and also of its predecessor (the G22), representing Argentina as a Deputy at that time, it is a particular pleasure for me to be back participating in this group and also to see that this group is so active in discussing these and other important issues. In my brief remarks, I will first consider the trends pertaining to foreign bank entry in developing countries. I wish to devote some time to talk about specific issues that arise including competition; which I know is the main focus of this meeting. And I also want to consider aspects of stability and corporate governance as I do believe that there remain several issues that are outstanding and where we are still searching for the appropriate solutions. I will end my remarks with some brief conclusions.²

2. Trends in foreign bank presence in developing countries

The BIS statistics for the third quarter of 2007 show that foreign bank claims on developing countries reached an all time high of roughly 4 trillion dollars. There are several slightly imperfect ways of calculating how important that figure is for developing countries, but whatever methodology is used it is clearly very important, particularly for developing Europe, Latin America and the Caribbean, and somewhat less significant for Africa and the Asian Pacific region. These averages, of course, hide particular cases where foreign banks completely dominate financial systems such as Chile and Mexico in Latin America.

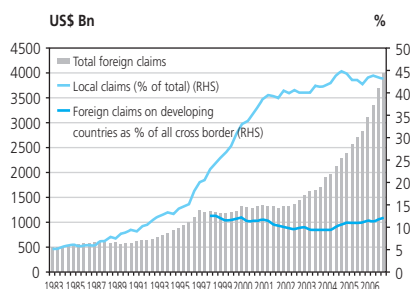
Figure 1 illustrates the rise in total foreign claims on developing countries and also the percentage of those claims that are local claims (on the balance

1 Andrew Powell is Lead Research Economist of the Research Department at the Inter-American Development Bank.

2 These remarks reflect purely my own personal opinions. They do not reflect the views of the Inter-American Development Bank or the countries that are represented in the Board of Directors in that institution.

sheets of the subsidiaries and branches of foreign banks in the host country) in local currency. As you can see from the figure, there is a period from 1996 to 2001 where the percentage of total foreign claims that are local and in local currency, increases quite dramatically. But then from 2001 to 2008, that percentage remains rather flat at around 45%. I'll come back to this point below. The figure also illustrates the ratio of claims of BIS-recording banks to developing countries divided by their total cross-border claims. At the moment, that ratio is about 12%, as measured on the right axis of the figure.

Figure 1: Foreign bank claims on emerging economies

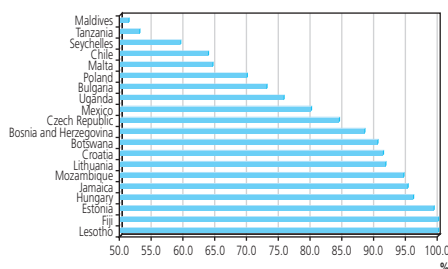


In recent work at the BIS, it is calculated that foreign claims are about 40% of total bank assets for a group of international banks from 10 large developed countries. However, a very large percentage of those foreign claims are intra-European. If those are taken out, then the above figure drops to just 6%. In other words, if we take out the intra-European claims then total cross-border claims of BIS-reporting banks for the most important international banks are just 6% of their total assets. The claims on developing countries are a much smaller percentage than that. In previous work for US banks, we estimated their total claims on developing countries as just 1% of their total assets.

What these calculations demonstrate is that while (not that many) international banks are extremely important for their host developing countries, those countries are less important for the larger international banks. Again, these averages hide some special cases where a particular country may be important for a particular bank. Moreover, if one considers other statistics, especially income or profits, developing countries do have a greater weight as banks tend to earn much higher margins in developing countries. But in terms of assets, the first broad statement is true; international banks are more important for developing countries than those countries are for these relatively few international banks.

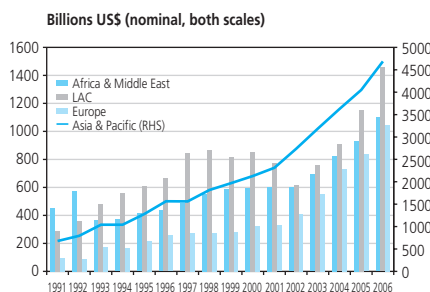
I mentioned above the dramatic rise of the local claims in local currency of foreign banks on developing countries during the nineties. This rise reflects in particular a set of acquisitions that were made in the latter half of this decade. These acquisitions implied that a set of countries went from some foreign bank presence to a situation where their financial systems were completely dominated by foreign institutions. Mexico, subsequently followed by Chile and now followed by El Salvador stand out as three cases in Latin America where foreign banks have become particularly important through a small number of large (relative to the size of the local financial systems) acquisitions. More generally Figure 2, using data from the World Bank database, illustrates countries where foreign banks account for more than 50% of the local financial system.

Figure 2: Foreign bank market shares in selected countries



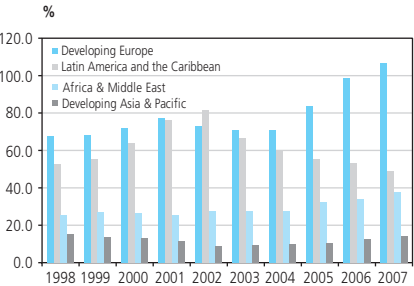
However, since 2001, the share of local claims in local currency as a proportion of total foreign claims has remained relatively constant at around 45%. In nominal terms both the numerator and the denominator of this ratio has been rising. There has been an expansion of local claims in local currency from subsidiaries and branches of foreign banks but also an expansion of truly cross-border lending activity.

Figure 3: The rapid growth in emerging economy financial systems



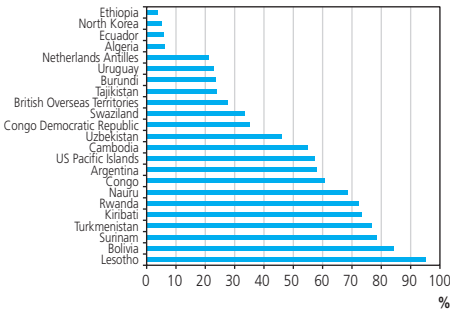
At the same time, as illustrated in Figure 3, the financial systems of developing countries have been growing rapidly –on average, across developing countries at about 20% per annum over the last three or four years affecting the changing importance of foreign banks. In fact there are quite divergent trends. As shown in Figure 4, foreign banks are becoming somewhat less important in Latin America if one looks at foreign bank claims over the size of financial systems since the end of the 1990's whereas they are still rising in importance, although more gradually, in other regions of the world.

Figure 4: Differential trends in importance of foreign banks (foreign bank claims divided by size of financial system - domestic assets)



Indeed, there are some countries that have seen significant falls in foreign bank claims and falls in the importance of assets of foreign banks of local subsidiaries and branches of foreign banks in the domestic financial system. Figure 5 suggests that while some countries have seen substantial increases in the participation of foreign banks, others have seen quite significant falls. Argentina and Uruguay are two cases in Latin America where foreign bank participation in the local financial system has fallen.

Figure 5: Falls in foreign bank claims



To conclude this section on trends, domestic credit in many countries is growing very strongly and there has been significant physical foreign bank entry from 1995 to 2001. Since then, there has been further physical entry but truly cross-border loans have also risen maintaining their share in the total. And there has also been exit; physical exit and a reduction of cross-border claims in some countries. In the case of Latin America for example, there is evidence that foreign banks are losing market share somewhat. All in all it appears that at the end of the first decade of the 21st Century there is a more mixed period with neither very fast rates of growth of foreign banks and domestic banks holding their own and even increasing market share in some instances.

3. Review of selected issues related to foreign bank presence

Let me now turn to some selected issues. I would like to talk briefly about **competition, stability** and, what I will refer to as **corporate governance and regulation**.

In regard to **competition**, my own view, and based on my reading of the literature in this area, is that that foreign bank entry has made competition stronger and that it has made, both the institutions that have been acquired and domestic institutions that compete with them more efficient. As a result in many areas we have seen margins fall. We did see some contradictory evidence to this, in this conference, but I think there are some explanations for this. For example, it may appear as net interest margins are increasing in Latin America but there are some serious compositional effects here. There has been a marked shift into retail lending, for example, which has been very profitable. It is better to consider margins in a particular business. In general I believe the evidence suggests domestic institutions have been catching up, so we've seen more equality between foreign and domestic players in those markets where entry occurred previously.

Foreign banks are accused of many things, of which I'm sure you are all aware: restricting credit, cherry-picking of one sort or another, not lending to SMEs that may be opaque, and not lending in certain geographical areas. I am quite skeptical of much of this literature. Frequently foreign bank acquisition is accompanied by a change in information systems and a cleaning of the local institutions balance sheet. It is likely this leads to a period of slower credit growth however in general, this should be welcomed as it is often a more efficient and a more robust bank that emerges. Moreover, each bank has its own management and culture, for the foreign banks I have analyzed in Latin America they are as different between them as they are to domestic banks. There are some results in

the literature that foreign banks tend to focus on particular types of firms (a type of cherry picking) however an alternative interpretation of these results is that it is not foreign banks as a group but it is simply reflective of the strategy of a particular bank. Banking is one of the most heterogeneous industries and unless proper account is taken of this, empirical work may be flawed.

An additional interesting point frequently ignored is that many foreign banks must seek authorization to lend to larger firms where loans rise above a certain limit. Many foreign banks are actually more agile at lending to smaller firms than larger ones. While they may lend larger amounts to larger firms especially if they are firms they know from international markets, they may be at a competitive disadvantage relative to domestic banks of a similar size, lending to larger firms in the domestic market that they have not previously had a relationship with.

While I am then strongly in favor of foreign bank entry when it comes to enhancing competition I am a little more cautious when it comes to **stability** concerns. In a paper I wrote with Arturo Galindo and Alejandro Micco and which is featured in an IDB book entitled "Unlocking Credit" we find a trade-off. For shocks that are related to liquidity, foreign banks act as a stabilizing force. Their easier access to a more global pool of liquidity allows them to smooth liquidity shocks in a particular country. However, if an international bank sees a decline in expected profits in one market, then the bank may sharply reduce its supply of credit. The interesting part of this is that the more diversified the bank is across different markets, the more aggressive its retrenchment will be. This result is backed by a theoretical model that comes from portfolio theory and mirrors one in a paper by Guillermo Calvo on mutual funds.

A related issue is that foreign banks may import shocks from their home countries or from other countries where they operate. In a paper I wrote with Soledad Martínez Pería and Vladkova, we found quite strong evidence for this. More recently we have now seen the effects of the US credit crunch as US banks have reduced their claims on developed countries and the rate of growth of their claims on developing countries has curtailed. This BIS data is from the third quarter of 2007, and perhaps we will see more such effects when newer data becomes available. An implication of these trade offs with respect to stability for foreign banks is that a host country would be advised to have several such banks from a variety of countries to diversify these risks.

Finally, there remains concerns regarding the **structure of foreign banks**. In a further paper I wrote with Giovanni Majnoni, we attempted to model the

structure a foreign bank would wish to form. Our idea was to define a core bank that survived or failed as one and then a set of units at the periphery that if push comes to shove might be allowed to fail and then to ask which operations a bank would wish to have in the core and which ones would it wish to place in the periphery. We then considered what the capital allocation would look like; how much capital the bank would wish to keep in the core and how much it would place in the periphery.

The model is a very stark and perhaps a little extreme but the results were extremely telling. In general the bank would wish to place riskier units in the periphery and would wish to have the minimum amount of capital possible to back them up. A host regulator that might consider its country as perceived as risky should be very wary of these results. If possible a higher capital requirement on such subsidiaries would lower the probability that they would be abandoned in a crisis and in fact, if the requirement was high enough, the bank would then wish to have them in the core. Interestingly a conflict might arise between the home and the host regulator. A host regulator would have the incentive to impose a high capital requirement such that the bank would choose to place that subsidiary in the core. However a home regulator might agree with the bank, to maintain the subsidiary in the periphery with low capital, as this would in fact protect the core from any negative effects.

It is tempting in our model to label those units in the core as branches and the units in the periphery as subsidiaries but after much thought, we did not in the end wish to confirm that interpretation. Indeed, international law appears to be very murky indeed when it comes to the situation of international branches and subsidiaries depending on both home and host country bankruptcy legislation or exit rules (frequently inconsistent). The US law is perhaps most explicit after cases brought against Citibank in the Phillipines and Vietnam, and there it is clear that in the eyes of US courts at least a branch in Boise or Boston is quite different to one in Buenos Aires or Bangkok. This is another area that the G20 would do well to consider, as the inconsistencies in international law in this area may prove highly problematic in the hopefully highly unlikely event of an international bank failure.

While we all hope that these are purely academic issues, the events surrounding the crises in Argentina and Uruguay suggest that they may not be. Moreover, rating agencies rate the subsidiaries and in some cases the branches of international banks in emerging economies. In most cases the rating of the branch or subsidiary lies below that of the main bank, indicating that these agencies do not believe that guarantees extended to those units are complete.

This brings me also to the issue of the **corporate governance** of international banks. Giovanni Majnoni have argued that when a foreign bank acquires a local bank frequently much information is lost. The domestic bank may have been quoted on the local stock market and issued bonds locally but depending on the financial structure of the new owner, it may delist and seek funding through the main bank. It might be argued that market data is lost and substituted by a rather non-transparent guarantee. Our suggestion was that the host regulator may request the subsidiary of the international bank to issue bonds in the local market such that there was a market price that gave investors a market signal of the perceived strength of the subsidiary together with any guarantees. I understand Governor Ortiz of the Bank of Mexico has gone further and suggested that the bank should be widely held and not simply owned by the acquiring bank. The concern here is that the board of the local subsidiary should be a real board and not a puppet reflecting only the wishes of the international bank. In turn, this concern stems from a view that the international bank may make decisions that are favorable for the bank as a whole but not for the local subsidiary or the country in which it is located. The potential divergence between the interests of the bank and the interests of the subsidiary are probably more extreme where the bank is large for the country but is small for the rest of the bank. I would however say that we need more debate regarding this issue, given the importance of international banks in several countries including Mexico. We need more analysis to understand properly these potential conflicts of interest and how they may be best resolved.

I know it is not the central topic of this discussion, but **Basel II** raises some interesting questions with respect to competition. First let me say that, as this is an international Accord, I do think that how supervisors will cooperate should be explicitly stated in Pillar 2. In my own mind, and given the theoretical work on bank structure mentioned above, consolidated supervision is necessary but it is not sufficient. Home and host supervisors have legitimate roles and this should be noted explicitly in Pillar 2 which is unfortunately written from the perspective that there is only one regulator per institution. My preferred approach would be one of explicit joint-supervision of the local entity with the home supervisor responsible for global supervision but I realize there are issues here to be discussed. Moreover, tensions may arise between home and host supervisors as again indicated by the theory; how such disputes should be resolved might also have been a useful addition to Pillar 2.

Let me now relate Basel II to competition. International capital accords have two main objectives a) to ensure an adequate level of capital given the risks

of banks and b) to ensure a level playing field. In my view Basel II stresses more the risk measurement and hence the adequate capital for the risk objective than the level playing field objective. Basel II also changes the language of Basel I. Basel I invented a language regarding “assets at risk”, Basel II (or at least its advanced approaches) changes that to a standard based on a probability. We are told it was calibrated on a 99.9% Value at Risk (so the risk of a bank failing is 1 in a thousand or once every thousand years) and using G10 data. If it is applied literally and homogeneously across the world, this would create quite high capital requirements in countries where default probabilities are high. However, and in part due to this calibration, it is likely not to be applied homogeneously. Some countries will allow banks to use the standardized or simplified standardized method while other banks adopt the more advanced techniques.

Indeed, if international banks apply their models consistently they may be at a disadvantage competitively with respect to local institutions. In turn this will create incentives not to apply those models on a consistent basis. My solution to this is to allow international banks to use the local authorities’ chosen approach to Basel II as a building block towards their global capital requirements. I understand some G10 regulators are already considering this. Particularly where the local entity is small in relation to the global bank, it would seem unlikely for this approach to jeopardize the integrity of the Basel II minimum capital estimates. If the local authority’s treatment is less onerous than the consistent application of the international bank’s advanced approach, then this will provide some incentives to originate loans onshore rather than pure cross border, which I find an appealing “arbitrage”.

4. Conclusions

Let me conclude my brief discussion of these selected issue regarding foreign bank entry. Foreign banks have become very important in many emerging countries. But some have resisted their entry and foreign bank importance has actually waned in some areas of the world. I think we are now in an interesting and quite mixed phase. Domestic institutions have become more efficient, and there is more of a level playing field between the foreign entrants and domestic institutions.

I believe that the benefits of foreign bank entry in terms of competition and efficiency are significant and the costs regarding access and cherry-picking have been exaggerated, largely due to problems of measurement. There is I think however a trade-off with respect to stability that host countries ought to be aware of and I think that, again, just to repeat, if you have a very strong foreign bank

presence, you should make sure that you have a heterogeneous foreign bank presence to diversify some of those risks. Moreover there are I believe some significant concerns and open questions about governance and regulation and supervision.

Thank you.

Discussant

Halim Alamsyah, Director of Banking Research & Regulation Directorate, Bank Indonesia

I found the presentation of Mr. Powell very useful and illuminating, especially the role of foreign presence in the context of the Indonesian economy from the point of view of emerging markets, in particular in pushing further competition to ensure efficiency and stability in the economy.

I tend to argue that during the early stage of our financial sector development we require the presence of foreign banks, especially in bringing about competition to introduce efficiency as well as stability in the economy as a whole. This trend may need to be studied further. As the dynamics within the economy have probably introduced a certain force to enhance competitiveness, not only in the foreign banks but, in general, actually valid for all the banks in the sector. Also, we would like to see whether foreign presence can really maintain stability in the banking system when the economy becomes more open. It also makes the economy more vulnerable to external shocks.

Let me start by giving you the rationale of foreign bank presence. I think I will be very brief because it has already been touched upon by many speakers before. From the point of view of emerging markets, the benefits of foreign banks, of course, will promote a more efficient banking sector as well as creating more competitive advantage against local banks in a less developed banking system. It will increase operational efficiency and improve market discipline specializing in financial cooperation originated in host countries. In fact, I think in Indonesia this motivation is one of the main reasons why the foreign banks are present in our economy. Foreign banks can provide significant help, especially in terms of liquidity in a crisis period.

According to our experience, foreign banks may also exploit the host country's regulatory weaknesses, indirectly, to create an uneven playing field for local banks. They also have the tendency to reduce their exposure and transfer their operations during economic turmoil in the host country. So, from the point of view of an emerging market economy, we tend to focus the role of foreign banks in the traditional way; lending activities. But we also know that the level of lending will be affected by the economic conditions and the regulations of the host countries.

It appears that eliminating restrictions on entry do not automatically attract foreign bank presence in a country. We acknowledge that foreign banks provide

the supply of human capital training in the high standard of banking practices. In a crisis time, for example, based on our experience, headquarters of foreign banks can be expected as the lender of last resort for the operation in host countries. Of course this argument will be irrelevant for large overseas foreign bank operations. This question can also be addressed; whether the regulatory authority in home countries is authorized to support a regulatory mismatch of overseas operations of national banks. This, of course, will depend on the agreement between host regulators and parent banks.

We try to learn from other countries' experiences with regard to this foreign bank presence and we have compiled several policy responses from host countries. But it seems that the policy response to foreign bank presence is mixed. Some countries liberalize their regulations to encourage foreign bank presence with the aim to attract capital inflow and regulation is also expected to prevent a level of competition among the domestic banks against foreign banks. Most countries seem to be opposed to tight regulation on branching operations. They put some constraints to branch operations. Most countries limit the access of foreign bank branching based on geography, for example Thailand. Most, according to our knowledge, limit the retail business of foreign banks. In our case, we do not restrict this. Most countries require a deposit for foreign bank branch operations in the countries to ensure the sustainability of their presence. We haven't done that. Malaysia explicitly restricts operational branching while other countries explicitly discourage the establishment of branching.

There are other types of restrictions in order to protect, for example, small domestic banks from unfair competition. To maintain financial stability, for example, some countries, including Indonesia, monitor closely possible speculative foreign exchange trading by foreign banks. There are also other regulations such as limiting the presence of foreign ownership in domestic banks, directly or indirectly, adopting a single presence policy for foreign banks, and applying exit policies for foreign banks and in the domestic market.

Now I would like to give you the banking indicators in Indonesia before and after the crisis. Just to give you the flavor of what was the dominant role of foreign participation before the crisis and after the crisis. In terms of foreign ownership, the division of foreign ownership, including foreign banks, branches, joint-venture banks and private banks partly owned by foreign entities, as of January 2001, they had 35.1% of total banking assets and based on the recent data, it is now 40.9% of total banking assets.

Let me give you, very briefly, the activities of foreign-related banks as compared with state as well as private national banks. State-owned banks used to be the dominant players but it has been declining. In terms of credit growth, foreign branches have not been very active recently. I think because the NPL of foreign branches is rather high. In terms of the sophistication level of risk management of foreign banks, it is usually much better than private national or state-owned banks. But because of their aggressive operations, especially in terms of consumer loans, it seems that they are suffering a bit in the NPL. However, if we look at the profitability of the return on assets, it seems that foreign and joint-venture banks are usually higher than the state as well as private national banks, but to remind you, this is more related to Treasury activities rather than lending activities.

In terms of efficiency, it seems that there are no marked differences between state-owned and private national banks compared to joint-venture and foreign banks. In general, looking at the data, it seems that the foreign branches in Indonesia have not been very active recently. Based on that trend, there are eleven foreign bank branches in Indonesia. There are no subsidiaries. Some indicators of foreign banks seem to not be very dominant anymore. Looking from the asset side, for example, only 8.9% of total banking assets in Indonesia, credit is only 8% of total credit, and third-party deposits are only around 7.5%, and non-performing loans are a bit higher 5.22%, while the NPL of the banking sector is 4.6%.

Some foreign banks have very low credit outstanding. In fact, now they are paying more attention to consumption loans. Only a few foreign banks have outstanding credit above the average of the banking system and the larger fraction of total capital foreign banks is net inter-office funds.

Regarding foreign participation in the case of Indonesia, Indonesia is one of the most open economies in terms of the regime in the financial sector. In fact, acquisitions of local existing banks are allowed through a purchase of up to 99% of shares. Foreign banks and joint ventures may open their offices in the big cities such as Jakarta, Surabaya, Semarang, Bandung and so on. Because of the level of skills in our Indonesian workforce, we are now putting some restrictions on Human Resource Development; what we call 'Horizontal Measures'. In addition to the Horizontal Measures, temporary immunity will be granted to technical experts or advisors for example, but on a short-term basis. There are also limitations on national treatment in terms of taxation, which are specified in the Horizontal Measures.

In closing, I think restrictions on foreign banks exist in some countries, and this is also happening in Indonesia, in order to protect the domestic economy from competition from foreign banks. There are considerations when imposing these restrictions so as to increase the contribution of foreign banks in our economy, but again, the entry and exit of foreign banks is influenced by domestic economic conditions. It is especially related to the global economy whether Indonesia can really become a country to place investments in their entirety. We do hope that in the future foreign participation will be one of the dynamic factors driving our economy.

Pascual O'Dogherty, Director of Financial System Analysis Division, Banco de México³

I would like to thank the Bank of Indonesia and the organizers for inviting me to participate in this conference. The topic of this session relates to the changes brought to the financial services industry by the entry of foreign banks.

The entry of foreign banks

The majority of modern economists agree on the economic benefits brought by the free cross-border movement of capital. Developed economies have championed the advantages of free trade and investment for many years. They have also made important efforts to persuade emerging-market economies to open up their financial sectors to foreign investment.

This has taken place relatively quickly in many regions of the globe. Foreign banks play a dominant role in major Latin American countries, as well as in Central Europe. In Asia, with the exception of Indonesia and Korea, financial systems remain relatively closed to foreign investment.

The need to recapitalize banks after major banking crises or to sell them to the private sector has forced many countries to open up their financial sectors to foreign investment.

In sharp contrast, some developed countries still discourage foreign investors from participating in their financial systems. Nonetheless, the recent losses suffered by some major American and European banks would very likely speed up the cross-border consolidation process in developed countries and also increase the participation of foreign investment. That is what is taking place nowadays in some developed countries, where foreign sovereign wealth funds are coming to the rescue of their capital-starved banks.

3 The views expressed are the author's and do not necessarily reflect those of Banco de México.

Advantages from the entry of foreign banks

Policy makers often disagree about the economic sectors that should be reserved for domestic investors. However, they very likely would agree that if one particular sector should be considered as strategic, it is banking.

Banks play an important role in facilitating the channeling of resources from savers to borrowers. They provide access to firms and households to the payment system and provide channels for the distribution and diversification of risks. The failure of a bank can have damaging effects on other financial institutions, public confidence, and the economy. The latter makes a bank failure potentially more costly than the failure of any non financial firm. For these reasons banks enjoy the protection of a safety net and are closely regulated and supervised.

The entry of foreign banks brings many associated benefits, among them, improvements in efficiency, technology, and risk management. I would like to highlight two important advantages that are not always mentioned in the literature.

The first is a more efficient allocation of credit. In emerging markets, wealth tends to be more concentrated, and hence bank owners and entrepreneurs tend to form a more concentrated group. When banks owners are also entrepreneurs, banks do not always take the best credit decisions. This usually results in very high default rates, especially in times of crisis.

Second, domestic supervisors find foreign banks easier to discipline than domestically owned ones, especially if the latter are in the hands of politically well-connected people. On the one hand, domestic bankers are generally wealthy and very powerful individuals. On the other, supervisors are often career government officials who frequently end their professional lives buried by legal demands. In contrast, domestic managers of foreign banks are career employees whose foreign bosses are not at all keen on receiving admonitions from banking supervisors.

The challenges for host countries

I would like to comment now on the challenges that host-country authorities face when the financial system is dominated by foreign banks.

The first challenge derives from the conjunction of two facts:

- A) There is a dichotomy between the legal and economic reality. Global banks are managed as a single economic unit. However, they are comprised of a constellation of independent financial companies, subject to different

regulations, jurisdictions, supervisors, and safety nets. The parent bank has all the decision-making powers but is not legally responsible for the impact subsidiaries make in each jurisdiction.

- B) Subsidiaries are closely held. It is generally accepted that widely held ownership structures are convenient for large banks, as they make it more difficult for controlling shareholders to take decisions that may not be in the best interest of other stakeholders. In fact, some countries have set limits that restrict the percentage of shares that a single shareholder can acquire, as Canada still does for its larger banks. However, the acquisition of banks by foreign entities often involves the elimination of minority shareholders.

When a unique shareholder (the parent bank) has other business interests besides those of the subsidiaries, the traditional relationship between a company and its shareholders, where the latter look out for the best interests of the company, is broken. Where the unique shareholder's interest lies becomes unpredictable.

Thus, the decisions taken by the unique shareholder are not always in the best interests of all the subsidiaries. While this may be an acceptable practice in any other type of business, it is completely unacceptable in banking. Banks have many different stakeholders, including domestic governments, who support the safety nets (along with domestic taxpayers).

When the subsidiary is relatively large for the host-country economy, the decisions taken by the parent bank could have important consequences. Under these circumstances, the subsidiaries' ownership structure and corporate governance practices become very important for domestic authorities.

The second challenge has to do with the speed at which events taking place abroad affect domestic markets. Corporate linkages between parent banks and their subsidiaries make events in either home or host countries affect each other.

An example can be found in the ongoing crisis in mature markets in which the consequences are already making themselves felt in countries where subsidiaries are established. Some subsidiaries' funding costs have increased because the credit ratings of their parent entities were downgraded. We are also seeing some subsidiaries established in emerging markets providing liquidity to their parent banks in mature ones.

The capital losses experienced by many global financial institutions will force them to revalue their global risk-return profiles. These evaluations will lead to important reallocations of capital and business lines among the different entities belonging to global groups.

The third challenge deals with crisis resolution processes. The interests of home-country supervisors and those of host countries are very likely to diverge if a parent bank or a large subsidiary becomes troubled.

In principle, each supervisor should be in charge of dealing with the entities licensed in its own jurisdiction. In the same vein, liquidity assistance should be provided by the central bank where the troubled entity is legally established. However, the speed at which resources can be transferred from healthy entities to troubled ones could give rise to profound disagreements among supervisors. Also, host-country central banks would be very reluctant to provide liquidity assistance to a troubled subsidiary when its business and risk-management decisions were taken abroad by a foreign parent bank.

The conflicts among supervisors would be particularly significant when the sizes of the parent and the subsidiaries involved are relatively different in each country. Home-country supervisors will not be very keen on their banks supporting small foreign subsidiaries, even if those subsidiaries are considered large in their host countries. Host-country supervisors would find it politically difficult to use public resources to help a foreign-owned bank.

The divergences between legal frameworks, as well as deposit insurance designs, would make the attainment of reasonable and efficient solutions almost impossible. It would have been an even worse nightmare if Northern Rock had been a global bank.

Policy options

Some countries have decided to tackle the problem of parent banks putting their own interests above those of a subsidiary by strengthening corporate governance through the establishment of a legal obligation for local managers and board members to act in the best interests of the subsidiary. The Reserve Bank of New Zealand has moved in this direction by establishing that bank directors should not act in the interests of the holding company when their actions are detrimental to the subsidiary.

However, directors and board members are often long-serving employees of parent banks. Their interests are very likely more aligned with those of the parent bank than the subsidiary's.

The question is how to create the right incentives to persuade managers to put their subsidiaries' interests above those of the parent bank. One solution could be to widen the ownership structure of subsidiaries. Minority shareholders

would discourage parent banks to take decisions against the subsidiaries' best interests.

Unfortunately, there are no ready answers to deal with the second challenge: the speed at which contagion between markets can take place because of corporate linkages. The only possible suggestion is to increase the sharing of information among authorities.

Regarding resolution processes, central bankers and supervisors have a lot of work to do. The lack of a common or supranational jurisdiction requires that more efforts should be devoted to devising ways to improve existing domestic frameworks. The recent experience in the UK should help create a set of best principles for the redesign of existing domestic resolution processes, including the characteristics of deposit insurance agencies and liquidity assistance provision.

European countries, particularly those in Scandinavia, have been working for some time on crisis drills and MoUs to facilitate understanding and identify the information that would need to be shared in a global crisis.

SESSION 3A

Challenges for Regulation and Stability: Regulation

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The Fetish of Liquidity– Liquidity, Leverage and Moral Hazard:Lessons from Asian and Subprime Crises

Andrew Sheng¹

I want to thank Bank Indonesia and Banco de México for inviting me to participate in this G20 Seminar on Competition in the Financial Sector. As I have wonderful friends in both central banks and also historic ties with the Group of Twenty Two, the predecessor to G20, this was an invitation I could not refuse.

Since stepping down as a full-time financial regulator, I have been preoccupied with writing a book on the Asian crisis. My regret was the various teaching and advisory work was so interesting that I had not had the time to finish the book by July 2007, the 10th Anniversary of the Asian crisis. However, the emergence of the sub-prime crisis has given me opportunity to reflect on the similarities and differences between the two crises.

The fact that the subprime crisis can occur in spite of the greatest overhaul in financial regulation, accounting and corporate governance standards since the 1930s is a conundrum that deserves better analysis. There is already considerable work explaining the subprime crisis and the possible implications. Sir Howard Davies in his tour de force, “The Future of Regulation” the Oxonia Lecture of January 2008, raised the classic blame game, “Politicians and others have raised serious questions about the adequacy of market regulation. Could the crisis not have been prevented? Were the regulators asleep at the wheel?”

This paper is more narrowly focused. I asked myself why is it that despite all the greater transparency, disclosure and improved surveillance, crises can happen right before our eyes. My own experience and research on the Asian crisis convinced me that it was due to the “Beam in Our Eyes”, as Nobel Laureate Gunnar Myrdal (1968) called the way economists looked at the world that perhaps lead us to read market behaviour wrongly. John Maynard Keynes (1936) in his General Theory

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argued, “Classical theory represents the way in which we should like our Economy to behave. But to assume that it actually does is to assume our difficulties away”.

Since the neoclassical paradigm remains dominant in modern finance theory, not much has changed. This paper attempts to explore how liquidity, leverage and moral hazard, common elements in all financial crises, came together to create the perfect storm of financial shocks. We assumed away all the difficult parts, but it is the difficult parts that are both interesting and where it all happens. The paper concludes with some preliminary thoughts for the way we think about regulatory reforms.

1. Assuming away the difficult parts

The title of this paper is not accidental. Despite the fact that many more professional economists have become fund managers and investors, few have achieved better academic and practical insights than Keynes, the speculator. His comments on liquidity is most intriguing:

“Of the maxims of orthodox finance none, surely, is more anti-social than the *fetish of liquidity*, the doctrine that it is a positive virtue on the part of investment institutions to concentrate their resources upon the holding of “liquid” securities. *It forgets that there is no such thing as liquidity of investment for the community as a whole.* The social object of skilled investment should be to defeat the dark forces of time and ignorance which envelop our future. The actual, private object of the most skilled investment today is “to beat the gun”, as the Americans so well express it, to outwit the crowd, and to pass the bad, or depreciating, half-crown to the other fellow.” (Italics added)

In the last few years, we have almost taken global excess liquidity for granted and have forgotten Keynes’s insight that liquidity of the market as a whole may be ephemeral. He understood that in complex markets, liquidity and valuation are subject to expectations that could change rapidly. “A conventional valuation which is established as the outcome of the mass psychology of a large number of ignorant individuals is liable to change violently as the result of a sudden fluctuation of opinion due to factors which do not really make much difference to the prospective yield; since there will be no strong roots of conviction to hold it steady”.² It is the confidence in near term stability that make investments “liquid” for the individual player, but changes in expectations can wipe out market liquidity very rapidly.

² Keynes, p.154.

Seventy years later in July 2005, the Counterparty Risk Management Group II (CPRGII), ably chaired by Jerry Corrigan, looked at the possibilities of financial shocks and crises and re-affirmed Keynes' views, including presciently laying out the fundamental conditions under which the subprime crisis unfolded a year later. After identifying that Counterparty Credit Risk is the single most important variable, the CPRGII pointed out that "evaporation of market liquidity is second, especially with crowded trades - in periods of acute market stress, market liquidity can evaporate even in what is normally the most liquid of markets". The Group also noted that the "value of complex financial instruments (especially those having embedded leverage) can change very rapidly even in a matter of hours or days". Moreover, because the valuation of many classes of financial instruments is very difficult and dependent on complex proprietary models, the use of similar analytical tools heightens precipitous price changes and most statistically driven models and risk metrics such as Value at Risk (VaR) calculations fail to capture "tail events".

The work of CPRGII should be commended because not only did it alert the community at large of the complexities and dynamic nature of modern financial derivative markets, it also alerted the regulators to the problems of backlog in clearing and settlement in several derivative markets, which if left unresolved, would have surely worsened the present crisis.

Why are there crowded trades? Firstly, it is perhaps because in a condition of sudden market change, everyone wants to "beat the gun" and get out. Professor Avinash Persaud,³ currently one of the most acute observers of the risk management game, commented recently that many of the Markowitz models used for measuring and controlling risks (such as Value at Risk models) all made simplifying assumptions that when one sells or buys in a market, one is the only one doing so. In reality, one is buying with the herd and selling with the herd when everyone has more or less the same information or same models. In other words, *"far from diversifying risk, these tools will concentrate risk"*.

Secondly, the commercial banks have tried to diversify their risks and maximize capital efficiency by packaging their mortgages into asset-backed securities (ABS) and selling them to other holders. If long-term risk holders such as pension and insurance funds carry all such securities, the market should have been more stable. But a considerable portion is held by hedge funds and short-term traders of ABS who are risk-traders and not risk-absorbers. As pension and insurance funds are also marked to market and are beginning to use the same

³ Persaud (2007).

quantitative investment models with hedging tools, they too are behaving with shorter time horizons. Thus, whenever price volatilities or uncertainties increase, the models suggest stop-loss action and the “bad half-crown ABS” are sold rapidly by both risk-traders and risk-absorbers, thus adding to crowded trades and their market illiquidity.

Thirdly, Persaud rightly pointed out “riskiness is” *as much a characteristic of the investor, as the instrument.*” We need to understand the risk profile of investors, before we can fully appreciate the risk of instruments. Our current risk management models look more at the latter and ignore the former.

Indeed, one needs to ask why 10 years after the failure of LTCM and its vaunted model, such models should still command credibility and wide usage. Keynes was perhaps the first to quip that investors have cognitive dissonance, using things that they suspect are wrong, but refuse to change, because: “worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally”.⁴

2. From static equilibrium to dynamic reflexivity

Another successful speculator, George Soros, has also expressed the frustration with the neo-classical framework of financial markets. Like Keynes, Soros has also observed “the general accepted theory is that financial markets tend toward equilibrium, and on the whole, discount the future correctly.” However, in his experience, markets are not necessarily stable and will not revert to “equilibrium because of reflexivity:

‘Reflexivity is a two-way feedback mechanism in which reality helps shape the participants’ thinking and the participants’ thinking helps shape reality in an unending process in which thinking and reality may come to approach each other but can never become identical...the inherent divergence, between the participants’ views and the actual state of affairs...“participant’s bias”, which provides the clue to understanding the course of events’. *Soros (1994)*

As early as the 1920s, sociologist William Thomas had observed reflexivity as ‘the situations that men define as true, become true for them’, a concept that was later refined by Robert K. Merton (1948, 1949) as a self-fulfilling prophecy. Reflexivity in financial markets suggests that different investor strategies interactively influence each other to change market expectations in a dynamic

⁴ Keynes, pg. 158.

and self-reinforcing manner, so that markets may in fact be in continuous disequilibrium. The role of expectations and different orders of expectations play in professional investors' views of the market was already observed by Keynes in his famous anecdotes about who gets unseated in the game of Musical Chairs or in a competition, "it is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion expects the average opinion to be".⁵ The different orders of expectations play a crucial role in market behaviour.

3. Asian and subprime crises: The usual suspects

It may be useful to begin with the usual suspects of financial crises, comparing the two most recent experiences, the Asian crisis of 1997-98 and the sub-prime crisis, drawing upon my recent work on the Asian crisis (Sheng, forthcoming).

The most common elements in both crises are excess liquidity, large capital flows, the presence of asset bubbles, excess leverage, premature financial liberalization, lack of transparency, inadequate supervision and moral hazard. I shall comment briefly on each.

In the last two decades, the dominant forces in financial markets have been globalization, financial liberalization, financial innovation and technology. The key trend within globalization was the phenomenal rise of emerging markets, largely led by China and India, which have added cheap labour, new savings and consumption to global markets. In the absence of unified global monetary policy, the world became flush with liquidity in the periods leading to both crises.

In both cases, large capital flows played a crucial role. As transaction costs declined throughout the world with financial innovation and emergence of hedge and other risk-traders, the volume and turnover of capital flows increased in both direct and portfolio investments. Part of this was due to regional demographic differences, as aging developed markets began to invest in younger emerging markets to diversify their risks and benefit from their faster growth. At the same time, as emerging markets enter into their high growth period, the underdevelopment of their capital markets has meant that they were obliged to invest the bulk of their official capital in developed markets, contributing to the widening of the global imbalance. Moreover, under the Samuelson-Belassa effect, changes in the real exchange rates of emerging markets, even if nominal exchange

⁵ Keynes, pg. 156.

rates may not have moved so fast, resulted in sharply rising asset prices in emerging markets, thus attracting even more capital inflows from the developed markets.

Post-Asian crisis, when emerging markets cut their investment levels and increased their precautionary savings, global liquidity increased even more, even as the US increased its level of consumption. Ironically, this time capital flows from emerging markets and global loose monetary and fiscal policies contributed to asset bubbles in the developed markets (and emerging markets as well).

At the same time, the nature of capital flows has also changed. Countries with high savings and low growth and low interest rates are also contributing to the capital flows (and leverage) through what is known as the carry trade. Quantitative traders (investors who use highly complex quantitative tools) are able to leverage their trades thanks to the Yen and other carry trades, which make hedging much cheaper, even as transaction costs are reduced. Quant trades are estimated to account for as much as 70% of volume in New York and London markets and between 40-50% in Tokyo and other Far East markets. Just as the 1987 market crash was attributed partly to computerized trading, quant trading is now identified as significant forces in contributing to market turnover, if not volatility.

It is therefore not surprising that the most significant commonality between both crises was the presence of asset bubbles in stock markets and property markets, with the correction in asset prices being triggers in both crises. Throughout history, bubbles almost always precede financial crises.

Although excess leverage played a central role in both crises, the key difference was the excess leverage in the corporate sector in the Asian crisis, whereas there was excess leverage in subprime borrowers in the United States. In hindsight, both banking systems were inadequately capitalized (and by definition over-leveraged) relative to their risks.

Was there premature financial liberalization and inadequate supervision? In the East Asian case, the supervisory process and policy mindset was not ready for the impact of opening up the financial system to globalization. Domestic players took the opportunity to leverage up and foreign investors took the opportunity to join the momentum trade. Complex financial products did not play as significant role in Asia as in the case of subprime, where the embedded leverage in collateralized debt obligations and their derivatives (CDOs) played a crucial role. Whether regulators were too sanguine in their liberal approach to financial innovation and their leverage is an issue that deserves much more debate.

What is interesting is the problem of transparency and disclosure. Since the Asian crisis, when there was genuine lack of transparency and disclosure in crucial market information, the subsequent global reforms undertaken in the area of transparency and disclosure standards were the most comprehensive and substantive since the 1930s.

Lack of transparency should therefore be the last excuse as a cause for the subprime crisis. Nevertheless, it is apparent that the complexity (and by inference the lack of understanding) of CDOs and their implications for ultimate investors occurred in the most developed and transparent markets in the world. For market experts who understood the nature and risks of CDOs and their derivatives, the information was available and disclosed in the notes to the accounts of the major banks, but such information would have to be very closely and carefully read in fine print to detect the real risks. A few prominent investors such as Warren Buffett and Henry Kaufman warned about the risks, but were largely ignored by the market.

As someone who was and still is an advocate of higher transparency,⁶ the major reforms on transparency has been on the push (or supply side) of information, in the sense that disclosure by market participants has been much better. However, we have perhaps under-appreciated the pull or demand side of transparency, that is, the level of understanding of complex products and transactions by the investor (retail or professional) or the regulator. We see what we choose to see or hear.

The subprime crisis has disproved the naive assumption that if the risks were fully disclosed by all issuers, the market would be more stable. The fallacy of composition, by which market participants erroneously assume that what they believe is true based on partial information is true for the market as a whole, was prevalent in both the Asian and subprime crises. Market participants acted on partial information and their collective behaviour was herd-like and created market overshooting or under-shooting.

Full disclosure is therefore necessary but not a sufficient condition for market stability, certainly if a large part of the market doesn't understand the risks.

There is consensus that growing leverage played a major role in both crises, and global leverage has been on the increase. The McKinsey Global Institute noted that the leverage of global financial systems (excluding derivatives) has increased from 108% of GDP in 1980 to 395% at the end of 2006 (Table 1). If you include

6 Group of Twenty Two, "Report of Working Group on Transparency and Accountability", co-chaired by Mervyn King and Andrew Sheng, 1999.

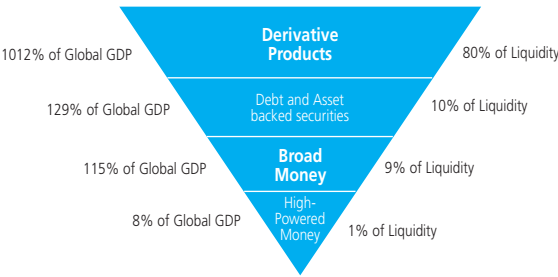
derivatives, David Roche (2006, 2007) has suggested that the world liquidity is an inverted pyramid that has grown exponentially. By defining traditional liquidity as high-powered money and broad money, he observed that since 1990, the proportion of traditional liquidity has almost halved from 13.6% of total securitized debt and derivatives to 7.1% by 2006 (Figure 1).

Table 1: Global leverage (exclude derivatives) moved from 108% of GDP in 1989 to 395% by 2006 (US\$ trillion)

Region	GDP	Reserves (ex. gold)	Stock Mkt Cap	Debt Mkt	Bank Assets	Total Finan. Assets	Total as % of GDP	Fin. Assets % share
World	48.2	5.091	50.8	68.7	70.9	190.4	395.0	100.0
EU	13.6	0.252	13.1	23.2	36.6	72.9	534.4	38.3
North America	14.5	0.090	21.3	28.1	12.1	61.5	424.8	32.3
Japan	4.4	0.880	4.8	8.7	6.4	19.9	456.5	10.4
Other Asia	6.3	1.249	6.9	3.5	7.5	17.9	285.4	9.4
Asia inc Japan	10.7	2.149	11.7	12.2	13.9	37.8	355.7	19.8

Source: IMF Global Financial Stability Report, October 2007.

Figure 1: Global leverage and liquidity - the unstable pyramid



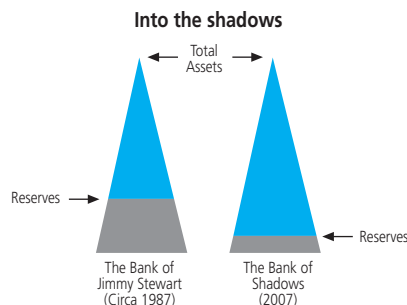
Although the nominal value of derivatives does not necessarily mean that all of it is leveraged, there is a considerable element of embedded leverage in many derivatives that can impact on the liquidity of the holders very fast. Derivatives are traded based on embedded leverage provided by issuers or prime brokers. Moreover, the fact that mutual funds and pension funds have begun to buy hedging instruments to manage their portfolio risks mean that they are also becoming

leveraged, although not to the extent of risk-traders. For example, if a pension fund or mutual fund adopts a 130/30 position neutral strategy, in other words, 130% long and 30% short strategy, both sides of the balance sheet are increased by 30% leverage. The cumulative consequence of higher leverage (part of which is for hedging purposes) is that whenever such risk-holders decide that they would sell-off their derivative assets or hedges to reduce their exposure (through legitimate stop-loss trades), the reversal of derivative leverage can happen very fast and reduce liquidity substantially.

The flip side of the CDO or ABS leverage story is the fact that the commercial banks packaged their mortgages and sold these as ABS in order to gain origination fees, rather than holding these mortgages to maturity and earning the interest rate spread. The net effect was a transfer of credit risks to non-banks. The matter would be stable if the ABS were legally and accounting-wise totally off the banks' balance sheets. However, since the ABS were moved to special investment vehicles (SIVs), the banks enhanced the liquidity of the CDOs issued by the SIVs through guarantees, so that the liability was brought back onto the banks' book, but below-the-line as contingent liabilities.

This sleight of accounting and regulatory arbitrage allowed the banks to appear to use their capital more efficiently. As renowned fund manager Bill Gross⁷ remarked in his January 2008 comment "Crumbling Pyramids", modern banks are likened as "Bank of Shadows in 2007" which are much less capitalized than the Bank of Jimmy Stewart (of *It's a Wonderful Life*), circa 1987 (Figure 2). In effect, the banks created a liquid ABS market, saved on capital, but the sale of

Figure 2: Bill Gross (PIMCO) - bank leverage grew from 1987-2007 by securitizing and moving liabilities off-balance sheet



Source: PIMCO.

⁷ Pimco, 2008.

ABS could under special circumstances be unwound, creating a condition whereby their liquidity and capital base were squeezed at the same time.

4. Excess liquidity, leverage and moral hazard

We now need to answer the Keynes enigma whether excess market liquidity really exists. Is it due to market confidence, or the mistaken belief by market players that a Central Bank Put and Lender of Last Resort (LOLR) facility exists to bail the investors out of their mistakes? In other words, the liquidity and leverage musical chairs can continue, as long as the market thinks, rightly or wrongly, that the central bank is there to pick up the tab when the music stops. As Professor Charles Goodhart⁸ insightfully put it in his recent analysis of liquidity management, bank liquid assets have moved from roughly 30% of total assets for British banks in the 1950s to current levels of 1%. He asked critically, “Why should the banks bother with liquidity management when the Central Bank will do all that for them? The banks have been taking out a liquidity ‘put’ on the Central Bank; they are in effect putting the downside of liquidity risk to the Central Bank”.

The definition of the concept of liquidity has perhaps caused some of the current market confusion. Liquidity is not easy to define both conceptually and operationally. There are in fact two types of liquidity –asset liquidity, which is the ability to sell an asset easily without major loss, and funding liquidity, which is the ability to borrow funds easily without paying excessive interest rates. Both are contingent on the sentiment of the market, since buyers or borrowers may not be willing to pay or lend when markets get into highly volatile conditions. To make matters even more confusing, “liquidity” in monetary economics sometimes refers to high-powered money.

Whatever the choice of definition, liquidity is an attribute that cannot be divorced from asset valuation, leverage and risks. Former UBS Risk Manager and a member of the CPRGI, Robert Gumerlock, insightfully pointed out in his 2000 monograph that prices, valuation, capital and leverage are all relative and inter-related, depending on context and timing. In times of crisis, when market prices fluctuate wildly, what is fair value? The normal definition is that fair value is the price between two willing parties under normal circumstances. In the ordinary course of events, asset liquidity or price is determined between one willing party and one neutral party. On the other hand, in a crisis event, price and liquidity is determined between one desperate party and one unwilling party. Consequently,

8 Goodhart (December 2007).

to define fair value as “mid-market” or “price between two willing parties” systematically overstates true worth.

Moreover, from the funding view of liquidity, “one measure of the liquidity of a financial instrument is to ask how much a creditor would be willing to lend against it. But an instrument’s worth as collateral is intimately tied to its current valuation, and to the extent that valuation of collateral is increasingly tied to market prices, the stability of “collateralizing” financing is brought into question, particularly in moments of crisis when market prices are either not available or fluctuating wildly”.⁹ Consequently, as discovered by Northern Rock, “forced liquidation in a predator market virtually guarantees insolvency”.

We now come to the tricky question of fair value. The FASB definition of fair value is “an estimate of the price that could be received for an asset or paid to settle a liability in a current transaction between marketplace participants in the reference market for the asset or liability:

- Level 1: quoted prices for identical assets or liabilities in active markets.
- Level 2: quoted prices for similar assets or liabilities.
- Level 3: direct market inputs other than quoted prices.
- Level 4: indirect market inputs.
- Level 5: entity inputs”.

But in a crisis, all five levels may be questionable. If we have to use model valuation, and market prices diverge from model valuations, are fair values better represented by mark-to-market or mark-to-model? If mark-to-model, which model should be used? In other words, can fair value or model value be divorced from the risk profile of the borrower, since if we use the lowest available market price, the borrower may be insolvent? Gumerlock rightly pointed out, similarly to Avinash Persaud, that liquidity depends on the behaviour of market participants in a crisis event, and it could easily disappear in a crisis, because risks become impossible to measure, as prices would depend on the uncertain behaviour of counter-parties.

After Northern Rock, the FSA issued a consultation paper that defined Liquidity risk as “risk that a firm, although balance-sheet solvent, cannot maintain or generate sufficient cash resources to meet its payment obligations in full as they fall due, or can only do so at materially disadvantageous terms”.¹⁰ The trouble

⁹ Gumerlock (2000).

¹⁰ FSA Review of Liquidity Requirements, December 2007.

with this definition operationally is that the firm would have to maintain two sets of liquidity, one for normal conditions and one for “tail events”. The two are not necessarily compatible in an environment in which the firms are trying to maximize capital efficiency. The conundrum is that banks are supposed to be first line liquidity providers, but they have pushed their risk-return envelop to the limit by over-relying on central bank lender of last resort facilities. If they are to become liquidity providers, they would need much higher levels of capital. If they are thought to be under-capitalized, then the whole market is illiquid in a Catch-22 situation, despite the fact that savings exist in abundance globally.

What Gumerlock and other experienced risk managers have observed is that under normal market conditions, the first order approximation of any market attribute, such as price, volatility, risk or liquidity, can be stable for it to be relatively distinct and measurable. However, in extreme market conditions, risk, liquidity and leverage become so interconnected that they are both unstable and unmeasurable (at least by present models). In other words, under normal market conditions, we can differentiate between credit risk, market risk and liquidity risk. Banks and regulators assume that these known unknowns can be measured and hedged using statistical tools. The question is whether under extreme market conditions, these risks may be inseparable and market participants are involved in a dynamic situation of unknown unknowns where the only alternative is to flee.

We are therefore forced to think through why leverage can rise to a level that creates systemic risks for the market as a whole. Was it due to irrational exuberance or due to moral hazard?

I am inclined to conclude that moral hazard is inherent in leverage. The common definition of moral hazard from insurance is “the risk that the presence of a contract will affect the behavior of one or more parties.” In other words, moral hazard is conditional on the behaviour of the other contractual party (insurer or insured). However, leverage is the relationship between debt and capital, in which the lender or insurer, under condition of asymmetric information is always uncertain as to the solvency of borrower. An insurance policy can be voided if the policyholder deliberately acts to benefit from moral hazard. However, a central bank or even society cannot avoid moral hazard consequences when a segment becomes insolvent, its losses are passed on to the lender, and if the lender fails, society will bear the residue losses. Unfortunately, the chain of property rights or loss transmission in a highly traded derivative market is unclear. No one knows where the loss will appear and therefore the investors assume that in a situation of asymmetric information that the only solution is to get rid of such tainted

assets. The degree of contagion (in terms of risks) creeps into the system, but avoidance can become precipitating and almost instantaneous.

Note that the risk creating moral hazard behaviour of the market participants is one-sided, in the sense that as long as the central bank and the regulators do not say explicitly which assets they will not accept as acceptable collateral, which behaviour is frowned upon and explicitly that there is no “central bank put”, the market can merrily behave as if everything is permissible and that increasing leverage is fine. In other words, if the market assumes that “the central bank put exists, (even if in the mind of the central bank and the regulator it does not), there is misplaced confidence and therefore irrational exuberance will occur to create a bubble.

There are two implications from this line of exploration. Firstly, funding liquidity increases because the lenders are willing to lend as long as they feel that the collateral is liquid and stable in price, which may be because there exists (possibly mistaken) market confidence that the central banks and regulators will ensure the continuation of stable market conditions, including providing ample funding. Secondly, asset liquidity increases, because buying and selling is facilitated when one can easily collateralize the assets. Funding liquidity begets asset liquidity and vice versa. The two types of asset and funding liquidity are mutually reinforcing, as long as central banks or exogenous factors do not change current market expectations.

Unfortunately, this virtuous circle ultimately leads to bubble conditions, while the reverse creates massive illiquidity and rapid price deflation. Such “conventional thinking”, plus the pro-cyclicality of accounting and supervisory standards, all make bubble effects and their rapid unwinding almost an inevitability.

The realization that moral hazard can be created unilaterally is important. It is the mistaken belief that there is a central bank put or government bailout that becomes a self-fulfilling prophecy. By herd behaviour that would ultimately lead to a bubble, the market is challenging the central bank to declare explicitly whether or not there is a central bank put. The more unwilling the central bank to declare that there is a bubble, the likelier the condition that the bubble would form and that the central bank would be forced ultimately to exercise that put to prevent systemic loss.

In other words, market behaviour is reflexive, in a game between the market and the regulator/central bank. The market will behave in one direction, unless the regulators or the central bank acts decisively to head it off. Just as regulators

have to enforce strictly to maintain market credibility, central bankers have to act constantly to ensure that markets do not have mistaken beliefs about moral hazard. Moral hazard lies in the implicit or explicit behaviour of both sides.

5. Minsky financial instability hypothesis: “Stability is destabilizing”

If leverage, liquidity and crisis are inter-related, perhaps we should go back to the Keynesian economist, Hyman Minsky’s analysis to see what is so dangerous about leverage. Minsky’s work, which was ignored by mainstream monetarists and regulators alike for years, has some profound insights into the behaviour of modern financial markets. He divided leverage into three levels. Firstly, “a hedge posture implies that the prospective cash flows are sufficient to fulfill contractual payment commitments on liabilities”. Secondly, a “speculative posture means that the unit’s cash flows are sufficient to pay interest but insufficient to pay the principle amounts fall due”. Thirdly, “a unit with a Ponzi financial structure insufficient cash flows from operations or contracts to meet its interest payment commitment. The options for such a unit are either to increase its indebtedness or default”. To put it simply, Ponzi financing is dangerous and could lead to systemic losses.

Many acute market observers have noted that in recent bubbly times, there was Ponzi financing being practiced, but as few regulators took this seriously or few understood how to operationalize Minsky’s work, Ponzi behaviour was neither stopped nor prevented.

However, Minsky’s insights did not stop there. He was also noted for his financial instability hypothesis, which “holds that over a run of good times the financial structure evolves from being robust to being fragile. This hypothesis rests upon the profitability of debt financing, given the term and risk class structures of interest rates in a robust financial structure and the way asset values can collapse whenever speculative and Ponzi financing units are forced to “make position by selling out positions”.¹¹ One could actually argue that the securitization of ABS into CDOs was inadvertently a form of Ponzi financing.

In other words, prolonged stability of values of risks, liquidity and prices may lull market participants into leverage behaviour that escalates until the system becomes more and more unstable. For those economists who follow the more recent work of econophysicists and financial market modeling,¹² financial markets are seen as dynamic, evolving, adaptive ecosystems, that go through periodic

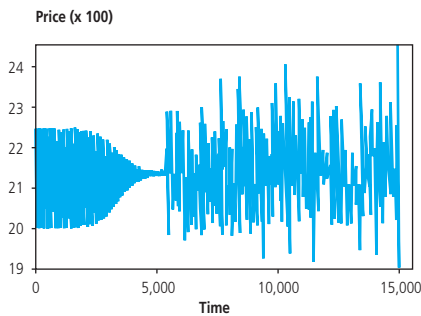
¹¹ Minsky (1992).

¹² This section is drawn largely from the work of Beinhocker (2005).

periods of instability, rather than mean-reverting, stable systems that go back to equilibrium. J. Doyne Farmer's pioneering study on agent-based modeling of financial markets suggests that Minsky's dictum "stability is de-stabilizing" may be true. Using four types of agents, value investors, technical traders, liquidity traders and market makers, Farmer modeled the financial market using Traditional economic assumptions such as random-walk behaviour.¹³ By repeating the agent-based behaviour over a long period of time, he discovered that initially, the market behaviour was as predicted by Traditional Economics. Prices converged and bid-ask spreads narrowed.

At some point of time, when the market became very stable, traders began to make larger and larger trades and bets, the "market looked as if it were rapidly approaching perfect efficiency. But then, volatility suddenly exploded, and prices began to move chaotically. What had happened was this: as the technical traders became richer, their trades became larger, and the large trades started introducing their own movements into the price. These movements created opportunities for other technical traders to try to arbitrage the patterns created by their fellow technical traders –when the technical traders had finished lunching on the seasonal traders, they began feeding off each other!"¹⁴

Figure 3: Modeling of financial markets
(Agent-based behaviour)



Source: Farmer (2001).

Farmer's modeling results seem to ring a bell with what happened in global markets since 2004/2005, when global credit risk and bond/equity spreads narrowed and volatility went down. Central bankers and regulators worldwide

¹³ Farmer (2001).

¹⁴ Beinhocker (2007), pg. 397.

attributed this to the success of financial innovation to spread risks, forgetting that risks were in fact building up as quants started increasing their bets using leverage.

Khandani and Lo recently examined the implications of collective quant trading behaviour.¹⁵ They examined the events of the week of August 6, 2007, when a number of quantitative long/short equity hedge funds experienced unprecedented losses. They hypothesized that the losses were initiated by the rapid unwinding of one or more sizeable portfolios, which caused larger and larger market movements, which suggested that systemic risk in the hedge fund industry may have increased in recent years. This suggests that the impact of quant trading feeding off each other into larger and larger trades may created volatile trade unwinds that have systemic implications. This fits into the market pattern predicted by Farmer.

6. Regulatory implications from subprime

It may be too early to draw firm lessons from the subprime crisis, but the preliminary consultation papers and studies published to date suggest that much work needs to be done. For example, the FSA¹⁶ has concluded after Northern Rock, *inter alia*, that:

- There is a need to improve stress testing.
- There is a recognition that liquidity can dry up very quickly, and hence there should be more consistent liquidity regulation internationally.
- The operations of securitization should be improved in 3 areas:
 - Valuation of ABS, firm valuation and IAS.
 - Role of credit rating agencies.
 - Lack of transparency about who is carrying risk, especially off-balance sheet exposures to SIVs.

By comparing the current with the Asian crisis, this paper has tried to take a longer and more holistic perspective on the lessons that we can draw. Did the problems occur because we were blind-sided by the way we looked at the problems? Should we not accept that markets are reflexive and are evolving, adaptive ecosystems, driving in an almost self-organized way by distorted incentive

¹⁵ Khandani and Lo (2007).

¹⁶ UK Consultation Paper: Financial Stability and depositor protection: Strengthening the framework, January 2008.

structures? Because our thinking and our models are all driven by Traditional Economics, were we lulled into complacency that the free market would take care of itself?

The above survey suggests that just as moral hazard, excess liquidity and leverage all had a role in both the Asian crisis and the subprime crisis, we really need to examine the reasons for each more closely than hitherto. Instead of trying to blame the usual suspects, we should review how reflexive behaviour in markets is changing the way the markets behave and evolve.

Influential regulatory academics are now beginning to think in this direction. Taking a dialectic view of banking crisis, some note that financial crisis can be “regulation-induced” as much as market induced.¹⁷ The market works on a reflexive interaction between the regulator (including regulations and standards) as well as market participants. Regulation and the way they are enforced and interpreted by the market can have complex lagged and feedback mechanisms that regulators should think through. The combination of pro-cyclical standards and rules, bad incentives such as moral hazard, and regulatory oversight or lack of enforcement, may give signals to market participants that induce them to push the market towards systemic instability. These are the laws of unintended consequences.

Instead of commenting on procyclicality of accounting standards and regulations, such as the Basle Accord, which is best treated elsewhere, I shall concentrate only on the issue of regulation, leverage and moral hazard.

During the Asian crisis, criticisms of the regulation and supervision of Asian financial markets could be summed up as “over-regulation and under-enforcement.” This was not without its validity, as there were too many protective restrictions on entry and not enough enforcement action against lax banking and lack of transparency. So far, no one has applied this criticism to the regulators in the developed markets, since they have been most supportive of financial innovation and also enforced the existing rules and laws firmly. But it still begs the question posed at the beginning of this paper: despite all the improvements in standards, rules and regulations, how did this crisis occur in front of all our eyes?

Just to blame excessive greed and poor ethics and judgment of management and issuers is politically expedient but ducks the real issue. Greed in itself does not create systemic risks. We cannot legislate away bad behaviour, incompetence in judgment or fraud. We have to apply the right focus in regulation, supervision

¹⁷ Kane (2000).

and enforcement in such a way that financial crime and bad behaviour have minimal systemic consequences.

I totally agree with Sir Howard Davies¹⁸ that the open-minded liberal approach to financial innovation in the developed markets was not wrong. It would be a wrong conclusion to draw that just because some derivatives are toxic, all derivatives are. Financial innovation has created instruments of hedging and market development that are useful and helpful to market efficiency and stability. This policy should not be changed, despite cries for tighter regulation.¹⁹

My personal experience in Hong Kong with adopting a disclosure-based regulatory system that is liberal on market entry and financial innovation is that it must be accompanied by firm back-end enforcement. This means that enforcement must concentrate on those market participants that break the rules and engage in systemically damaging activities. The market participants must learn that the condition for liberal market entry is strict exit for those who break the rules. This can only be achieved via enforcement.

If we can agree that excessive leverage is systemically risky, then regulators and supervisors should ask: operationally, how do we detect that markets or borrowers have moved to Ponzi financing?

This is where risk-based, institution-based or even functional-based regulation and supervision approaches may be missing the point. During the Asian crisis, I observed that the IMF, which was in charge of surveillance over member countries, did not pick up the risks of contagion, because it was operationally geared to look at symptoms on a country-by-country basis, much like present regulators still look at intermediaries, institution-by-institution. There was insufficient attention paid to the channels of transmission (such as capital flows and the supply chain), the connectivity and the inter-relationship between groups of economies and their interaction that create feed-back cycles that are systemically damaging. This is precisely the danger of regulating through silos or compartmentalized supervision.

Similarly, current off-site surveillance and on-site examination techniques, widely practiced throughout the developed and emerging markets, is still focused on individual institutions and relatively little work is done on the channels whereby systemic risks are passed or amplified within the whole financial system.

¹⁸ Davies (2007).

¹⁹ I am grateful for Malcolm Edey of the Reserve Bank of Australia for pointing this out. I do not argue for more regulation, only for more focused enforcement.

To sum up, if we agree that modern financial markets are complex, adaptive ecosystems, then our regulatory and supervisory approaches would have to be radically different. Total reliance on off-site surveillance and asking intermediary management to do more stress tests will not reveal the sources of systemic problems. If a management is blind or ignorant to what it is doing and its impact on the rest of the market, asking it to do more stress tests will add very little new information. What are really needed are forensic investigations into what has happened to financial derivatives and their evolution within the ecosystem along the whole chain of trading. This means that operationally, after a new financial derivative is introduced, the regulator attempts to trace how the product has evolved, who is holding what risks, and whether there are problems with its embedded leverage or the “robustness” of the underlying asset.

For example, the problems with all derivatives (even finance is a derivative of the real sector) are their embedded leverage, opacity and complexity. However, the stability of different orders of derivatives (the inverted pyramid) ultimately depends on the stability of the underlying asset. In the subprime case, it was clearly the fact that there was insufficient checking on the credit standards of the subprime lenders that allowed the situation to deteriorate. Everyone assumed that someone else was doing the job.

In other words, regulation and enforcement in practice in a world of complex market ecosystems means that only through focused on-site inspection can problems of systemic risks be exposed. If financial innovation is to continue to grow healthily, then the risk/rewards of financial innovation must be symmetric. Namely, those who benefit from bad innovation or bad implementation of innovative instruments must pay equally for the consequences for bad innovation. However, the only way for society to detect whether practice is bad is to have forensic detection. We can either do this on a post-mortem basis, that is, after the fact, or we should try to prevent the emergence of greater loss, through vigilantly patrolling the perimeter. The fact that the market is aware that the regulators are kicking the tires along the whole product cycle and trade chain will make them behave more prudently.

No one said that this is easy, because current methods of management and regulation and enforcement are not geared to think or operate this way. The skill sets of regulators will have to change radically. What I am saying is that there are limits in which systemically risky problems can be detected or resolved at the level of firm self-regulation. Because moral hazard (or passing private losses to

society) behaviour is inherently self-interest and survival-based,²⁰ it is unlikely that firms will volunteer information that enable current methods of off-site surveillance and management discussions to detect. Regulations can detect and prevent such behaviour only through active on-site forensic examinations (possibly using external auditors and market experts) to check whether there are behaviour or symptoms, which reveal that systemic losses are likely.

7. Preliminary conclusions

The philosopher Alfred North Whitehead observed, “The art of progress is to preserve order amid change and “to preserve change amid order”. This contradiction is the burden of all central bankers and financial regulators. Financial stability is relative and dynamic and regulators and central bankers’ behaviour are not independent of the market. The market behaves in a reflexive, adaptive way and is continually and dynamically shaped by competing interests and different forces, driven by incentive structures embedded in rules and their enforcement or lack of.

The contradictions pointed out by Whitehead have parallels in market behaviour under asymmetric information and contextual conditions. In a situation of order, disorder wins; in a situation of disorder, order wins. Under the conditions of Great Stability and liberal regulation, complexity wins by creating more derivatives. After all, a derivative is one way of charging more fees through transforming the simple (underlying) product that yields only a low spread. Unfortunately, when the derivative situation becomes too complex to understand, simplicity wins for the investor by running away, i.e. avoid holding the dubious asset. The last holder holds the bad halfpenny.

Just as institutional regulation has moved towards consolidated supervision and super-regulator regimes, it is time that we move one step further from conventional thinking that markets are self-equilibrating towards the view that markets are adaptive ecosystems that are also reflexive - namely, markets are affected by regulator/policy maker behaviour and vice versa. This implies that supervision needs to make sure that enforcement is focused on preventing systemic risks (along the whole process chain) from exploding into crisis. It is recognized that there is no zero failure, but at least patrolling the perimeter will help.

There is one final thought that requires further reflection. If markets are adaptive and changing, having one or universal standards (accounting or regulatory

20 Ponzi behaviour survives by passing losses to the next sucker.

rules) may itself be risk creating. If that standard or rule is for whatever reason wrong, then the cumulative effect of the mistake could be catastrophic for the market as a whole. This is one lesson I personally drew from fair value accounting. If the market price is wrong, due to the existence of a market bubble, marking all prices to market may have very serious long-term consequences when the market reverses. If we agree that markets are competing and evolving systems, then perhaps the only way for sustainable stability is to have competing standards, and to make clear and transparent to the market which standard is adopted and why.

There is no question that the subprime crisis has opened a Pandora's box for the whole approach to financial regulation, but there is no doubt that crisis has forced us to think through whether our current theories and practices are adequate for the challenge of adaptive, dynamic and evolving markets.

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Competition in the Financial Sector: Challenges for Regulation

James R. Barth²¹

There are ten key issues that I consider important for policy makers. The first and most general issue is whether differences in size and composition of the financial sector necessitate different regulatory regimes. The answer is yes. One size obviously does not fit all. We have in particular heard in some presentations that in countries with bank-oriented financial sectors benefits can be achieved from greater competition, and it is probably easier to introduce greater banking competition in such countries. In other countries, such as the United States, there exists a securities-oriented financial sector. Regardless of the orientation, competition is clearly important yet typically receives far too little attention. Given all the differences in the size and composition of financial sectors across countries, one must take this into account in any discussion how best to regulate one particular part of this sector to promote competition.

We all know that the U.S. financial system has evolved over time. It went from essentially a bank-oriented financial system to a securities-oriented one. Banks in many important respects compete with securities markets. That has not yet been emphasized sufficiently when one realizes that many of the different types of loans that banks make are now securitized. Banks have tended to shift from operating as institutions that originate, hold, and service loans to a model that originates loans and then sells them into the secondary markets, and perhaps retains some servicing rights associated with those loans.

The Vice Chairman of the U.S. Federal Reserve System recently tells us that when we go from a bank-oriented financial system to one in which there is a greater role for securities markets, banks shift to this newer mode of operation. Many of the bigger banks now originate loans, package loans, and sell them in the secondary market, raising a variety of issues. This requires that one ask the question, "What is a bank?" It differs in different countries because banks in

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many countries now want to get into securities and insurance activities as these markets have grown in importance relative to bank loans for funding consumer purchases and business operations.

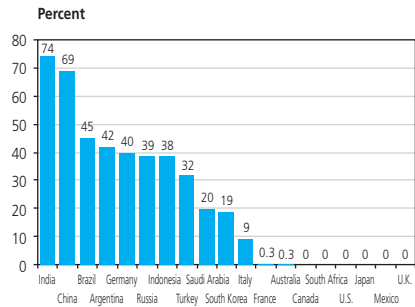
Jeff Carmichael, in his comments, talked a lot about financial conglomerates. They do raise issues as he indicates about capitalization, measurement of capital, excess leverage, and double gearing. I will not further elaborate on these issues here. Instead, I will note the scope of activities in which banks are allowed to engage. In my powerpoint presentation, there is a list of the different sorts of activities allowed for banks in the nineteen individual countries of the G20. In the table, we can see that real estate activities are the most restricted activity in countries around the world, whereas securities activities are the least restricted.

Table 1

	What kinds of securities activities can banks engage in?			What kinds of insurance activities can banks engage in?		What kinds of real estate activities can banks engage in (other than real estate in which banking operations are conducted or resulting from foreclosure on loans)?		
	Underwriting?	Dealing and brokering?	Mutual Funds?	Underwriting?	Selling?	Investment?	Development?	Management?
Argentina	Yes	Yes	No	No	Yes	No	No	No
Australia	Yes	Yes	No	No	Yes	Yes	No	No
Brazil	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Canada	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
China	No	No	No	No	Yes	No	No	No
France	Yes	Yes	No	No	Yes	Yes	No	Yes
Germany	Yes	Yes	No	No	Yes	Yes	Yes	Yes
India	Yes	Yes	Yes	Yes	Yes	No	No	No
Indonesia	No	No	No	No	No	No	No	No
Italy	Yes	Yes	Yes	No	Yes	No	No	No
Japan	Yes	Yes	Yes	Yes	Yes	No	No	No
Mexico	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Russia	Yes	Yes	No	No	No	Yes	No	Yes
Saudi Arabia	Yes	Yes	Yes	No	Yes	No	No	No
South Africa	Yes	Yes	No	No	Yes	Yes	No	No
South Korea	Yes	No	No	No	Yes	Yes	No	No
Turkey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
United Kingdom	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
United States	Yes	Yes	Yes	Yes	Yes	No	No	No
All countries	96 Yes, 22 No	94 Yes, 23 No	69 Yes, 46 No	21 Yes, 96 No	73 Yes, 44 No	52 Yes, 66 No	30 Yes, 88 No	38 Yes, 79 No

It has been mentioned a couple of times by earlier speakers that government ownership is a key factor in some of the big countries, and obviously important countries. The 69 percent ownership figure given for China (i.e. their share of the banking sectors' total assets) is based on that country's four big state-owned banks. We can also see from the chart that India's government plays a large role in its banking sector in terms of ownership.

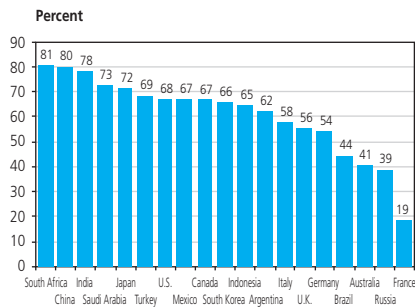
Figure 1: G20: Government ownership of banks



This raises a question about competition, not just among banks per se, but between government-owned banks and non-government-owned banks, whether they be domestic or foreign. Do both types of institutions compete on a level playing field? It raises another question, too: How does one adequately supervise and monitor government-owned banks when the regulatory and supervisory authorities are government officials?

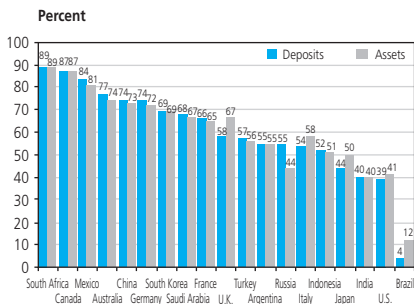
The chart below also provides some information on the extent to which deposits fund assets at banks in different countries. We can see that, in some cases, deposits really do not fund as large a share of bank assets as one might think in these different countries.

Figure 2: G20: Percentage of banking system's assets funded with deposits



With respect to the degree of concentration in the banking industries of different countries, the chart below shows the share of assets and deposits accounted for by the five largest banks in each of these countries.

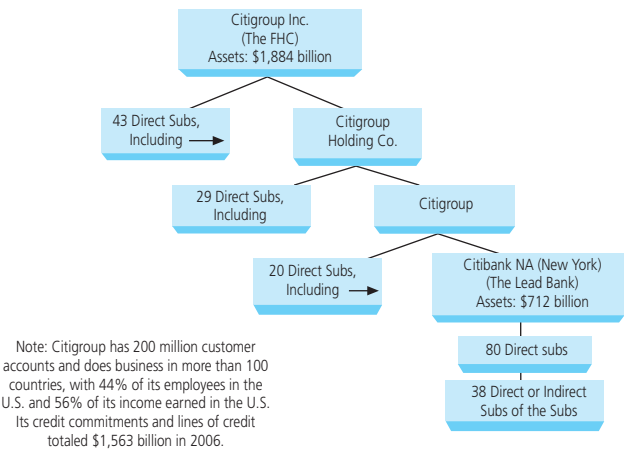
Figure 3: G20: Percent of deposits and assets held by five largest banks



One can see that there is a wide variation in the degree of competition measured in this particular way. However, there is information available indicating that competition and concentration are not extremely highly and positively correlated. In other words, a country can have relatively few banks and still have a fairly substantial amount of competition in the banking sector.

As regards complexity of individual banks, one can look at Citigroup and see that it's not only a very big bank, but also a very complex institution. Furthermore, at Citigroup, its banking assets only account for less than half of the corporation's

Figure 4: Organizational complexity is regulatory challenge
(Citigroup hierarchical organization)

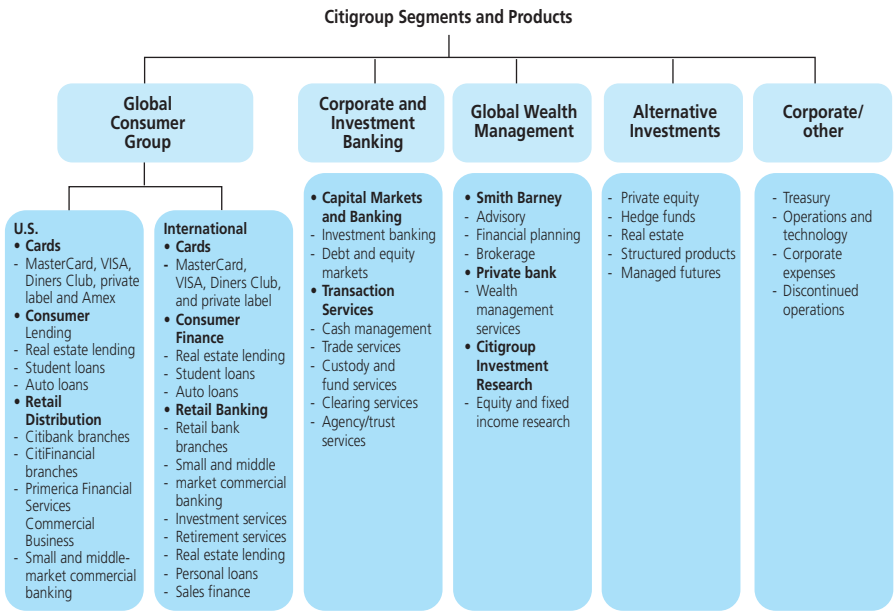


total assets. This means that when one talks about the 'H' statistic, one might wish to measure it for the different components of a complex bank like Citigroup.

Furthermore, Jacob Bikker produced 'H' statistics for the banking sector in different countries. However, we do not have 'H' statistics for the entire financial sector in each of these countries. We do it for banks, and we do it for other types of institutions, but not for the entire financial sector. It would be interesting to know whether or not the total financial sector is more or less concentrated or competitive across different countries.

When considering complexity for a financial institution like Citigroup, complication arises when measuring concentration and competition. More specifically, it would be useful to pay more attention, to the extent that we can obtain data, on the different products and services and competition among them when studying large and complex financial organizations.

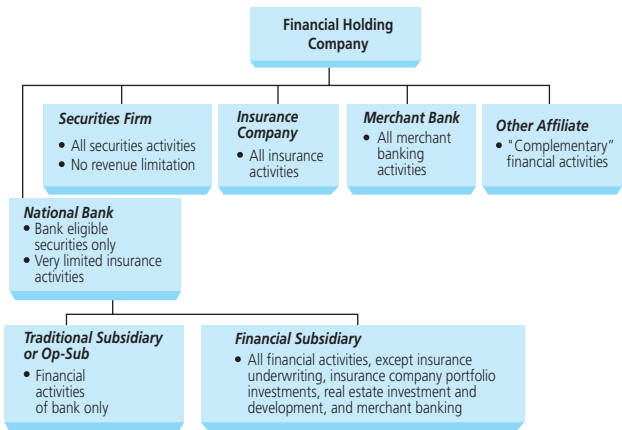
Figure 5: Product complexity is a growing challenge



There are some important issues that arise when considering the best organizational form for financial institutions to conduct different activities. The chart below shows the organizational form permitted in the United States under Gramm-Leach-Bliley Act. We can see that financial holding companies can engage in a fairly

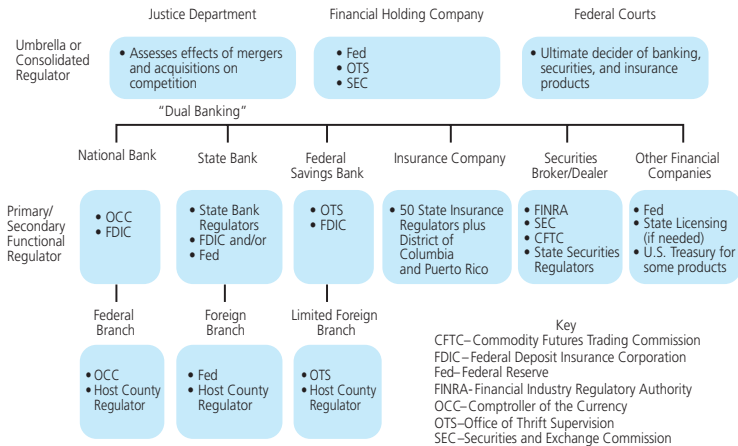
wide range of activities but they must be located in different parts of the organizational structure rather than conducted entirely in the bank or its subsidiaries.

Figure 6: What organizational form is best for broader range of activities
Permissible activities: Post-GLBA



The United States has a fairly complex regulatory structure, as we can see from the chart below. Moreover, there are institutions in the United States that are non-bank banks as well as institutions that are similar to banks known as industrial loan companies. Furthermore, Bill Gates can own a bank even though Microsoft cannot in the United States.

Figure 7: The U.S. regulatory regime: Multiple, overlapping, inconsistent and costly regulation



It may be somewhat surprising to some people to learn that there are a lot of commercial enterprises that are offering banking services in the United States. The big issue that has recently arisen in the U.S. was the attempt by Wal-Mart to acquire an industrial loan corporation, with its deposits insured by the Federal Deposit Insurance Corporation (FDIC). The FDIC, however, decided to postpone any decision on whether or not commercial firms can acquire any industrial loan corporations even though such firms in the past were allowed to do so. This creates an unequal playing field with respect to some commercial firms and some financial institutions in the United States.

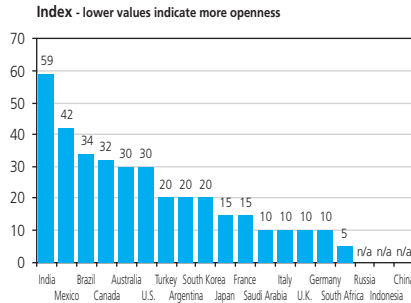
What about globalization of big banks? And what are countries' regulatory postures towards foreign entry? We know that Mexico has essentially outsourced its banking system, as has New Zealand. We heard earlier some talk about whether or not foreign ownership is good or bad for countries, that is whether it produces bad outcomes or not. Auburn University is located in the great state of Alabama, and in this state a Spanish bank recently acquired one of Alabama's big banks. Yet most people do not seem to be unhappy with this particular development. In contrast, in Italy there has been relatively little foreign ownership. In this regard, the available evidence regarding foreign ownership indicates that foreign banking is, on average, not bad for countries. Some people hold the view that competition *per se* is bad or produces bad outcomes, but actually it is the environment in which competition takes place that matters to the whether the outcomes are good or bad.

There are big banks, highly valued banks, that seem to do similar sorts of things. But in reality, they may differ quite a bit in what they do. Citigroup, for example, differs from many other big banks in that it operates in more than one hundred countries, and has over half its staff outside the United States. However, its headquarters are in the United States, and it is considered a U.S. bank. There is a problem when considering competition among banks that operate in a single country and those that operate in many different countries. One might want to calculate 'H' statistics for international banks separately from those for just domestic banks. Given that there are different types of banking institutions, it may be hard to compare them using the same yardstick.

In the paper that has been distributed, my co-authors and I looked at WTO member countries and the commitments they have made with respect to allowing foreign entry of financial institutions. We also looked at World Bank data that was collected in an attempt to see if the commitments that countries made were more or less generous as compared to actual or reported practices as regards

foreign entry of financial institutions. Using these data, we constructed a Market Openness Index. It is basically a measure of market openness to foreign banks in the G19 countries. The index values are reported in the chart below.

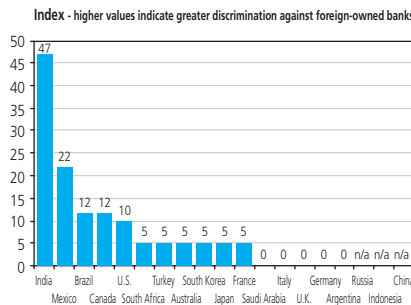
Figure 8: G20: Market openness to foreign banks
WTO Commitments Index Value



In our paper we explain in detail how we put together this market openness index based on WTO commitments and as may be seen in the chart, there is quite a difference across countries.

We also examine the extent to which, once foreign banks are allowed into different countries, they are treated the same as domestic banks. We call this the “Discrimination against Foreign Banks Index.”

Figure 9: G20: Discrimination against foreign banks
WTO Commitments Index Value



There is a difference between being allowed to enter a country and the way in which a foreign bank has to compete with domestic banks once allowed into a country. What we find (and in the paper we go into more detail) is that developing countries are more restrictive than developed countries with respect

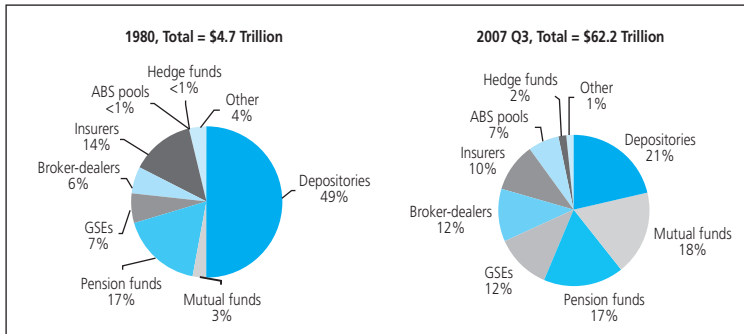
to their WTO commitments. Developing countries are less open to foreign entry than developed countries. However, actual practices reported in the World Bank survey show that they are more open in practice than their WTO commitments would indicate. Developed countries, in contrast, are less open in practice than their WTO commitments would indicate, which is an interesting finding.

Another issue concerns the current structure of regulation. Based on information for the G19 countries for which we have information, I have examined whether or not the central bank is a supervisory authority and whether or not more than one license is required to operate in the different sorts of activities engaged by a bank. In particular, there was a question asked earlier about the regulatory structure, whether or not it matters. As indicated in an earlier chart, with respect to competition, it is the U.S. Justice Department, in cooperation with the bank regulatory authorities that decide whether or not banks can acquire or merge with one another. They do take into account the degree to which the banking sector becomes too concentrated. Furthermore, Bank of America, one of the biggest U.S. banks, is now in a position in which it can no longer acquire other banks to grow still bigger. The reason is that there is a law in the United States that says no bank can make acquisitions to the extent to which it acquires more than 10 percent of all deposits nationwide or 30 percent of the deposits in any single state. This is a clear limitation on competition. Bank of America must be unhappy with the fact that it cannot acquire any more banks in the United States if it wishes to do so. Yet, somewhat ironically, it can make acquisitions in other countries.

In the United States, once banks were allowed to acquire other banks across state lines by the enactment of a federal law, we saw what one might call “foreign” banks from North Carolina moving into California. This type of consolidation produced more competition, and it has worked out fairly nicely, even though banks are prohibited by and large from branching throughout the United States, as a result of states enacting laws prohibiting this type of expansion.

Turning again to the issue of the activities of institutions and regulating those activities, there are a lot of different types of financial services firms and products that they offer. The question that arises is: Does one regulate each type of financial-service firms? Or does one regulate on the basis of the products offered? The chart below shows the diversity in types of firms in the United States and their changing relative importance over time.

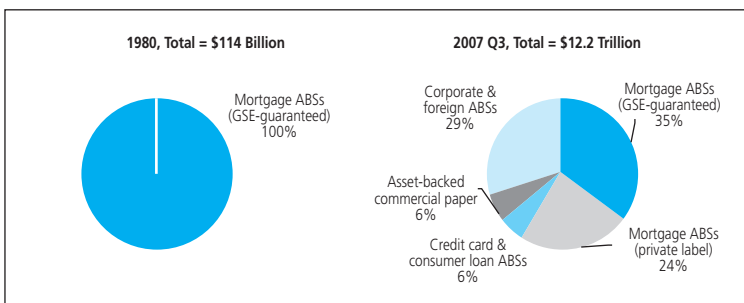
Figure 10: Wide diversity in types of U.S. financial services firms



Does one wish to classify these firms on the basis of whether they offer banking or insurance or securities products? Ultimately, in the United States, it is not clear how to fully distinguish among these products and, moreover, if there is disagreement among the regulatory authorities about whether something is a securities or banking or insurance product, the ultimate decision is made by the U.S. Federal District Court. It is interesting to contemplate that judges may decide what type of product can be offered by different financial services firms. Yet these different products, because of the lack of a clear differentiation, compete with one another. It is thus hard to talk about competition by just looking at banks. Banks are competing with insurance companies and securities firms, as well as other types of companies offering financial services.

Securitization is also very important. A lot of banking institutions are securitizing various types of loans: originating loans, packaging them into securities, and then selling these securities in the secondary market. In 1980, there was not much securitization, with the exception of mortgages. Since then, there has been

Figure 11: Growth and diversity in U.S. asset-backed securities outstanding

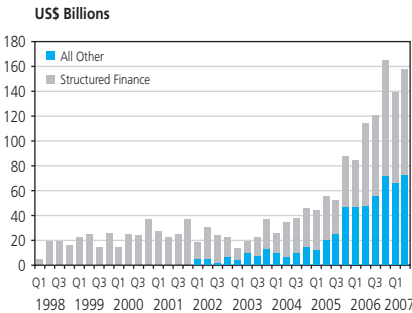


a tremendous amount of securitization activities taking place, and some of these activities, even in the mortgage market area, are not being undertaken by government agencies or government-sponsored entities, but by private entities.

What is particularly striking is that in the United States today banks are securitizing about the same amount of their consumer credit as they are holding in their portfolios. This demonstrates, as noted earlier, a shift from an originate-and-hold model to a originate-to-distribute model.

We also have monoline insurance companies as financial guarantors. They interact with banks in interesting ways. These firms have moved away from providing guarantees for municipal securities to backing different types of securitized assets. Recently, there is a concern that they may not be able to fulfill all their guarantees. The reason is that, as the chart below indicates, they have moved heavily into collateralized debt obligations (CDOs) as well as the mortgage-backed securities, many of which are collateralized with subprime mortgages. And the collapse in home prices and associated increase in home mortgage defaults have adversely affected the financial condition of the monoline insurance companies.

Figure 12: The growth in mortgage-backed securities has contributed to the rise of structured finance collateral in collateralized debt obligations
Quarterly CDO issuance in the United States

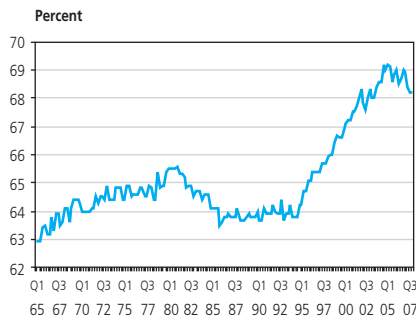


We have not heard anyone say much about financial innovation. In the early 1980s, we had a savings-and-loan crisis in the United States. These financial institutions had substantial interest-rate risk and got into deep trouble when the yield curve inverted. Today, we also have problems in the United States because the interest rate risk was shifted in large part to individuals who took out loans to purchase homes. This raised the question: Do we want financial institutions to take on interest-rate risk or do we want borrowers to do so? In short, what is a proper or prudential balance between the two parties?

In the United States around 1980, savings and loans throughout the country were allowed to offer, for the first time, an adjustable-rate mortgage loan after the U.S. Congress lifted a ban on these types of mortgages. They became quite popular in recent years, but at the same time they have created problems for some individuals due to increasing interest rates.

The homeownership rate reached an all-time high in the United States in 2004. All segments of society benefited from this increase, until recently. The increase in homeownership reflects an increase in sales of both new and existing homes. Home prices also peaked recently before declining. There was a credit boom stimulated by the rapid growth in the subprime mortgage market.

Figure 13: Homeownership rate reaches an all-time high
(January 1965–September 2007)



It used to be the case that lenders would simply look at credit scores in deciding upon whether or not to make a loan and the interest rate to charge to a borrower. Any borrower with a FICO score less than 620 was typically offered a subprime mortgage loan. However, it is difficult to determine whether a loan is subprime or not based on just the borrower's credit score. In the United States, sometimes we classify lending institutions on the basis of whether they are predominantly "subprime" or "prime" based upon the interest rate they charge on mortgage loans relative to a comparable rate on Treasury securities. In any event, the chart below shows that there have been more and more subprime loan originations in recent years, with their share of all originations increasing significantly until the last year or so.

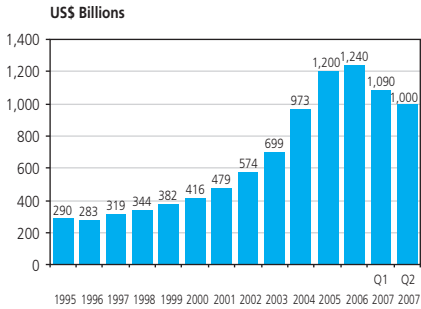
A big portion of those subprime mortgage loans were originated and then securitized by private entities, and also guaranteed by the monoline insurance companies. In this way, banks were able to generate fee income, and avoid any

Table 2: Subprime residential mortgage originations grow in importance
(1994 - 2006)

Year	Total originations (US\$ Billions)	Share of total (%)	
		Prime originations	Subprime originations
1994	773	95.5	4.5
1995	639	89.8	10.2
1996	785	87.7	12.3
1997	859	85.5	14.5
1998	1,450	89.7	10.3
1999	1,310	87.8	12.2
2000	1,048	86.8	13.2
2001	2,215	92.2	7.8
2002	2,885	92.6	7.4
2003	3,945	91.6	8.4
2004	2,920	81.8	18.2
2005	3,120	78.7	21.3
2006	2,980	79.9	20.1

interest rate risk by simply securitizing the loans and selling them in the secondary market. The chart below shows the subprime residential mortgage debt outstanding, which has been declining significantly with the spreading weakness in home prices and rising foreclosure rates.

Figure 14: Subprime residential mortgage debt
outstanding takes off
(1995–June 2007)



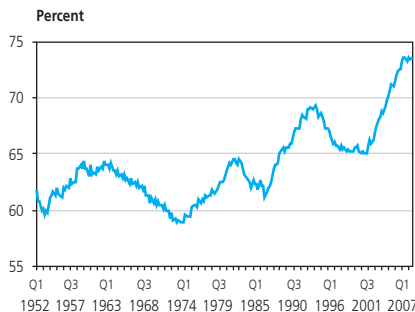
Source: Inside B&C Lending.

A lot of these subprime loans were 2/28 or 3/27 mortgage loans. Such hybrid mortgage loans had a fixed rate for a short period of time, either two or

three years, and then reset to higher interest rates thereafter for the remaining 28 or 27 years. Many of the securities backed by these loans were sold around the world, and when the mortgage markets collapsed the United States has been able to export some of its losses.

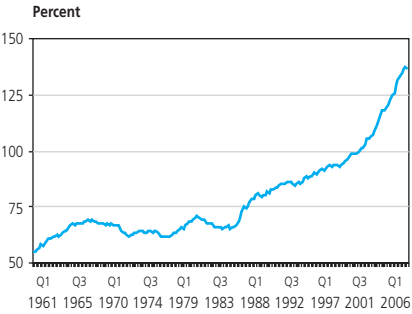
More generally, there has been a host of new financial instruments entering the marketplace in recent years. There have been home-mortgage loans originated in which the loan-to-price ratio exceeded 100 percent. There were “interest-only” loans and loans in which all one would have to do was to state one’s income and no one would even bother to verify that income. In addition, there were a lot of independent mortgage originators – mortgage originators– not affiliated with U.S. financial institutions or lenders but stand-alone entities. Lots of them were regulated at the state level, not at the federal level. These institutions could earn fees by originating mortgages but then avoid any credit risk by letting other firms provide the funding. It was well known based on publicly available information that mortgages as a share of household debt were rapidly rising for a number of years, as the chart below shows.

Figure 15: Home mortgage share of household liabilities reaches a new high



Furthermore, households were increasing leverage and debt. All of this was fairly well known in the United States.

Figure 16: Households have increased leverage materially *household debts as % of disposable personal income*



As the chart below shows, the default rates on subprime mortgages were quite high within even a year or two of their origination. But this was not just a recent phenomenon, the problem occurred even before any rise in interest rates could only make matters worse.

Table 3: National subprime foreclosure rates rise (by origination year*)

Foreclosure rates in origination year and subsequent years	Origination Year								Year to July 2007
	1999	2000	2001	2002	2003	2004	2005	2006	
Originate year	1.30	1.50	1.85	1.07	0.82	0.86	0.97	2.56	3.01
1st year	6.33	6.86	7.17	5.51	4.14	3.93	6.38	7.69	
2nd year	5.46	6.01	5.81	4.55	3.11	3.66	4.66		
3rd year	4.85	3.35	4.23	2.37	2.23	1.85			
4th year	2.29	2.49	1.88	1.56	0.83				
5th year	2.05	1.19	1.17	0.59					
6th year	0.79	0.71	0.48						
7th year	0.56	0.30							
8th year	0.24								
Total number of foreclosures from origination through September 2007	188,026	165,801	140,195	124,781	127,100	176,729	231,360	140,278	13,272
Total number of originations	787,420	739,749	620,945	797,625	1,143,037	1,716,141	1,925,780	1,368,706	440,934
Foreclosure rate through September 2007	23.88	22.41	22.58	15.64	11.12	10.30	12.01	10.25	3.01

*Foreclosure rates are based on the number of loans starting foreclosure.

This means that it was not necessarily the 2/28s or the 3/27s that caused the problem. It was also not securitization, which some have cited as the villain. There were other factors at work. One has to be extremely careful not to stifle the innovation –and its benefits– that comes from competition by blaming the wrong factors when problems arise.

Another issue relates to information. In the United States, the Federal Trade Commission did a study showing that half the people who took out a mortgage loan did not know how much they were actually borrowing, and many did not know the total costs. So there is much more to be done in terms of educating American consumers about what it is that they are getting into when they take out a mortgage loan.

What about market discipline *versus* regulatory control over financial institutions? I recently co-authored a book about rethinking bank regulation. My co-authors and I discuss and analyze the best way to go about regulating and supervising banks and promoting competition. We look at different outcomes with respect to regulating and supervising banks. What we tend to find is that it is better not to impose stringent restrictions on activities in which banks can engage, and that deposit insurance, if not properly designed, can create serious moral hazard problems. We also believe that supervisors have a crucial role. They should support market discipline, not supplant it, and foster information disclosure.

We do, of course, believe that governmental actions are important. One has to more fully understand the reasons that governments choose to regulate their financial institutions in the way which they do. There have been a lot of banking laws enacted over the years in the United States. Most of these laws and implementing regulations, however, were in response to crises. They were not proactive in the sense of preventing crises. There were a few, though, that were not a response to a crisis but a response to market forces, such as the law that allowed the mixing of commercial and investment banking. Also, with respect to branching and banking nationwide, it was not until recently that the United States actually permitted its banks to expand more aggressively throughout the country.

In conclusion, there are a number of serious issues that merit further study in the attempt to best regulate and supervise the financial sector in countries around the world. One must be sure, however, to take into account the importance of promoting competition throughout the financial sector in ultimately any future regulatory reform that is undertaken.

Discussant

Nicholas Joicey, Director, International, HM Treasury UK

I think Andrew's and James' presentations together highlight three key issues that are very relevant to the competition theme we are discussing today. The first is how to ensure financial markets remain globally competitive while promoting safety and soundness; the second, how to ensure that financial markets meet the changing needs of business and promote innovation while ensuring an appropriate level of consumer protection; and the third, how to promote the free operation of financial markets across borders, reducing barriers to foreign and domestic entry while ensuring that the risks from integration are addressed.

What I want to talk about a little is the UK approach, as an example of how we are addressing some of those challenges, and also how these challenges are being met in the EU and internationally. Finally, I would like to say something about how we in the UK have responded to the recent financial turmoil and the serious issues this raises. Andrew referred to the UK consultation paper and I will pick up on some of the themes in that paper.

First of all, on the approach that we are taking in the UK, James's presentation highlights that the UK financial sector is characterized by its size, its global character and openness to investment. I should say that, in relation to the earlier discussion on openness to foreign investment, in the UK we have found that this stimulates dynamism and innovation.

The financial services legislation sets out statutory objectives for the Financial Services Authority, which rightly focus on maintaining market confidence, promoting public awareness and securing the appropriate degree of protection for consumers. However in meeting these objectives, the Financial Services Authority is guarded by a set of principles of better regulation, including that it should be proportionate, the desirability of facilitating innovation, the need to take into account global character of the UK's financial markets, and –particularly relevant to today's discussion– the need to minimise adverse effects on competition and the desirability of competition between firms.

Guided by these, the Financial Services Authority has been moving away from prescribed rules towards a more principles-based approach to regulation. An important feature of this principles-based approach is that it allows firms more flexibility to take decisions that are right for their businesses and more freedom to

innovate, so addressing some of the problems posed in James' presentation about how regulation can keep pace with market development. At the same time, it also places more responsibility on firms to ensure that they have appropriate management systems and controls in place. And, as also noted this morning, the principles-based approach undoubtedly needs to be complemented by steps that give consumers the tools to make effective decisions.

Second, in the EU and internationally, the challenge that has been highlighted this morning is how to legislate in a targeted way without putting in place an overly prescriptive and harmonized framework. We have seen a welcome focus in the EU on better regulation principles in the Commission's financial services strategy and, for example, the decisions to rely on an industry-led approach to clearing and settlement. As we get the legislative framework right, we also need to get the supervision of these markets right. Again, in the EU, the *Lamfalussy* arrangements, in particular the co-operation of national supervisors through the so-called level 3 committees, has provided a flexible approach to enhancing supervisory corporation and convergence. We welcome the further reforms that have been agreed to build on this and to strengthen their effectiveness.

Finally, let me say something about the current financial turmoil and the serious challenges it poses for improving the effectiveness of the financial system. The financial regulation system has rightly come under intense scrutiny in recent months in the UK and internationally. As Andrew noted, we have published a number of proposals for consultation. We propose reforms in five key areas. I will just outline those briefly.

The first one is in terms of strengthening the financial system through international action to increase stability and resilience by strengthening risk-management by banks, including stress testing and liquidity management; and improving the functioning of securitization markets, including through improvements in accounting and valuation procedures for complex structured products, and examining the role of credit-rating agencies.

Secondly, to reduce the likelihood of banks failing, we propose action to strengthen the regulatory and supervisory framework, including new powers for the Financial Services Authority to gather early information from banks on the basis of its risk-based assessments, and to share this information with the other members of the tripartite authorities, namely the Bank of England and the Treasury.

Thirdly, to reduce the impact of failing banks and to minimize the impact on financial stability, we propose to introduce a special resolution regime for banks, which will provide new options to deal with banks in difficulty.

Fourthly, to ensure effective compensation arrangements we are consulting on proposals on the limits of compensation and on the speed of payments on our compensation scheme.

Fifthly and finally, strengthening the Bank of England and improving coordination between the Tripartite authorities, including giving the Bank a statutory role to ensure financial stability and through a strengthened memorandum of understanding. At an international level, to improve surveillance of the financial sector through how we can use the analytical expertise of the IMF together with the regulatory expertise of the financial stability forum. Also, how we can prove financial crisis management arrangements.

It is clear that the recent events have raised significant issues that need to be addressed to strengthen the resilience of the financial system. They underscore the need to put in place the appropriate regulatory and supervisory frameworks to continue to secure the benefits financial globalization and competition can bring. This workshop and the G20 provide a valuable opportunity to share experiences on how best to do that.

Takamasa Hisada, Deputy Director-General International Department, Bank of Japan

It is a great honor for me to be here as a discussant for the two distinguished presenters. Let me first comment on Mr. Sheng's presentation, and then, I will show you Japan's experience for further discussions.

Mr. Sheng's presentation focuses on the current global financial turmoil triggered by the U.S. sub-prime problem. I agree that the excessive leverage and the moral hazard made the problem worse. On the liquidity issues, I myself think it would be constructive to distinguish the dry-up of market liquidity from the liquidity problems of individual banks caused by idiosyncratic factors, because the prescription would be different. It is an open question how we should redesign the rules and practices of the credit market transactions and to what extent we should require additional liquidity for individual banks.

A lesson we are learning now would be the importance of the stress-testing. Although it is already incorporated in the Basel II framework, we had better to recognize it once again. In this context, it is still an open question to what extent

we should require additional capital for individual banks in order to prepare for the tail event.

Let me turn to the Japan's experience on financial regulations and deregulations in relation to Mr. Barth's presentation.

In Japan, many financial regulations have been abolished or deregulated as the financial system changes (Slide 1). The abolition and deregulation were accelerated in 1996, when the Government declared the Japanese financial "Big Bang". That was aimed at encouraging competition among financial institutions and enhancing efficiency of the financial system, particularly through developing capital markets.

1. What is the optimal regulation?

- **Financial regulations have been abolished or deregulated in Japan**

- In order to encourage competition among financial institutions and to enhance efficiency of the financial system
- Japanese financial "Big Bang" in 1996 accelerated the abolishment and deregulation

- **Regulation is needed for the financial stability**

- In order to avoid the materialization of "systemic risk"
- Some financial regulations are aimed at the consumer protection and the other policy purposes to address the market failure
- How to design and incorporate the incentive mechanism is important

- **Optimal regulation changes**

- As the conditions of financial institutions and external environment change
- A regulation effective in the short-run might be harmful in the long-run
- How to balance the regulation needs and deregulation needs is important

1

On the other hand, regulations are needed to achieve the financial stability and other policy purposes. Consumer protection and depositor/investor protection measures are the examples. Anti-trust policy is another.

What I have learnt from the Japan's experience is that the optimal regulation changes, as the conditions of financial institutions and external environment change. A regulation effective in the short-run might be harmful in the long-run. Too gentle or protective regulations for banks might discourage banks improving their competitiveness. Therefore, it is entirely essential to realize a good balance between the regulation needs and deregulation needs. It is easy to say so, but may be difficult in practice.

Then, let's quickly review Japan's regulatory instruments in the past and present (Slide 2-3).

1. Interest rate regulations were abolished gradually in the 1970s and 80s, and fully abolished in 1994. Only exception is an interest rate cap for consumer finance, to protect consumers from loan-sharks.
2. Branching restriction was abolished in 1997, and merger requirements have been substantially eased. Triangular merger was liberalized and introduced in 2007. Citi Group's acquisition of Nikko Cordial Group, one of the big three Japanese securities houses, was the first case of the triangular merger in Japan.
3. New financial products and services were required to obtain permission from the authority up until 1990s, in order to protect weaker banks from competition. But that kind of administrative guidance was abolished in principle in the late 1990s.
4. Reserve requirement is imposed on banks, but that is getting less important as a regulatory instrument.
5. Deposit insurance is an important instrument for financial stability.
6. Capital requirement is very important to achieve financial stability. Japan introduced the Basel II at the end of March last year. Financial technology is getting more advanced and complex, sophisticated risk management system is indispensable.

2. Regulatory instruments

- **Interest rate regulations**
 - Gradually deregulated from 1970s, finally abolished in 1994
 - Except for the regulation on the loan-shark type consumer finance
- **Entry, branching and merger restriction**
 - Branching restriction was abolished in 1997
 - Triangular merger was introduced in 2007
- **New product/service restriction**
 - Abolished unless interfering with other regulations
 - So-called "Convoy System" was abandoned in the 1990s
- **Reserve requirement**
 - Getting less important as a regulatory instrument
 - Capital requirement is getting more important

3. Regulatory instruments - 2

- **Deposit insurance**
 - An important instrument for financial stability
 - A blanket guarantee by the Government was introduced in 1996 and lifted in 2005
- **Capital requirement**
 - Japan introduced the Basel II at the end of March 2007
 - AIRB and AMA are to be introduced at the end of March 2008
- **Regulation on the scope of business**
 - Universal banking is not allowed in Japan
 - Active discussions are on going about the banks' scope of business
- **Accounting standards, auditing, tax system, and rules on corporate governance are getting important**

3

Beside the traditional regulatory instruments, accounting standards, auditing, tax system and rules on corporate governance are getting more important for the sound development of the financial sector.

I would like to draw your attention to two new steps forward with regard to the financial regulation in Japan (Slide 4).

The first one is the introduction of the “financial instruments and exchange law” enacted last September. Now all the financial transactions across the board

4. New steps forward

- **Introduction of “Financial Instruments and Exchange Law” in 2007**
 - Background is the increasing variety and complexity of financial products/ services, and the fading border between banks and non-banks
 - It is an important step for the functional approach of the regulation
 - Consumer protection is incorporated in the law
- **Discussions on the separation of the banking and securities business**
 - Background is the fading border between the banking business and the securities business, customers' increasing needs for more advanced products/services
 - The separation has been justified by the banks' overwhelming power over borrower firms, the conflict of interests and the firewall consideration
 - The U.S. introduced the Gramm-Leach-Bliley Act in 1999, in place of the Glass-Steagall Act

4

are comprehensively ruled by the law. Japan's regulations are basically institutional ones, but the border of institutions or business lines is fading. I think the introduction of the law is an important step for the functional approach of regulations.

The second one is on the scope of bank's business. The universal banking is not allowed in Japan. The separation of the banking and the securities business has been justified by the overwhelming bank's power over borrowing firms, conflict of interests and fire wall between the two businesses. But recently, the border between the banking business and the securities business is fading. On the other hand, customers' needs are getting more advanced and complex. Banks now claim that the restriction on the scope of business is an obstacle for strengthening their competitiveness and meeting customers' needs. Although the issue is still under discussion, it is likely that the banks' scope of business would be expanded to the securities businesses.

I will touch upon Japan's regulatory authorities and the division of labor among them (Slide 5-6).

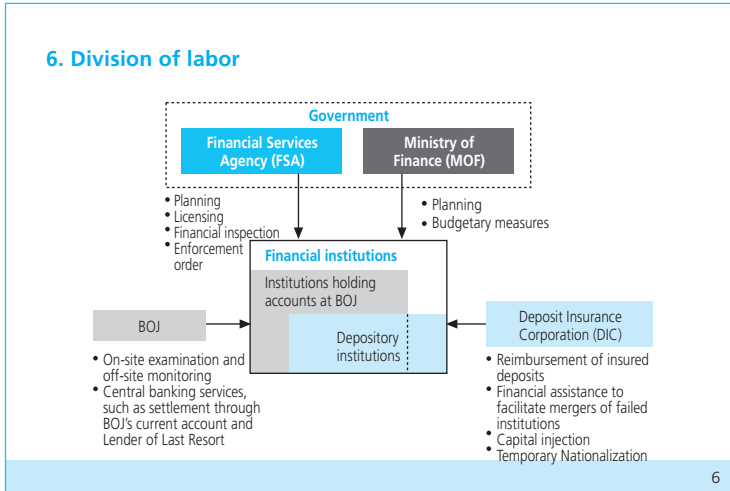
5. Japan's financial authorities

- **Financial Services Agency**
 - Regulator and supervisor of all financial institutions
 - Conducts on-site inspections
 - Established as the Financial Supervisory Agency in June 1998, and reorganized to the Financial Services Agency in July 2000
- **Bank of Japan**
 - Responsible for the lender of last resort function
 - Conducts on-site examination based on contracts with financial institutions that hold current deposit accounts at the Bank of Japan
- **Deposit Insurance Corporation of Japan**
 - Provides insurance
 - Deals with bank resolution, including public money injection
- **Ministry of Finance**
 - Responsible for fiscal expenditures

5

In Japan, Government established the Financial Supervisory Agency (FSA) in 1998, amid the serious financial difficulties (The FSA was reorganized to the Financial Services Agency in 2000). Before that, the Ministry of Finance was responsible for the regulation and supervision of banks, security houses and insurance companies. The establishment of the FSA was intended to detach the

6. Division of labor

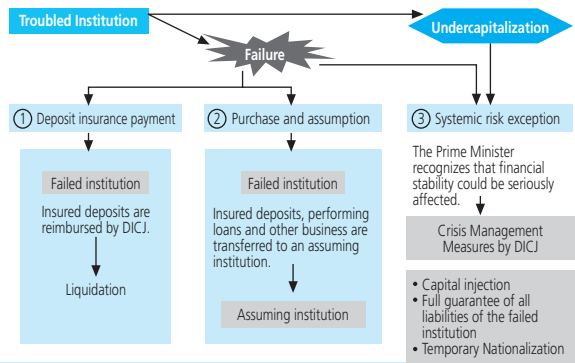


regulatory and supervisory function from the budgetary authorities and strengthen it, and to cover all the financial institutions across the board. The regulatory and supervisory authorities had to respond to the serious financial difficulties then. At the same time, I think there was an understanding that the authorities had to respond to the fading border between banks and other financial institutions.

Division of labor is shown on the slide (Slide 6). One unique characteristic here is that the Bank of Japan conducts on-site examination of banks, apart from the FSA's inspections. 'As Professor Alan Blinder wrote, some sort of bank supervision function may be important for the central bank not only to contribute to the maintenance of the financial stability, but also to better conduct monetary policy.

At last but not least, I believe a transparent bank resolution scheme with a clear loss sharing rule and a crisis management scheme are important bases for the sound competition and financial stability (Slide 7-8).

7. Bank resolution scheme



7

8. Crisis management

- **Financial System Management Council** judges whether the ailing financial institution has a systemic risk
- The council consists of Prime Minister, Chief Cabinet Secretary, Minister for Financial Services, Commissioner of the FSA, Minister of Finance, Governor of the Bank of Japan
- When the case is judged as systemic, the following measures are taken

	Solvency/Cases	Loss Sharing
Capital Injection	Solvent, e.g. Resona Bank (May 2003)	<ul style="list-style-type: none">• Public: (injected capital)• Others: none
Financial Assistance in excess of pay-out cost limit	Insolvent	<ul style="list-style-type: none">• Public: pay-out costs + excess above payout costs• Shareholders: lose the value of their shares• Managers: lose their jobs etc.• Depositors & Creditors: none
Temporary Nationalization	Insolvent, e.g. Ashikaga Bank (Nov.2003)	

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SESSION 3B

Challenges for Regulation and Stability: Stability

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Bank Competition and Financial Stability: Friends or Foes?

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abstract

Theory makes ambiguous predictions about the relationship between market structure and competitiveness of the banking system and banking sector stability. Empirical studies focusing on individual countries provide similarly ambiguous results, while cross-country studies point mostly to a positive relationship between competition and stability in the banking system. Where liberalization and unfettered competition has resulted in fragility, this has been mostly the consequence of regulatory and supervisory failures. The advantages of competition for an efficient and inclusive financial system are strong, and regulatory and supervisory policies should focus on an incentive-compatible environment for banking rather than try to fine-tune market structure or the degree of competition.

¹ Tilburg University, previously: World Bank. This paper was written for the G20 Seminar on Competition in the Financial Sector in Bali, February 2008 and builds on joint work with Asli Demirgüç-Kunt and Ross Levine. Comments from Stijn Claessens and participants at the G20 Seminar in Bali are gratefully acknowledged. This paper's findings, interpretations, and conclusions are entirely those of the author and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

1. Introduction

Stability concerns are often at the center of banking sector policy debates. After a relatively stable period between World War II and the 1970s, developed and developing countries alike have been hit by banking crises in the three decades since then. While the early years of the 21st century have seen a period of relative banking system stability around the world, recent turbulences linked to the U.S. subprime crisis have again caused concerns for policy makers, even in emerging economies that are not at the center of the storm.

Competition in the banking market has been at center of the policy debate on financial stability. As in other, non-financial, markets competition is often seen as pre-requisite for an effective banking system. Several theoretical and empirical studies, however, have shed doubts on this proposition, claiming that monopoly rents gives banks higher incentives to invest in relationships with smaller and more opaque borrowers.² Similarly, theoretical and empirical studies have not come to a conclusive finding on the relationship between banking market competition and stability. There is a notion that excessive competition can lead to fragility and restraints on competition are necessary to preserve the stability of the banking system. Activity and branching restrictions put in place after the financial crises of the 1930s in many industrialized countries had the explicit goal of restricting competition. Financial liberalization in the 1970s and 1980s resulting in unchecked competition, on the other hand, has often been blamed for subsequent banking fragility in many developed and developing countries. Unfettered competition in the U.S. financial system has been partly blamed for the recent boom and subsequent bust in the subprime mortgage market.

The past decades have also seen a rapid consolidation of banks around the world, which is intensifying concerns among policymakers about bank concentration, as reflected in major reports by the Bank for International Settlements (2001), International Monetary Fund (2001), and the Group of Ten (2001). This consolidation has happened not only within countries, but also across countries. The past decades have seen a wave of foreign bank entry in many developing countries, and, more recently, there have also been cross-border mergers in many developed financial systems, most notably within Europe. Consolidation has happened both within business lines but also across business

2 While theory and some empirical work suggest that market power might entice banks to invest in long-term relationships with small and opaque enterprises as they know that they can regain the initial investment in the relationship at a later stage (Petersen and Rajan, 1995; Bonaccorsi di Patti and Dell'Ariccia, 2004), other empirical papers point to the healthy effect of competition on availability of lending to SMEs (Cetorelli and Strahan, 2004; Beck, Demirgüç-Kunt and Maksimovic, 2004). See Berger *et al.* (2004) for an overview.

lines, resulting in financial conglomerates that offer commercial and investment banking, insurance and pension fund services. While consolidation has often been justified by efficiency and scale economy arguments, the process of consolidation and the resulting financial conglomerates have given rise to stability concerns. Specifically, the size and complexity of these institutions might undermine proper regulation and supervision by both markets and authorities; their size and critical role across different segments of financial systems might make it difficult for authorities to intervene and potentially close such as institutions, a phenomenon known as “too-big” or “too-important-to-fail.”

What are the effects of bank competition and the consolidation process on the stability of banking systems around the world? While seemingly opposing trends, consolidation does not necessarily imply less competition, as such consolidation can take place across different business lines or markets or create fewer, but more competitive players. Both competition and consolidation, however, have raised stability concerns among policy makers. This paper summarizes the existing literature and tries to derive policy conclusions. This is an important topic for policy makers for several reasons. First, given different policy goals such as deepening, broadening and stability of financial systems, it is important to understand whether there are trade-offs across these different policy goals with respect to competition. Second, given the array of regulatory policies at the disposal of policy makers, it is important to understand how they affect competition and stability as well as how they vary across different competitive environments in their effect on stability.

The discussion on the relationship between bank competition and stability has been made difficult by measuring both stability and competition appropriately, as we will discuss in section 2. While we will not review exhaustively the literature on banking distress or on measuring bank competition, understanding both concepts is important for the remainder of the discussion. Section 3 turns to the theoretical literature, which has derived different predictions concerning the effect of competition on bank stability. Albeit sometimes arbitrary, for presentational purposes, we organize the literature into two opposing views, the competition-stability and competition-fragility hypotheses. Section 4 presents the results of empirical studies. We distinguish between bank-level studies focused on one country, on the one hand, and more recent cross-country studies, on the other hand. While the bank-level studies do not provide unambiguous findings on the relationship between competition and stability, cross-country studies point mostly to a positive relationship. In addition, the review of the theoretical and empirical literature allows two conclusions: first, it is important to consider the interaction

of regulatory policies and market structure and, second, bank concentration is not an appropriate measure of bank competition and any effect of bank concentration on stability works through channels other than bank competition. Section 5 uses the theoretical and empirical findings to define the policy space for policy makers, also taking into consideration the related literature on bank regulation and banking system stability. Section 6 concludes and points to future research directions.

It is important to define, what this paper does not cover. First, the paper is focused on domestic bank competition; the increased financial integration in the EU –while of increasing importance for policy makers and regulators– will not be specifically touched upon in this paper. Second, an important dimension of competition, as pointed out by Claessens and Laeven (2004), is foreign bank entry. While we do not cover this literature in this paper, our policy discussion will make reference to the findings of this literature. It remains to be stressed that this paper reflects the current state of knowledge. As discussed in the Conclusions, more research is needed, especially in light of new markets and products.

2. Measuring stability and competition

In order to test the relationship between stability and competition, we need appropriate measures of both. Bank stability is mostly measured in a negative way, i.e. by considering individual or systemic bank distress. Systemic banking distress can be broadly defined as periods where the banking system is not capable of fulfilling its intermediation function (deposit taking, lending, payment services) for the economy effectively anymore. In this paper, we follow the definition by Demirgüç-Kunt and Detragiache (1998, 2002) who define banking distress as systemic if (i) non-performing assets reached at least 10 percent of total assets at the peak of the crisis, (ii) the fiscal cost of the rescue operations was at least 2 percent of GDP, (iii) emergency measures, such as bank holidays, deposit freezes, blanket guarantees to depositors or other bank creditors, were taken to assist the banking system, or (iv) if large-scale bank nationalizations took place.³ More difficult than defining a crisis is the exact timing, i.e. the start and the end year, and most cross-country papers therefore subject their analysis to alternative definitions of the exact crisis periods.

Using this definition of systemic banking crises, Honohan and Laeven (2005) find 116 systemic banking crises in 113 countries over the period 1974 to 2002,

³ See also Caprio and Klingebiel (1999).

which illustrates how widespread financial crises have become across the globe (Figure 1). Both developed and developing countries have been hit by systemic crises, with fiscal costs of up to 55% of GDP in Argentina in the early 1980s. The 1980s and 1990s have been characterized by a relatively large number of banking crises. During this period, at least 20 countries were in a systemic banking crisis at the same time; ranging from such diverse countries as Japan and U.S. to Argentina and West Africa. In addition to systemic crises, there were numerous nonsystemic banking crises, which disturbed the normal functioning of banking business.

While systemic banking crises top the list of bank supervisors' and policy makers' concerns, individual bank fragility can also be worrying, as it puts countries' financial safety net under pressure (Beck, 2004). Several systemic banking crises have started as crises in individual banks. Furthermore, the failure of large international banks present in several countries can have important repercussions for cross-border financial activities, as the example of Herstatt in 1974 has shown. Today's important cross-border financial sector dependencies have become clear in the recent crisis when first signs of distress in the U.S. subprime market showed up in several German banks.

Individual banks distress can be measured in terms of proximity to bankruptcy or entry into bankruptcy. Specifically, researchers often use the z-score, which is the sum of capital-asset ratio and return on assets, weighted by the standard deviation of return on assets (Boyd, de Nicoló and Jalal, 2006). The resulting ratio indicates the number of standard deviations in return on assets that a bank is away from insolvency and thus the likelihood of failure. Alternatively, researchers have used the non-performing loan ratio as fragility indicator. Unlike the z-score, this measure focuses on credit risk and cannot be related directly to the likelihood of failure. Neither of the two measures considers actual failure of banks.

Even more difficult than measuring bank stability is measuring bank competition. Here, the literature has used a variety of measures, which can be broadly classified into three groups. First, there are market structure measures such a concentration ratios, number of banks or Herfindahl indices. These indicators measure the actual market shares without allowing inferences on the competitive behavior of banks. They are rather crude measures that do not take into account that banks with different ownership behave differently and that banks might not compete directly with each other in the same line of business. Most importantly, the literature has not come to a conclusion on whether market structure determines

bank behavior (structure-conduct-performance hypothesis) or market structure is the result of performance (efficient structure hypothesis).⁴

Second, competition measures, such as the H-Statistics, which measures the reaction of output to input prices, gauge the competitive behavior of banks, but impose certain restrictive assumptions on banks' cost function. Specifically, under perfect competition, increases in input prices cause total revenue and marginal cost to move together, while in imperfect competition they do not. However, the inference from this measure derived from the profit-maximizing condition is only valid if the market in question is in equilibrium. Estimates of the H-Statistics vary widely, as the studies by Claessens and Laeven (2004) and Bikker and Spierdijk (2007) show. Similarly, the Lerner index indicates a bank's market power by considering the ratio between marginal cost and price, which should be equal in perfect competition, but will diverge in less competitive environments. Specifically, the ratio of price to marginal cost decreases in the degree of competitiveness. Importantly, the price has to be properly adjusted for lending risk.⁵

Third, indicators of the regulatory framework can provide indications of the contestability of the banking system. Such measures include entry requirements, formal and informal barriers to entry for domestic and foreign banks, activity restrictions and other regulatory requirements, which might prevent new entrants from challenging incumbents. However, one can include even the wider institutional framework among these indicators, such as the contractual and informational framework, a topic to which we will return to in section 5.

An additional challenge in measuring competition is to properly define the relevant market. Cross-country studies typically define an economy as the relevant market, not necessarily a correct assumption. Studies for the U.S. have typically focused on the Metropolitan Statistical Areas (MSAs) as the relevant market. Further, market structure and competition indicators are typically measured on the institutional level, rather than the product level; i.e. competition is assumed to be the same across different product lines, such as deposit, lending and payment services.

⁴ See Berger *et al.* (2004) for a discussion of this literature.

⁵ Other performance measures such as interest rate spreads and margins are not necessarily good indicators of the competitiveness of a banking system as they are driven by other bank- and country-specific factors, such as bank size and business, contractual framework, taxation and macro performance. See Beck (2007) for a discussion.

3. Bank competition and stability: What does theory predict?

Theoretical models have made contrasting predictions on the relationship between bank concentration, competition and stability.⁶ These predictions might differ in static and dynamic models and have important interactions with elements of the regulatory framework, such as deposit insurance. Most theoretical models do not make a distinction between market structure, such as concentration, and competition, but rather assume a one-to-one mapping from market structure to competitive behavior of banks. In the following, we will summarize the theoretical literature under two headings, depending whether the model predicts a positive or negative relationship between competition and stability.

3.1. Competition-fragility hypotheses

Some models predict that more concentrated and less competitive banking systems are more stable, as profits provide a buffer against fragility and provide incentives against excessive risk taking. This “charter value” view of banking, as theoretically modeled by Marcus (1984), Chan, Greenbaum and Thakor (1986), and Keeley (1990), sees banks as choosing the risk of their asset portfolio. Bank owners, however, have incentives to shift risks to depositors, as in a world of limited liability they only participate in the up-side part of this risk taking. In more competitive environment with more pressures on profits, banks have higher incentives to take more excessive risks, resulting in higher fragility. In systems with restricted entry and therefore limited competition, on the other hand, banks have better profit opportunities, capital cushions and therefore fewer incentives to take aggressive risks, with positive repercussions for financial stability. In addition, in more competitive environment, banks earn fewer informational rents from their relationship with borrowers, reducing their incentives to properly screen borrowers, again increasing the risk of fragility (Boot and Greenbaum, 1993; Allen and Gale, (2000, 2004). These models thus predict that deregulation resulting in more entry and competition, such as in the U.S. in the 1970s and 80s and in many emerging markets, would lead to more fragility.

More concentration and less competition can also have positive repercussions for liability risk. Smith (1984) shows that less competition in banking leads to more stability if information about the probability distribution of depositors’ liquidity needs is private and lower competition allows banking relationships to

⁶ See Carletti and Hartmann (2003) for an in-depth literature survey and Allen and Gale (2004) for an excellent exposition on the different theoretical mechanisms that can lead to contrasting relationships between competition and stability.

endure for longer periods. Matutes and Vives (1996), however, argue that concentration is not a consistent signal of competition, so that bank illiquidity can arise in any market structure. Specifically, a bank's distress probability is determined endogenously by depositors' expectations resulting in the possibility of multiple equilibriums.

Another channel through which competition can impact stability is the interbank market and payment system. As shown by Allen and Gale (2000), perfect competition can prevent banks to provide liquidity to a peer that is hit by a temporary liquidity shortage. If all banks are price takers, no bank has incentive to provide liquidity to the troubled bank, with the result that this bank will eventually fail with negative repercussions for the whole sector. Saez and Shi (2004), on the other hand, show that a limited number of banks can cooperate, act strategically and help a bank with temporary liquidity shortages.

What regulatory policies can enhance banks' charter value and thus prudent risk taking? Deposit insurance can reduce fragility by preventing bank runs (Diamond and Dybvig, 1983), but also introduces moral hazard and risk shifting into the banking system by providing increased incentives to banks to take excessive risk and reduced incentives for market participants to monitor. A reduction in charter value and more generous deposit insurance can thus act in a multiplicative way to undermine bank stability. Matutes and Vives (1996) show that deposit insurance schemes can prevent a systemic confidence crisis and overcome the coordination failure problem in their model of multiple equilibriums. At the same time, however, deposit insurance schemes can increase unhealthy competition between banks, reduce diversification benefits and ultimately increase failure probability. Cordella and Yeyati (2002) show that with fixed-rate deposit insurance schemes, higher competition increases deposit interest rates and risk, while lowering profits. With risk-adjusted deposit insurance premiums, on the other hand, banks can credibly commit to lower asset risk, thus lowering cost of funding even in competitive environments. Perrotti and Suarez (2003) show that bank failure policies that aim for mergers of failing banks with healthy banks increase the incentives of banks to take prudent risk, as the "last bank standing" increases its charter value. At the same time, an active entry policy can reduce negative effects of increasing concentration in the banking market. The model by Perotti and Suarez also underlines the importance of taking into account dynamic incentive effects for banks.

Another popular regulatory measure is a minimum capital requirement for banks, to thus boost the charter value and reduce incentives for excessive risk taking. Hellmann, Murdock, and Stiglitz (2000), however, show that even with

capital requirements, deposit interest rate ceilings are still necessary to prevent banks from excessive risk-taking in competitive markets.

A somewhat different argument of proponents of the competition-fragility hypothesis is that more concentrated banking systems have larger banks, which in turn allows them to better diversify their portfolios. Models by Diamond (1984), Ramakrishnan and Thakor (1984), Boyd and Prescott (1986), Williamson (1986), Allen (1990), and others predict economies of scale in intermediation. While the “large-bank” argument does not rely directly on competition in the market place, it is an important side effect of market structure.

A final argument refers to the number of banks to be supervised by the authorities. If a more concentrated banking system implies a smaller number of banks, this might reduce the supervisory burden and thus enhance overall banking system stability. According to Allen and Gale (2000), the U.S., with its large number of banks, supports this “competition-fragility” view since it has had a history of much greater financial instability than the U.K or Canada, where the banking sector is dominated by fewer larger banks. As in the case of bank size, this argument is about the market structure in banking, not the competition that this implies.

3.2. Competition-stability hypotheses

While the charter-value hypothesis predicts that more concentrated and less competitive banking systems are more stable, an opposing view is that a more concentrated banking structure results in more bank fragility. First, Boyd and De Nicoló (2005) argue that the standard argument that market power in banking boosts profits and hence bank stability ignores the potential impact of banks’ market power on firm behavior. Rather than banks choosing the riskiness of their assets, it is the borrowers who choose the riskiness of their investment undertaken with bank loans. They confirm that concentrated banking systems enhance market power, which allows banks to boost the interest rate they charge to firms. Boyd and De Nicoló (2005) theoretical model, however, shows that these higher interest rates may induce firms to assume greater risk, which results in a higher probability that loans turn non-performing. Thus, in many parameterizations of the model, Boyd, and De Nicoló (2005) find a positive relationship between concentration and bank fragility and thus the probability of systemic distress.⁷ Similarly, Caminal and Matutes (2002) show that less competition can lead to less

⁷ Martínez-Miera (2008), however, shows that higher interest rates also imply higher interest revenues for banks, which might result in a U-shaped relationship between competition and bank fragility.

credit rationing, larger loans and higher probability of failure if loans are subject to multiplicative uncertainty.

Second, advocates of the “competition-stability” view argue that (i) relative to diffuse banking systems, concentrated banking systems generally have fewer banks and (ii) policymakers are more concerned about bank failures when there are only a few banks. Based on these assumptions, banks in concentrated systems will tend to receive larger subsidies through implicit “too-big” or “too important to fail” policies that intensify risk-taking incentives and hence increase banking system fragility (e.g., Mishkin, 1999). Further, having larger banks in a concentrated banking system could also increase the contagion risk, resulting in a positive link between concentration and systemic fragility.

Proponents of the competition-stability view would also disagree with the proposition that a concentrated banking system characterized by a few banks is easier to monitor than a less concentrated banking system with many banks. The countervailing argument is that bank size is positively correlated with complexity so that large banks are harder to monitor than small banks. Holding all other features of the economy constant, concentrated banking systems tend to have larger banks. Further, the recent consolidation trend has also led to financial conglomerates offering a whole array of financial services, previously offered by specialized institutions, another complicating factor for bank supervisors. Thus, this argument predicts a positive relationship between concentration and fragility.

4. Bank competition and stability: What do the data tell us?

We can distinguish between several strands of empirical literature, which allow us to infer on the relationship between market structure, competition and stability. Up until recently, the literature either focused on one country or on the comparison of two countries. Only recently, the availability of large cross-country, time-series data sets has enabled cross-country studies to assess the relationship between competition and stability.

4.1. Bank-level evidence

In a seminal paper, Keeley (1990) provides evidence that increased competition following the relaxation of state branching restrictions in the 1980s reduced banks’ capital cushions and increased risk premiums reflected in higher interest rates on certificates of deposit. Overall, this suggests that higher competition in the U.S. eroded charter values and resulted in higher bank fragility in the 1980s. This is consistent with Dick (2006) who finds evidence of increased

charge-off losses and loan loss provisions following deregulation in the 1990s, but contradicts findings by Jayaratne and Strahan (1998) who find that branch deregulation resulted in a sharp decrease in loan losses. Jiménez, Lopez, and Saurina (2007) find for a sample of Spanish banks for the period 1988 to 2003 that banks with higher market power, as measured by the Lerner index, have lower non-performing loans, thus providing evidence for the charter value hypothesis. Notably, they do not find any significant relationship between market structure, as measured by concentration ratios, and non-performing loan ratios.

As discussed by Calomiris (2000) and Calomiris and Mason (2000), an extensive literature finds an inverse relationship between bank scale and bank failure in the United States. Boyd and Runkle (1993), examining 122 U.S. bank holding companies, find that there is an inverse relationship between size and the volatility of asset returns, but no evidence that large banks are less likely to fail. Boyd and Graham (1991, 1996) find that large banks were more likely to fail in the U.S. during the period 1971 to 1986, but less likely in the period 1987 to 1994. De Nicoló (2000), on the other hand, finds a positive and significant relationship between bank size and the probability of failure for banks in the U.S., Japan and several European countries.

An extensive strand of literature infers the effect of market structure and competition on bank fragility by assessing the effect of mergers creating larger banks and increasing market concentration. Paroush (1995) points to higher bank stability caused by increases in market power stemming from diversification gains after mergers. Benston, Hunter and Wall (1995) and Craig and Santos (1997) also point to positive diversification and thus stability gains from bank mergers in the U.S. However, empirical work by Chong (1991) and Hughes and Mester (1998) indicates that bank consolidation tends to increase the riskiness of bank portfolios.

De Nicoló and Kwast (2001) assess the direct and indirect interdependencies of large and complex U.S. banking organizations (LCBO) arising from inter-bank on- and off-balance sheet exposures, including linkages through the payment and settlement systems by considering the correlation of their stock returns. They find that these correlations increased between 1988 and 1999, as did the market share for these LCBOs, interpreting this as evidence for an increase in systemic risk in the U.S. banking system, partly as consequence of consolidation.

A few descriptive studies have compared banking market structures and stability across pairs of countries. Bordo, Redish and Rockoff (1996) observe a greater stability of Canadian banks than of U.S. banks and relate this to the oligopolistic market structure in Canadian banking, compared to the higher degree

of competition in U.S. banking. On the other hand, in spite of higher profitability, there are no indications of less competition in the Canadian market. Comparing the UK and German banking systems, Hoggarth, Milne and Wood (1998) find more competition and less stability in the UK; Staikouras and Wood (2000) find more competition and more stability in the Spanish than in the Greek banking system.

Summarizing, there is no clear conclusion from these different empirical studies on the validity of either the competition-stability or the competition-fragility hypotheses. Two conclusions, however, can be drawn. First, a higher degree of market concentration does not necessarily imply less competition. Specifically, testing for the relationship between market structure and stability and for the relationship between competitiveness and stability does not necessarily yield the same results. Second, as predicted by several theoretical studies, there is an important interaction effect between the regulatory and supervisory framework, on the one hand, and market structure and competitiveness, on the other hand, in their effect on banking system stability.

4.2. Cross-country studies

The recent availability of large cross-country time-series datasets has initiated a new wave of literature assessing the validity of the different theoretical models. Beck, Demirgüç-Kunt and Levine (2006 a,b) build on the crisis prediction work by Demirgüç-Kunt and Detragiache (1998, 2002) to assess the competition-stability and competition-fragility hypotheses. Specifically, using standard panel logit models, they assess whether the probability that a country suffers a systemic banking crisis in a specific year depends on the concentration of the banking system, controlling for other banking system, macroeconomic and institutional factors that the literature has shown to be associated with the probability of a banking crisis. They find that more concentrated banking systems are less likely to suffer systemic banking crises, a finding that is robust to a number of different specifications and controlling for an array of other factors potentially associated with crises. Table 1 presents these results for a sample of 69 countries and 47 crisis episodes over the period 1980 to 1997. These findings hold when they control for general measures of bank competition. When analyzing the channels through which concentration might be positively associated with banking system stability, they find tentative evidence that more concentrated banking systems allow better possibilities for banks to diversify risk. On the other hand, they do not find any evidence, that it is easier for bank supervisors to monitor more concentrated banking systems or that the higher stability results from the market

power and consequent franchise value of banks in more concentrated banking systems. Bank concentration is thus not an indicator of the lack of competition. Rather, more competitive banking systems are also less likely to suffer systemic banking distress.

Boyd, de Nicoló and Jalal (2006) arrive at a different conclusion using bank-individual fragility data. Rather than focusing on systemic bank distress, they use the z-score, a bank-level measure of distance from insolvency as fragility indicator. Unlike Beck *et al.* (2006a,b), they find banks are closer to insolvency, i.e. more likely to fail, in countries with more concentrated banking systems. Cross-country results on the effect of concentration thus vary depending on whether one considers individual bank fragility or systemic banking distress. It is important to note, however, the different concepts these studies consider –actual systemic banking distress vs. the probability of individual bank fragility; the latter might not necessarily result in the former.

Schaeck, Cihak and Wolfe (2006) find a negative relationship between bank competition and systemic bank fragility using a more refined measure of competition in the banking market –the H-Statistics. Specifically, using a sample of 38 countries over the period 1980 to 2003, they show that more competitive banking systems are less prone to systemic distress and that time to crisis is longer in more competitive banking systems (Table 2).⁸ Unlike Beck, Demirgüç-Kunt and Levine, however, they do not find an independent link between bank concentration and systemic banking fragility. The differences in this finding, however, could be due to the smaller sample utilized by Schaeck, Cihak and Wolfe. Schaeck and Cihak (2007) identify bank capitalization as one of the channels through which competition fosters stability. Utilizing data for more than 2,600 European banks, they show that banks have higher capital ratios in more competitive environments.

Finally, there is cross-country evidence that regulatory policies that restrict entry and banks' activities are negatively associated with bank stability. Specifically, Barth, Caprio and Levine (2004) and Beck *et al.* (2006 a,b) find that banking systems with more restrictions on banks' activities and barriers to bank entry are more likely to suffer systemic banking distress, while capital regulations are not significantly associated with the likelihood of suffering a crisis. Limiting

8 Levy Yeyati and Micco (2007) find different results for a smaller sample of eight Latin American countries in the 1990s. Specifically, they find that banks in more competitive banking systems are more fragile, as measured by the z-score and the non-performing loan ratio. This contrasting result might be explained by the contemporaneous increase in foreign bank penetration in these countries, which resulted in lower competition.

contestability of the banking sector thus seems to undermine rather than to strengthen bank stability, a result contradicting the charter value hypothesis.

Overall, the cross-country evidence points mostly to a positive relationship between bank competition and stability, but yields mixed results on the relationship between concentration and stability. This also underlines that market structure measures, such as concentration ratios are inadequate measures of bank competition. Higher concentration might result in more stability through channels other than lack of competitiveness, such as improved risk diversification. The rather clear picture arising from the cross-country studies is somewhat in contrast to the ambiguous findings emerging from country-specific bank-level studies, which can be explained by the fact that the latter do not control for the regulatory framework.

5. Bank competition and stability: policy implications

The empirical cross-country results point to overall positive effects of competition on stability, while they yield contradictory results on the relationship between bank concentration and stability. They also underline that crude market structure measures, such as concentration ratios, are not good measures of competition. Overall, maintaining a competitive and contestable banking system seems to have positive repercussions for stability. At the same time, allowing growth of banks even if it implies more concentrated banking systems might have benefits in terms of risk diversification.

While the empirical findings reported so far have important policy implications, it is difficult, for several reasons, to translate them directly into a policy agenda. First, market structure, such as the number of bank or market share of the largest banks, is not directly subject to policy actions in market-based financial systems. Second, many regulatory measures that are associated with banks' competitive behavior have other, more direct, effects on bank stability than through their effects on competition. We will discuss these different regulatory policies in turn.

A large literature has pointed to the risks of financial liberalization in a weak institutional environment (Demirgüç-Kunt and Detragiache, 1999). This literature points to the dark side of competition in terms of its relationship with individual and systemic bank fragility. Most importantly, theory and international experience with liberalization episodes over the past thirty years show that liberalization in an environment where banks can shift risk to the taxpayer leads to excessive and imprudent risk taking, often resulting in systemic banking distress.

Most recently, the sub-prime crisis in the U.S. has shown how an increase in the number of competing lenders can result in declining lending standards at times of loose monetary policy and financial innovation such as securitization that allowed easier risk shifting (Dell'Ariccia, Igan, and Laeven, 2008). While proper regulatory safeguards (entry requirements, capital regulations, liquidity requirements etc.) and effective bank supervision are important, an incentive compatible financial safety net that forces banks to assume the consequences of their risk decisions seems especially important.

It is in this context, that restrictions on banks' activities have often been imposed to prevent financial conglomerates from emerging. Similarly, deposit interest rate ceilings and other restrictions have been proposed to prevent unhealthy competition and excessive risk taking leading to fragility (Hellmann, Murdock, and Sitglitz, 2000). While theoretically attractive, they are difficult to implement, monitor and enforce in reality, especially in the weak institutional environment they are designed for and might prevent banks from reaping necessary diversification and scale benefits. Critically, they can easily serve as cover for rent-seeking activities, allowing incumbent banks to protect their rent, and can result in political regulatory capture. Not surprisingly, Kroszner and Strahan (1999) find that the strength of lobby groups related to small banks and insurance companies –segments of the financial sector standing to lose from branch deregulation in the U.S.–determined the speed with which states abandoned branching restrictions in the 1970s and 80s. Mexico offers a well-studied example, where regulatory capture led to a suboptimal privatization process and subsequent bank distress in the 1980s and 90s (Haber, 2005).⁹

The role of deposit insurance schemes has been especially controversial. While often introduced to protect small depositors' lifetime savings and to prevent bank runs, they also provide perverse incentives to banks to take aggressive and excessive risks. These perverse incentives are held less in check in weak supervisory frameworks (Demirgüç-Kunt and Detragiache, 2002). While several of the theoretical studies discussed above point to risk-based premiums as solution, other elements such as management of the scheme, compulsory membership and link with the remainder of the financial safety net are important characteristics as well (Demirgüç-Kunt and Kane, 2002; Beck and Laeven, 2008)).

Another important area that interacts with competition is bank failure resolution, as shown by Perrotti and Suarez (2003). A combination of an active

9 See Haber and Perotti (2008) for a recent survey on the relationship between politics and finance.

merger and acquisition policy for banks and a liberal entry policy can give banks incentives to take prudent risks, while at the same time maintaining contestability of the banking system. An important issue in the context of increasing consolidation has been the issue of “too-big” or “too-important-to-fail” banks. A clear policy of governments is necessary on how to address large failing banks that are systemically important. While intervention and government support for such institutions might be unavoidable in times of distress, a clear and transparent framework on who takes the decision and assumes the cost is necessary.

The institutional structure of financial sector supervision can be an important factor as well. The recent trend towards consolidated supervision has been justified with the trend towards financial conglomeration across different segments of the financial system and the need to create an even regulatory playing field. Theory suggests that the separation of responsibility for monetary and financial stability and thus also for lender-of-last resort facilities and bank failure resolution might create stability-enhancing incentives (Kahn and Santos, 2005). Empirical analysis of these questions is still outstanding and previous conclusions on the ideal institutional structure might have been put in doubt by the different reactions to the recent crisis.

The contractual and informational framework can also play an important role in interacting with the market structure and competition. Take the example of credit information sharing, which numerous studies have shown to be associated with better access to credit (Love and Mylenko, 2003 and Brown, Jappelli and Pagano, 2007), but also with better credit decisions by banks. For instance, Powell *et al.* (2004) use the actual data in the public Argentine credit registry to show that availability of system-wide registry information can substantially improve the precision of credit decisions even for a large bank. This has important positive repercussions for bank stability. Effective systems of credit information sharing have thus positive ramifications for competition, lowering barriers to entry, and stability.

Another important issue for policy makers, though not covered in the previous sections, is foreign bank entry.¹⁰ Claessens and Laeven (2004) show that foreign bank participation is an important dimension of competition in the banking system. Numerous studies have shown that foreign bank participation has contributed to rather than weakened financial sector stability, as often feared by policy makers in developing countries (see Cull and Martínez Pería, 2007, for a

¹⁰ Claessens (2006) reviews the effect of cross-border banking on bank competition.

literature overview). Specifically, Cull and Martínez Pería (2007) show, using data on the share of banking sector assets held by foreign banks in over 100 developing countries during 1995-2002, that countries that experienced a banking crisis tended to have higher levels of foreign bank participation than those that did not. Importantly, however, foreign participation increased as a result of crises rather than prior to them.

While foreign bank entry is mostly positively related to banking system stability, government ownership has mostly a negative impact on both competitiveness of the banking system and its stability (Barth, Caprio, and Levine, 2004; Caprio and Martínez Pería, 2002).

A final consideration is competition from the non-bank financial sector and capital markets. As both the East Asian crisis and the recent sub-prime crisis in the U.S. have shown, fragility can start from non- or underregulated non-bank segments of the financial system. This does not imply limiting interlinkages between different segments of the financial system, but rather calls for a regulatory and supervisory framework that is focused on financial products rather than institutions and avoids possibilities of regulatory arbitrage resulting in risk shifting to less-regulated segments.

6. Conclusions

Theory makes ambiguous predictions about the effect of competition on banking stability. Empirical research has been made difficult by finding proper measures of bank competition. Cross-country research has found that more concentrated banking systems are less likely to suffer from systemic banking distress. On the other hand, more competitive banking systems are also less likely to suffer from systemic banking distress. Bank-level analysis give less clear indications, are often confounded, however, with regulatory changes in the country being analyzed.

The tentative conclusion of this paper is that competition *per se* is not detrimental for banking system stability in a market-based financial system with the necessary supporting institutional frameworks. Policies associated with more competitive financial systems –fewer activity restrictions, lower entry barriers, openness to foreign bank entry– have also been found to be associated with higher stability. However, it is important to note the necessary institutional frameworks for countries to reap maximum benefits from competition. While unchecked competition can lead to fragility in weak institutional environment, it is important to focus in improving these frameworks, rather than limiting

competition, at least in the long-term. Restrictions put in place at times of financial liberalization to allow upgrading of regulatory and supervisory frameworks and capacities should be temporary and have clear sunset clauses.

Stability is one important concern of policy makers in the financial sector, but should not be the only one. Deep and efficient financial systems are important for economic growth and poverty alleviation (Beck, Levine, and Loayza, 2000; Beck, Demirgüç-Kunt and Levine, 2007). Even if there were a trade-off between competition and stability, it is ex-ante not clear whether stability should have a higher priority than efficiency, which has clearly been shown to be linked to higher degrees of competition. It is more, there is evidence that countries with deeper but more volatile financial systems have grown faster over the period 1960 to 2000 than countries with low but stable levels of financial deepening (Ranciere, Tornell and Westermann, 2006, 2008). The positive growth effect of financial liberalization thus outweighs the negative crisis effect. This is also confirmed by theoretical work that shows that Schumpeterian competition, i.e. competition through innovation, in the financial system can lead to individual bank failures, but also to higher innovation and thus efficiency in the financial system (Allen and Gale, 2004). Designing institutions, including regulatory policies, to create efficient financial markets that allocate society's savings to their best use and support real markets, should therefore be the primary concern of policy makers. Given the increasing evidence that competition *per se* does not cause financial fragility, it seems important to focus on a regulatory framework and a financial safety net to support competitive and efficient financial markets, rather than restraining competition.

The literature surveyed in this paper and the conclusions point to further much needed research. Better measuring competition (on the product rather than institutional level and taking into account input markets and access to network services, such as the payment system) and banking distress beyond credit risk will be an important challenge. As countries' financial markets become more integrated, as for example in Europe, it is important to design regulatory frameworks and financial safety nets that allow reaping the maximum benefit of this increased competition, while aligning incentives of the different stakeholders to reduce the risk of bank fragility. The recent crisis has reminded us that regulatory and supervisory frameworks need constant updating as new products, markets and interlinkages emerge.

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Table 1: Bank concentration, regulation and systemic stability

The logit probability model estimated is $\text{Banking Crisis}_{i,\text{Country},t} = \alpha + \beta_1 \text{Real GDP growth}_{i,t} + \beta_2 \text{Terms of trade change}_{i,t} + \beta_3 \text{Real interest rate}_{i,t} + \beta_4 \text{Inflation}_{i,t} + \beta_5 \text{M2/reserves}_{i,t} + \beta_6 \text{Depreciation}_{i,t} + \beta_7 \text{Credit growth}_{i,t-2} + \beta_8 \text{Concentration}_{i,t} + \beta_9 \text{Regulatory measure}_{i,t} + \epsilon_{i,t}$. The dependent variable is a crisis dummy that takes on the value of one if there is a systemic and the value of zero otherwise. Growth is the growth rate of real GDP. Real interest rate is the nominal interest rate minus the inflation rate. Inflation is the rate of change of the GDP deflator. M2/reserves is the ratio of M2 to international reserves. Credit growth is the real growth of domestic credit, lagged two periods. Depreciation is the rate of change of the exchange rate. Concentration equals the fraction of assets held by the three largest banks in each country, averaged over the sample period. Moral Hazard is an aggregate index of moral hazard associated with variations in deposit insurance design features. Fraction of entry denied measures the number of entry applications denied as a fraction of the total received. Activity restrictions captures bank's ability to engage in business of securities underwriting, insurance underwriting and selling, and in real estate investment, management, and development. Required reserves is the percentage of reserves regulators require to hold. Capital regulatory index is a summary measure of capital stringency. Official Supervisory Power is an index of the power of supervisory agency to enforce prudential regulations on banks. State ownership is the percentage of banking system's assets in banks that are 50% or more government owned. Foreign ownership is the percentage of banking system's assets in banks that are 50% or more foreign owned. Banking freedom is an indicator of relative openness of banking and financial system, while economic freedom is a composite of 10 institutional factors determining economic freedom. KKZ_composite is an aggregate measure of six governance indicators. White's heteroskedasticity consistent standard errors are given in parentheses. Detailed variable definitions and sources are given in the data appendix. The sample period is 1980-1997. Source: Beck, Demirgüç-Kunt and Levine (2006b)

	1	2	3	4	5	6	7	8	9	10	11
Concentration	-1.467** (0.565)	-2.556* (1.552)	-2.285*** (0.939)	-2.472*** (1.060)	-2.847*** (1.142)	-2.533** (1.096)	-2.796*** (1.091)	-2.524*** (1.083)	-1.953*** (0.806)	-1.930*** (0.809)	-1.881*** (0.769)
Moral Hazard	0.037 (0.075)										
Fraction of Entry Denied		1.885*** (0.737)									
Activity Restrictions			0.166** (0.072)								
Official Supervisory Power				-0.021 (0.166)							
Required Reserves					0.016 (0.016)						
Capital Regulatory Index						-0.079 (0.129)					
State ownership							0.015* (0.008)				
Foreign ownership								-0.005 (0.008)			
Banking freedom									-0.506*** (0.165)		
Economic freedom										-0.513*** (0.225)	
KKZ_composite											-0.439** (0.201)
No. of Crises	47	21	34	34	27	33	32	31	47	47	47
No. of Observations	989	583	767	767	572	755	686	609	955	955	989
% crises correct	66	62	68	62	63	61	66	68	68	66	68
% correct	71	81	79	78	77	79	74	73	70	70	72
Model χ^2	37.93***	29.34***	38.21***	38***	30.46***	37.62***	30.97***	34.15***	52.41***	47.58***	49.59***

***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 2: Bank competition and systemic stability

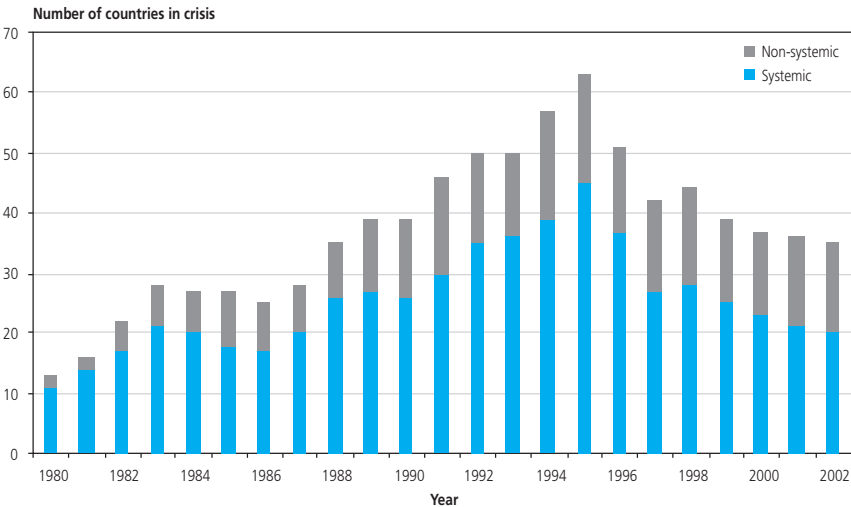
	Duration models				Logit models			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	4.6274 (0.6236)***	0.8507 (1.5846)	0.0802 (1.9978)	6.5739 (5.2874)	-5.4307 (7.062)***	-1.1953 (1.4726)	-0.6020 (1.8109)	-2.8211 (4.3279)
GDP growth (real)	-0.0691 (0.0803)	-0.0214 (0.0904)	-0.0184 (0.0909)	-0.0141 (0.0880)	0.1315 (0.0817)	0.0787 (0.0922)	0.0719 (0.0935)	0.0709 (0.0920)
Real interest rate	-0.0084 (0.0118)	-0.0103 (0.0139)	-0.0085 (0.0126)	-0.0067 (0.0131)	0.0219 (0.0100)**	0.0253 (0.0130)*	0.0235 (0.0130)*	0.0231 (0.0130)*
Inflation	-0.0021 (0.0018)	-0.0018 (0.0017)	-0.0010 (0.0018)	0.0002 (0.0022)	0.0053 (0.0031)*	0.0043 (0.0037)	0.0036 (0.0039)	0.0033 (0.0038)
Term of trade change	-0.0024 (0.0017)	-0.0029 (0.0017)*	-0.0026 (0.0017)	-0.0025 (0.0018)	0.0002 (0.0027)	0.0001 (0.0035)	-0.0000 (0.0032)	-0.0001 (0.0033)
Depreciation	-0.0039 (0.0015)***	-0.0025 (0.0017)	-0.0027 (0.0015)*	-0.0030 (0.0014)**	0.0002 (0.0023)	-0.0010 (0.0020)	-0.0008 (0.0019)	-0.0007 (0.0018)
M2/international reserves	0.0138 (0.0296)	0.0187 (0.0305)	0.0293 (0.0324)	0.0266 (0.0319)	0.0057 (0.0239)	-0.0020 (0.0262)	-0.0110 (0.0326)	-0.0080 (0.0320)
Credit growth (real)	-0.0014 (0.0004)***	-0.0019 (0.0005)***	-0.0020 (0.0005)***	-0.0022 (0.0006)***	0.0010 (0.0008)	0.0016 (0.0008)**	0.0017 (0.0008)**	0.0018 (0.0008)**
Moral hazard index	-0.0372 (0.2190)	0.2685 (0.2772)	0.2602 (0.2933)	0.0527 (0.3306)	0.3375 (0.3417)	0.0299 (0.3690)	0.0601 (0.3683)	0.1363 (0.3984)
British legal origin	-0.5227 (0.6629)	-0.3812 (0.7934)	-0.1951 (0.8777)	-0.6531 (0.9105)	1.1127 (0.8397)	1.1103 (0.9437)	1.0450 (0.9338)	1.2049 (0.9193)
French legal origin	-1.1209 (0.6180)*	-1.5525 (0.5790)**	-1.3319 (0.5518)**	-1.2832 (0.6086)**	1.6562 (0.6230)***	2.2597 (0.6465)***	2.1015 (0.5998)***	2.1036 (0.6185)***
Scandinavian legal origin	-1.1441 (0.5604)**	-1.0797 (0.5249)**	-1.5069 (0.7134)**	-1.2270 (0.7192)*	1.2795 (1.1575)	1.2279 (1.1414)	1.5485 (1.2624)	1.4447 (1.2846)
H-Statistic		5.0854 (1.7922)***	4.2562 (1.9919)**	-6.3020 (8.2633)		-5.8513 (1.7523)***	-5.2130 (1.8819)***	-1.7627 (6.2430)
Concentration			2.3486 (2.4725)	-11.8460 (11.2600)			-1.8366 (2.4980)	2.9196 (8.6863)
H-Statistic* Concentration				23.9997 (18.7818)				-7.8430 (13.1666)
Observations	619	619	619	619	567	567	567	567
Number of crises	22	22	22	22	28	28	28	28
Type I Error (%)	n/a	n/a	n/a	n/a	25.00	28.57	25.00	25.00
Type II Error (%)	n/a	n/a	n/a	n/a	41.37	33.95	33.58	32.21
Akaike Info.					0.400	0.387	0.390	0.393
Criterion	0.1610	0.1555	0.1571	0.1578				
Pseudo R ²	n/a	n/a	n/a	n/a	0.091	0.132	0.135	0.136

Source: Schaeck, Cihak and Wolfe (2006).

We estimate exponential duration models with time varying covariates for the period 1980-2003 in column (1) - (4) and logit models in column (5) - (8). The dependent variable is the log of time to crisis on the exponential duration models. The observations are right hand censored if no crisis surfaced during the observation period. The number of observations in the duration models is greater than in the logit models since the data set has to be set up differently for analysing duration data with multiple crises. If a crisis runs over multiple years, the years following the onset of a crisis are deleted from the data set. If a country experienced multiple crises, subsequent systemic episodes are included in the sample. The number of crises in the duration model setup is smaller since duration analysis focuses on time spans for each country and exploits information in the data at the end of each span. Therefore, values of the first observation for each country recorded in the initial data set are discarded in this analysis. The dependent variable in the logit models is a dummy variable that equals one if a crisis is observed or zero otherwise. All explanatory variables are lagged in the models by one period to avoid simultaneity problems. If a crisis runs over multiple years, the years following the onset of a crisis are deleted from the data set. If a country experienced multiple crises, subsequent systemic episodes are included in the sample. The Appendix provides detailed information on the explanatory variables. Specifications (1) and (5) are our baseline models that include covariates used in previous studies, whereby we update the Moral Hazard Index by Demirgüç-Kunt and Detragiache (2002). We also incorporate three dummies for origin of the legal system, whereby we capture German legal origin in the intercept. Specifications (2) and (6) include the *H-Statistic* as measure for the competitiveness of the industry and Specification (3) and (7) incorporate the level of concentration as measured by the three bank concentration ratio, averaged over the sampling period. To control for nonlinear relationships between the degree of competitiveness and the level of concentration, we include an interaction term of these two variables in Specification (4) and (8). White's heteroskedasticity consistent standard errors are given in parentheses. Type I and Type II Error are calculated as the total number of crisis observations (28) divided by number of observations in the sample (567), this yields a cut-off point of 0.0494. Significance levels of 1, 5 and 10 percent are indicated by ***, ** and *.

Figure 1: Crisis frequency

This graph shows the number of countries that were in a systemic or non-systemic crisis at a given year.



Source: Honohan and Laeven (2005).

Discussant

Malcolm Edey, Deputy Governor, Reserve Bank of Australia

Thanks for the opportunity to comment on the paper.

I thought Thorsten's paper gave a very useful overview of the literature on this topic of financial sector competition and stability, and I agree with his main conclusions:

- theoretically, there are reasons for thinking that the link between competition in the financial sector, and financial stability, could go either way;
- empirically, it seems that high levels of competition are not necessarily detrimental to stability; and
- the way to promote financial stability is not by restricting competition *per se*, but by ensuring competition takes place within a sound prudential framework.

These are issues that will obviously be of interest to countries that are in the process of allowing greater competition by deregulating their financial systems, or are contemplating doing so. Rather than going through the detailed empirical findings, I'd like to use my time to focus on some of these issues in a different way, by using Australia as a case study.

Financial deregulation in Australia was a protracted process that took place mainly over the decade between the mid 70s and the mid 80s.

The main elements were:

- a gradual deregulation of bank interest rates;
- moving to market-based interest rates on government securities;
- removal of foreign exchange controls;
- floating the exchange rate; and
- entry of foreign banks

Why did we deregulate?

Issues of competition in the financial sector were certainly important. The underlying philosophy behind the drive to deregulate in Australia was the objective of allowing competitive markets to deliver a more efficient financial system.

But as well as the efficiency considerations, there were some more urgent practical reasons for deregulating, essentially to do with macroeconomic control. What we found was that, as the financial system got more sophisticated, it was harder to maintain monetary control through a network of direct regulations. The decision to move to market-based pricing of government securities was very important in that respect, because it was an essential step in allowing the central bank to gain control over its own balance sheet. But it then had other competitive consequences in that it contributed to the development of domestic capital markets.

A related point is that regulations that suppress competition don't have a stable equilibrium. Over time we found that banks learned to innovate around regulations, and so the unregulated sector expanded. To give a simple example, if you went to a bank for a housing loan in the 70s and early 80s, you'd get part of the loan you needed directly from the bank at the regulated interest rate, and the remainder, at a much higher rate, from the bank's unregulated subsidiary. There are parallels today in the way that banks around the world have responded to prudential regulations by using off-balance-sheet vehicles to economise on capital.

One possible response to that dynamic in the 70s and 80s would have been to expand the regulatory net to cover the unregulated sector. That was briefly considered, but it was rightly ruled out on the grounds that it would have compounded existing inefficiencies. Hence, like most countries in this position, the response was to deregulate and let market forces operate.

What were the consequences of the increased competition that flowed from this?

I would highlight two main consequences.

The first was an increased supply of credit. Interest rate controls suppressed the ability of banks to raise funds and, therefore, to lend. So once the controls were removed, the result was a greater volume of financial intermediation took place. Banks significantly increased their lending to the business sector in the second half of the 80s, and then also to households from the early 90s onwards. To the extent that this was meeting previously repressed demand, it has to be seen as a gain in efficiency. But there were also some significant transitional problems, which I'll come back to.

The second consequence was greatly increased contestability of the various sub-markets that make up the financial system. In simplified terms, the old model was one of full-service banking. Banks provided a package of deposit, loan and transactional services to their customers. The best way to get access to finance

was to have a relationship with a bank for the full package of services. What you got out of that was, essentially, access to high-priced (and heavily rationed) financial intermediation, along with low-cost, cross-subsidised transactional banking services.

In the new competitive environment, each of those services has become individually contestable. Not surprisingly, the most profitable sub-markets were targeted by new entrants. Margins on home loans, for example, have been competed down dramatically by specialist lenders. Similarly, there was specialist competition on the deposit side. Those things, in turn, reduced the scope for cross-subsidies, and led to a shift towards more rational pricing structures for a range of other banking services.

I know there's a lot of interest at this conference in the possible effects of opening up national markets to foreign banks. Our experience was that foreign banks played an important role in the contestability process I've just described, but that the threat they posed to the domestic banks turned out to be not nearly as great as some initially predicted. A lot of the important competitive innovations, like the cut-price housing loans I referred to, were actually led by new domestic players. The foreign banks never gained a great deal of market share and, even two decades later, the Australian market is still dominated by the big four domestic banks.

This brings me to the final point, and the one that is at the heart of this session.

Does competition in the financial sector promote financial instability?

I would answer that question by saying 'yes and no'.

The 'yes' part of the answer is that the transitional period following financial deregulation was one in which there was a very large one-off increase in credit supply to businesses. As so often happens with a new financial event, the system overshot. Banks competed for market share by lending aggressively to the corporate sector, and in that environment it was very hard for any individual bank to stand aside and leave apparently profitable opportunities to others. The upshot was a boom in corporate takeover activity and commercial property, followed soon after by a collapse.

Possibly some of these things were going to happen anyway, but the response of a newly deregulated financial sector clearly amplified it. This immediate boom and bust was focused on competition in the corporate lending market. I'll note in passing that, on the household side, we are arguably still going through

the transitional phase of rising debt and increased risk taking, not just in Australia but globally.

The 'no' part of the answer is that these events seem to have been transitional effects of increased competition, not permanent ones. Periods of financial excess have existed before, and in Australia at least, there's no evidence that they've become any more frequent in the twenty years since the financial sector was opened up to greater competition.

I think these observations accord with the conclusion of Thorsten's paper, that competition is not necessarily detrimental to stability. But I'd add to that the general point that there can be important transitional issues when financial sectors are first opened up. The nature of financial systems is that they can overshoot in response to events like that, and this underscores the need to have appropriate prudential systems in place.

Mark Sobel and Richard Freeman¹¹

The theme of this session of the workshop, "Challenges for Regulation and Stability," is obviously of great interest and timeliness. The lessons we learn from this episode of financial market turmoil should be extremely valuable, not just for a better understanding of how financial markets function, but also for how they guide our thinking about protecting financial systems in future episodes of financial stress. The G20, with its broad membership and its mandate that is focused on key issues related to global stability, provides an ideal forum for discussion of such matters. Our comments in this paper will focus on three aspects: (1) reasons we believe financial competition is welfare-enhancing and likely to promote stability, along with some evidence from U.S. experience; (2) why foreign participation in domestic financial markets can be especially beneficial and the implications of that for the G20 and Doha Round; and (3) current Treasury consideration of reforms to the U.S. system of financial regulation.

Some basics on effects of competition

From the theoretical literature, there is a strong presumption that competition in financial services is welfare-enhancing. Just as in non-financial markets, first principles indicate that financial competition should yield a wide range of positive effects. Benefits arise from more efficient allocation of resources

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in the sector itself, of course –but even more critically from the broader role that financial services play in directing resources to their best economic use, both across sectors and over time. Ideally, competition should improve the quality and quantity of information about risk and expected return. It also should provide incentives for introduction of new technology, better business models, and new products –including, for example, innovations that bundle or unbundle financial components so that risk can be shifted to places where it is best able to be borne. Taken together, the presumptive expected outcome from the various impacts of financial competition is lower costs of borrowing and better return/risk trade-offs for investors that, in turn, should raise real economic growth across the economy.¹² An implication for the sound regulatory and supervisory underpinnings that a successful financial system requires is that such frameworks should not become so onerous as to stifle efficiency and hamper the capacity of a financial system to deliver these benefits.

Competition and financial stability—some general observations

With regard to the particular focus of this workshop –financial stability– there is, similarly, a strong expectation that, for a number of reasons, competition should result in more efficient, robust institutions and, consequently, a financial system that is better able to withstand economic shocks. A multiplicity of participants in financial markets should make for greater market liquidity and better price discovery, resulting in less excess volatility and bias in prices. To the extent that more open competition results in a greater number of participants and sectors of larger scale, outside shocks could be expected *ceteris paribus* to be absorbed and dispersed with less disruption. From the point of view of a national financial system, having a range of institutions and types of market participants also should improve system stability and resilience. One can point to episodes in U.S. experience, for example, that illustrate that having a diversified financial system with well-developed banking and securities markets contributed importantly to financial and economic stability, especially when one or the other was buffeted by sector-specific shocks. It is interesting to note that in the recent crisis, small- and medium-sized U.S. banks have continued to lend more or less as usual and to provide liquidity to interbank markets. Looking across the broad record of many countries' experiences, there is evidence that the effects of banking crises on an economy and its individual firms have tended to be particularly severe and long-

¹² A sample of the extensive literature on the connection between financial development and growth is Levine, Loayza, and Beck (2000).

lasting, when firms' dependence on external funds was high and when banks were firms' primary or only source of outside funding.¹³

Modeling financial firm behavior and empirical results

Notwithstanding these observations, a closer look at the fundamentals that arguably govern the behavior of financial services firms in order to identify specific factors related to competitive conditions that may or may not contribute to stability raises some complexities. Problems in modeling and interpreting firm behavior arise in part because theory is ambiguous about what to expect under the conditions of imperfect competition that often –perhaps typically– prevail in these markets. In very basic theoretical models of financial intermediation, efficient outcomes may involve default, so deviations from perfect competition may increase stability, but with some loss of efficiency. But when additional factors relevant to financial intermediation are introduced –such as imperfect and asymmetric information, search costs, agency problems, and spatial competition– the relationship between stability and competition (or, sometimes, concentration or firm size) is less clear.¹⁴

The diversity of outcomes under formal modeling suggests that the issue of how competition affects stability might be better addressed empirically. As one might expect, however, there are daunting econometric challenges involved in disentangling the many competing factors that can come into play. Especially at a national level or in cross-country analysis, measures that are more directly observable such as market concentration may be poor proxies for competition itself; concentration that arises from restrictions on entry, for example, may have considerably different implications for economic behavior and stability than concentration that arises in some other way. Statistical associations between measures of concentration and stability may well reflect the omission of important underlying factors related to competitive conditions that also affect economic performance. Such factors could include prominently the quality of supporting

13 See speech by Federal Reserve Governor Randall Kroszner on "Analyzing and Assessing Banking Crises," to a conference on "The Asian Financial Crisis Revisited," Federal Reserve Bank of San Francisco, September 6, 2007, and Kroszner, Levine, and Klingbiel (2007).

14 An important strand of the literature on this topic has emphasized that competition-induced declines in banks' charter value (or franchise value) can increase instability, as a reduction of monopoly rents might induce managers to shift into riskier assets. Such incentives can be exacerbated by moral hazard considerations arising from the presence of safety nets. But, running the other way are arguments that banks are prone to take on more risk as their market power increases, in part because higher interest rates tend to promote adverse selection by borrowers and raise the latter's incentive to default. To cloud the issue further, models designed to reflect how banks' risk-taking may react to the possibility of too-big-to-fail (or to other factors that limit the lower tail of the distribution of possible outcomes) offer support to both sides of the stability debate. For discussion of these and other related issues, see Allen and Gale (2004) and Carletti and Hartman (2002).

institutional frameworks, involving, for example, enforcement of contracts, systems of governance, the quality and availability of financial information.¹⁵ Even after such factors are identified and controlled for, however, findings on whether or not greater stability can be expected in a more competitive market setting evidently still vary and depend in complex ways on the details of the particular economic setting.

Competition in the U.S. banking industry

An area where underlying factors affecting competition can be identified with perhaps greater reliability and where findings may be clearer is the extensive empirical work done on the effects of deregulation of the U.S. banking sector. Because the lowering of restrictions on branching and interstate banking happened in individual state jurisdictions at different times, it presents a natural experiment for exploring the effects of specific steps to increase competition across a range of economic settings. That research has found that the opening of wider opportunities for branching raised the efficiency of the banking sector, in part by reducing the incidence of non-performing loans, loan charge-offs, and “insider” loans.¹⁶ Importantly, the removal of limits on bank entry and expansion were found to have a significant, persistent positive effect on regional growth and a negative impact on regional income volatility.¹⁷

Deregulation seems to have had a number of additional benefits as well. Related work has established that increased competition, on balance, supported new business formation and employment, although there also is some evidence that it may have tended to undercut the relationship-lending that some small firms depend upon heavily at the start-up stage.¹⁸ As banks expanded and extended operations in reaction to wider lending opportunities, there are indications that their share of lending to small businesses declined –but other sources of credit to small businesses tended to offset this effect. And when delivery of financial services improved under more competitive conditions, there even have been signs of broader social benefits, such as crime reduction and more stable neighborhoods.¹⁹ In summary, research findings support the conclusion that, especially once one controls for other factors that may have been exerting an influence on competitive conditions, the easing of legal restrictions on geographic expansion by banks

¹⁵ For more details, see Beck, Demigürc-Kunt, and Levine (2005 and 2006).

¹⁶ Jayaratne and Strahan (1996).

¹⁷ Strahan (2003).

¹⁸ Cetorelli and Strahan (2006), and Cetorelli (2003).

¹⁹ Garmaise and Moskowitz (2006).

appears have been significantly positive and long-lasting across a wide range of measures, thereby buttressing financial and economic stability. This is consistent, of course, with the Federal Reserve's emphasis on the importance of potential competition in these markets.

The empirical results on the deregulation of U.S. banking underline the importance of identifying accurately the factor (or factors) that may be changing the competitive environment. The period of deregulation has coincided with widespread bank consolidation and concentration in many banking markets. But deregulation is only one of several powerful forces that in recent years have may have contributed to such consolidation, both in the U.S. banking industry and elsewhere. Prominent among other factors are ongoing improvements in information technology, globalization of financial and real product markets, and increased shareholder pressure for financial performance. The consequences of these trends for firm stability and that of financial systems are not entirely clear. Firms that are larger can benefit from simple economies of scale (smaller financial firms especially), and financial firms can lower their risk profiles through increased opportunities for diversification –outcomes that tend to work in the direction of greater stability. However, as consolidated firms become more complex, more extensively interlinked, and less transparent in some respects, the channels for market discipline and the effectiveness of regulatory structures may need to be strengthened; there also may be increased potential for systemic risk.

The recent financial turmoil and responses

Just as in other industries, creative destruction and change are necessary aspects of market functioning and progress. There is no doubt that the U.S. economy, and the global economy as well, have benefited substantially from the widespread financial innovation and other changes in financial services that have occurred in recent years. In the case of financial services, however, it also is true, as we have seen, that episodes of market turbulence have been a recurring part of that history.

Although markets in the past have shown considerable powers to heal themselves over time, it is obvious that the serious turmoil in global markets is still continuing and posing some immediate challenges to policy makers. In the United States, the Federal Reserve has taken a number of important measures –some in concert with other central banks– to relieve liquidity pressures, to help maintain proper market functioning, and to support the real economy. The Administration proposed and Congress recently approved a fiscal stimulus package to help sustain

the U.S. economic expansion. In addition, affected financial institutions have been taking productive steps to write down assets, re-intermediate off-balance-sheet vehicles, and strengthen their capital.

In addition to those actions to address immediate consequences of the crisis, there are a number of initiatives underway aimed at identifying the factors behind the events, with a view to formulating longer-run remedial actions. Key areas for review are the underpinnings of the originate-to-distribute model, the potential conflicts of interest at credit rating agencies, increasing investors' awareness of the risks associated with structured products, apparent shortcomings in liquidity and credit-risk management at key financial institutions, and implementing the Basel II capital adequacy framework. Some might argue that the turmoil was the result of excessive financial market competition and that the proper remedy is to reduce or restrain competitive impulses in the financial system. It is important to stress, however, that, when poor transparency, inadequate information and disclosure, or misaligned incentives enter the picture—as evidently has been the case in the current situation—competition may look bad, as firms compete vigorously for what are ultimately distorted, even socially bad objectives. However, the root problem and the proper policy response, in fact, may lie elsewhere—in policies that address the specific market failure directly or in firming up the regulatory structure.

Looking forward, there are many challenges to be faced in addressing the regulatory and policy issues raised by the turmoil. Policy-makers will need to be pro-active, but should avoid a rush to judgment. The issues are complex and require both careful analysis and a measured response so that the fundamental problems can be targeted properly. In the United States, the President's Working Group on Financial Markets is examining a range of issues including: credit rating agencies, investor practices, market infrastructure, risk management, and regulatory policy issues.

At the international level, the Financial Stability Forum (FSF) is reviewing similar issues, including: the underpinnings of the originate-to-distribute model; market transparency; the uses and role of credit rating agencies; supervisory frameworks and oversight, including the implementation of Basel II; supervisory and regulatory responsiveness to risks; and the authorities' ability to respond to crises.

It is fair to say that Basel II will refine the incentives structures of Basel I, especially relative to off-balance sheet vehicles, and that Basel II should continuously be monitored and refined so that its incentive structure remains appropriate.

Supervisors will need to ensure a resilient capital framework to create the right incentives for risk management; indeed, risk management practices will need strengthening across a broad front. The underpinnings of the originate-to-distribute model, including underwriting standards and the role of credit rating agencies should be strengthened, and enhancements will be needed to risk disclosure practices for structured products. Supervisors also should strengthen ways to respond to new market developments and innovation.

As noted in the FSF Interim Report released last week, there is much work to do, but already the FSF and standard setting bodies are engaged in work streams to study the issues and take them forward.

Foreign investment in financial services and the Doha Round

One key aspect of financial competition that merits specific emphasis is the effect of openness of financial systems to foreign direct investment flows across international borders. Cross border investment in financial services brings a host country the same benefits from competition that were noted above, including increased efficiency, more diverse and new products, and better technology. Additionally, foreign participation can add strength and stability to a country's financial services sector, as foreign institutions can help recapitalize struggling local institutions, and access to foreign capital may act as an important buffer in times of financial stress. Beyond that, foreign participation may yield other less tangible, but equally important benefits –in part via demonstration effects– by exposing local practitioners to better risk-management techniques, improved operational practices, specialized technical skills, and even incentives for upgrading the local financial infrastructure and supervisory practices.

There is compelling empirical support for openness generating such benefits. A 2001 World Bank study found that countries with fully open financial sectors on average grew one percentage point faster (and even more for developing countries) than did other countries.²⁰ A WTO study of 27 emerging market countries found that allowing foreign financial institutions to be established locally and engage in a broad spectrum of financial activities contributed to greater financial sector stability.²¹ When foreign firms make acquisitions, typically only a few outside experts and managers are brought in; thus, concern about displacement of local workers applies mainly to the extent that foreign investors

²⁰ Mattoo, Rathindran, and Subramanian (2001). The thrust of these arguments is also supported by Kose, Prasad, Rogoff, and Wei (2006).

²¹ Kono, Low, Luanga, Mattoo, Oshikawa and Schuknecht (1997).

introduce labor-saving techniques. Greenfield investment, of course, adds employment, and openness may well stimulate financial sector development more broadly, including knock-on effects for pro-poor growth.²²

The G20 is a grouping of the finance ministries and central banks of the largest economies in the world. As such, it brings together a wealth of financial expertise and talent. Thus, it can play an enormous, positive role in helping to strengthen financial sectors throughout the world, contributing to a more robust framework for global growth. In this regard, the G20 currently has a golden opportunity to support financial sector liberalization by encouraging all countries to use the financial services discussions in the Doha Round to remove –consistent with prudential standards in their countries– those barriers that restrict foreign financial services firms from participation in their markets, especially via locally established affiliates. This is a time for boldness and meaningful improvements in financial services offers. The G20 should emphasize this reality in the upcoming meetings of the Deputies and at the Ministerial.

U.S. capital market competitiveness and regulatory reform

As noted previously, the strength of the U.S. financial system has been vital to the robust historical performance of the U.S. economy. U.S. capital markets are the deepest and most liquid in the world; our financial services industry alone accounted for nearly seven percent of U.S. GDP in 2006. Despite the resilience of the U.S. financial system and the positive benefits it has imparted to the economy over time, it has not been immune from challenges, as illustrated by the latest financial turmoil. Accordingly, it is important to keep the efficiency and competitiveness of the U.S. capital market under ongoing review to maintain its integrity and to ensure that it continues to perform most effectively in its key role in global markets.²³

Any such review of competitiveness must include an assessment of the supervisory and regulatory framework within which the U.S. financial system operates. Excess regulation slows innovation, imposes needless costs on investors, and stifles competitiveness and employment growth. However, a lack of sound regulation can invite a “race to the bottom” and weaken essential safeguards for investors. Policy-makers need to seek the right balance, which is not an easy task.

²² See Beck, Demirgüç-Kunt, and Levine (2004).

²³ See, for example, speech by U.S. Treasury Secretary Henry M. Paulson, “The Competitiveness of U.S. Capital Markets,” to the Economic Club of New York, November 20, 2006; also, speech David Nason, Assistant U.S. Treasury Secretary for Financial Institutions Policy, on “Redesigning U.S. Financial Regulation for a Global Marketplace,” London, December 11, 2007.

The regulatory framework necessarily also needs to take into account a number of fundamental changes that continue to alter the financial landscape. Foreign financial systems are growing strongly and becoming far more competitive and influential. The G20's existence, its rapid rise on the global stage, and this weekend's seminar are testimony to this reality. Not only are financial products more complex, but the emergence of large, globally integrated financial markets means that, more than ever before, financial institution activities do not stop at water's edge. Global corporations and financial institutions find that addressing different regulatory requirements in any one country where they operate, let alone in multiple countries, can be cumbersome and costly. Thus, financial globalization also raises the question of the adequacy of regulatory mechanism to address cross-border activity.

Against this background, many other countries have reconsidered their regulatory structures in the past decade and undertaken significant reforms. For example, the United Kingdom separated bank supervision and monetary policy, and it consolidated financial services supervision under the umbrella of a single regulator. Some countries, such as Australia, have adopted a "twin peaks" approach, creating two regulatory bodies—one for prudential regulation and one for disclosure and market regulation of financial products.

The U.S. regulatory structure, in contrast, has largely been knit together over the past 75 years. Much of the framework was put into place for particular reasons in a different time and in response to circumstances that no longer may be relevant. The United States has multiple federal banking regulators, one federal securities regulator, one federal futures regulator, and a state-based insurance regulatory system. In addition, there are state-based supervisors for depositories and self-regulatory organizations as well. The evolution of the U.S. regulatory structure has resulted in addition over time of layers of regulation, a situation that suggests the need for a comprehensive evaluation of the best way to regulate the financial services industry.

Against this background, Secretary Paulson has underscored the need to bolster the competitiveness of U.S. financial markets and pursue a modernized regulatory structure. To this end, the Treasury is working on a blueprint for regulatory reform and has published a Federal Register notice seeking public comment on a series of questions about the U.S. regulatory structure. This blueprint will lead to examination of many key questions related to improving the U.S. regulatory structure, including:

- What lessons can the United States learn from regulatory structures that other countries have put in place?
- Are U.S. regulatory approaches overly rules-based, and could the United States benefit from a more principles-based approach which reduced reliance on a check-the-box mentality?
- Can U.S. regulatory approaches be framed in a manner that supports greater convergence in global practices around high quality principles?
- Can our supervisory regime for depository institutions be streamlined without imposing costs in other areas?
- Does the increasingly close interaction between equity and derivatives markets bear on the nature of securities and futures regulation?
- Does a state-based approach to insurance regulation align with the needs of an ever more global industry, especially at a time when others are adopting consolidated supervisory and risk-based approaches to insurance regulation? Is U.S. welfare limited if foreign firms need to meet 50 differing state standards and do not have a single federal regulator to coordinate with on insurance matters?

Treasury's blueprint will be released early this year. It will offer new thinking on broad ideas for regulatory reform to match the globally-integrated U.S. financial services industry. Of course, it will be difficult to achieve fundamental change in the U.S. regulatory structure, especially in the short term. Thus, it will also offer more focused recommendations on steps to place the U.S. structure on the path toward greater effectiveness.

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I very much enjoyed Dr Beck's paper and I thought it was very instructive. I personally drew three major lessons from the discussion and also from the papers I have read yesterday. The first is that financial markets should be contestable. There does not seem to be a justification to barriers to entry on the basis of financial stability considerations. The second one is that supervision and competition authorities should be separated. The third one, which is more on our most recent experiences in France and in Europe, is that there is a big advantage in having banking supervision close to or inside the Central Bank. I think we benefit enormously from this type of arrangement. These may look less sophisticated than other ones but they prove to be extremely robust in terms of stress and uncertainty.

Beyond that, I think the relationship between competition and financial stability is still very much as we have seen it; an area for research and thinking. I would pinpoint three questions. The first one is about competition policy relating to non-bank entities. I am very struck by the fact that most presentations and discussions have been focused on banks. Of course, the turmoil has taught us that banks remain extremely central to the financial system and that when something happens it quickly shows up in the banking sector. But they are not alone. They have complex interaction with other participants in the financial market.

Let me give you two examples where competition policy does matter. The first one is in payment and settlement services. It is a very important issue right now in the European Union and I suspect it will become very important in other parts of the world as well. We have many directives that have come out, which introduce more competition into payment and settlement services. They are very difficult problems to resolve; problems of fixed costs and sometimes natural monopolies. We are here very close to classical issues of industrial organization. The impact on financial stability may be extremely important.

One salient fact of the recent turmoil is that we did not have any problems with payments systems. We take it for granted but it is a major achievement that those systems could withstand such shocks without showing any kind of strains in a period where market liquidity was very scarce. Competition policy relating to payment systems and payment services are, in my view, a major issue for the future, if we look at competition in the financial sector in a broad sense.

The other question is competition between banks and other financial intermediaries. The difficulty here is, of course, that banks are regulated and are competing with financial intermediaries which are less or not regulated. Is this a

good or a bad thing? I read, with great care, the paper of Professor Claessens yesterday. He makes the case that there should be a level playing field and that regulation tends to be harmonizing the competitive competition between different entities.

There is a reverse case which can be made by having non-regulated entities competing with regulated entities, which is good for market efficiency. That is the case for instance when there was discussion about putting some obligation of transparency. Again, I think we would benefit from more research on what should be the proper level of competition and harmonization between bank and non-bank entities. Actually, I am very agnostic about that but I think it should be a matter for research. That is about competition outside of the banking system.

My second point is what it is that makes banks financially different. Why it is that competition has ambiguous effects on financial stability? It seems to me that the implicit assumptions behind all of the discussions here is that competition makes banks more fragile and that by itself is a threat to financial stability. There may be more and deeper issues to be taken into account.

The first point is that banks are interdependent. Its basic is very important. When a garment factory goes bankrupt, all the other garment factories feel better. When a bank goes bankrupt, all other banks feel worse. That is a major difference in terms of competition in relation to financial stability. Having entities, which are both interdependent and taking risk on each other, counterparts which are stealing competition is a very tricky and complex situation. Which might deserve more research and more investigation? For instance, what happened in the inter-bank market in the last six months? This can maybe best be analyzed through a very complex interaction between cooperation and competition between banks in regard to liquidity provision. So the first reason is that they are interdependent and competing at the same time.

The second point is about the nature of the innovation progress in the financial sector. Of course, people and banks compete through innovation but the innovation process in the financial sector is very difficult to analyze and is very difficult to disentangle, which is what I would call 'true innovation', bringing new techniques, new ideas and processes or which is simply more risk taking and more leverage. If we look at financial innovation that has taken place, at least in our countries in the last ten years, through credit derivatives and securitization, it includes both. Monoline may be a very nice invention; there may be very nice sophisticated tools that have been used in the last two or three years as a tool for leverage in the structure finance sector. What part of innovation is good innovation

and what part is excessive leverage leading to financial instability? This is very difficult to tell. I think a thorough investigation of the innovation process in the banking sector would be necessary. Finally, we have incentive problems. It is quite clear that, if incentives are wrong, competition can lead to excessive risk taking and financial instability. The question of how incentives are aligned with both the competition objective and the financial stability is essential.

What are the consequences for policy? There will be a lot of discussions about liquidity requirements, transparency requirements, capital requirements and so on. In my view, but that is very personal, the key issue is the last one about incentives. If we want to have a system which provides an appropriate degree of competition and an appropriate level of stability, we have to look at the incentives of the people who are acting in managing the system. That is very tricky for regulators because they do not have any power over incentives, so they have to engage into a dialogue with the private sector, and that may be impossible.

To conclude, I always remember, I am an avid reader of, the yearly Warren Buffet letter. Two years ago, he wrote something that struck me as very basic. He said to his shareholders, "I can not promise you that you will get a return more than the benchmark. I can not promise you that you will get a good return on your investment. The one thing I can promise you is that I will not do better than you because 99.99% of my wealth, and my wife and family, is invested in your stock." I find that, personally, the best risk management statement that I have ever heard. If I had to promote one idea to make consistent the objective of financial stability, and of the strong competition, it would be that one.

Thank you.

SESSION 4

Lessons for Competition and Growth

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abstract

This paper examines whether regulation that is more conducive to competitive and efficient financial systems has a significant positive impact on sectoral output and productivity growth in a sample of 25 OECD countries. More specifically, following a methodology used by Rajan and Zingales (1998), the paper tests whether industries that depend more heavily on external sources of funding tend to grow faster in countries that have more competition-friendly regulation in markets for banking services and financial instruments. The regulatory indicators are assembled from surveys conducted by the World Bank on regulations in banking and securities markets. They point to substantial variations in the stance of regulation across countries, in particular with respect to the broad rules underpinning securities market transactions. The empirical analysis indicates that financial system regulation matters for output growth both in a statistical and economic sense.

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1. Introduction

The operation of the financial system can have a key impact on economic growth and the stability of the economy. It affects long-term economic growth through its effect on the efficiency of intermediation between the savers and final borrowers of funds; through the extent to which it allows for monitoring of the users of external funds, affecting thereby the productivity of capital employed; and through its implications for the volume of saving, which influences the future income-generating capacity of the economy. It affects the stability of the economy because of the high degree of leverage of its activities and its pivotal role in the settlement of all transactions in the economy, so that any failure in one segment risks undermining the stability of the whole system.

The impact of financial systems on growth has been well established empirically. Given the difficulties in directly measuring efficiency in the financial sector, a large number of empirical studies have relied on measures of size or structure to provide evidence of a link between financial system development and economic growth (Levine, 2005).² Indeed, nearly all studies based on macro or sector-level data find that financial development, measured as the size of financial intermediation or of external finance relative to GDP, has a significant positive impact on growth, either directly *via* productivity, or indirectly *via* its effect on the build-up of physical and knowledge capital (Pelgrin *et al*, 2002). And the finding is generally quite robust to variations in the sample. For instance, even though the majority of these studies cover a broad range of developed and developing countries, the results of financial development affecting growth have been found to hold also when the sample is limited to OECD countries (Leahy *et al*, 2001).

Taken at face value, this would suggest that in order to achieve faster growth, individual countries should vigorously pursue the development of domestic financial markets and institutions regardless of the size of their domestic economy. However, to the extent that markets for banking services and securities exchange are characterised by increasing returns to scale or network externalities, cross-border integration of financial markets may well be one of the major sources of efficiency gains. If all countries might benefit from reduction in costs arising from international market integration, only those with a comparative advantage in the provision of financial services would be expected to see an increase in the depth of their domestic financial sector. In this regard, beyond a certain threshold most likely to be reached in most developed countries, the size of a domestic financial system as conventionally

² For a recent effort in assessing the performance of financial systems using a broad range of indicators, see ECB (2005).

measured may not be an adequate indicator of efficiency in terms of intermediation costs or productivity of capital employed (Guiso *et al.*, 2004).

Another limitation of empirical studies linking growth to measures of financial sector size is the difficulty to identify unambiguously the direction of causality. In order to address this issue, several studies have focused more directly on the determinants of financial development and/or on the mechanisms through which the latter affect growth. For instance, Rajan and Zingales (1998) exploit industry-level data across a set of countries to test the theoretical argument that financial development reduces the cost of raising funds from external sources by contributing to overcome problems of moral hazard and adverse selection. They do so by examining whether industries that are typically more reliant on external financing grow faster in countries with better-developed financial systems. More recently, Barth, Caprio and Levine (2004) use a database they have contributed to assemble on the regulation and supervision of banks around the world to examine the relationship between banking regulation and the development of the banking sector.

This paper combines the two approaches and uses industry-level data from over 20 countries to examine whether industries that rely more heavily on external sources of funds grow more rapidly in countries where regulation allows for stronger competition in markets for banking services and financial instruments. The construction of regulatory indicators relies essentially on surveys conducted by the World Bank on regulations in banking and securities markets for its member countries.³ Individual elements from these surveys are aggregated into broader indices directly used in the regression analysis.

In the case of banking regulation, the areas covered are separated according to whether they constitute unwarranted barriers to competition or they achieve stability objectives with more limited adverse effect on competitive pressures. Regulatory impediments to competition include barriers to entry (both foreign and domestic) and lines-of-business restrictions. The extent of government ownership is also treated as a barrier to competition, reflecting the potential impact of state control on the level playing field. As for markets for debt and equity instruments, the regulatory indicators cover the following four areas: contract enforcement, access to credit, investor protection and bankruptcy procedures.

3 The two World Bank data sources exploited in this study are the *Bank Regulation and Supervision Database* (http://www.worldbank.org/research/projects/bank_regulation.htm) and the *Doing Business Database* (<http://www.doingbusiness.org>).

Using panel regression techniques, the paper examines whether regulation that facilitates competition in banking and that is more conducive to securities market development and efficiency has a significant positive impact on sectoral output growth, productivity growth and firms' entry rates. The output and productivity regressions are performed on a sample of around 25 countries and industries. The entry regression includes fewer countries (16) but a similar number of industries and also has a time-series dimension. Overall, the results indicate that financial system regulation has a statistically significant influence on output and productivity growth, in particular *via* the impact on industrial sectors relying more heavily on external sources of funding. The economic impact is also found to be non-negligible. The analysis suggests that reforms that would align regulations in banking in countries with the most restrictive stance to the OECD average could be associated with an increase in annual GDP growth by $\frac{1}{4}$ to $\frac{1}{2}$ of a percentage point for a significant period of time. The impact from strengthening investor protection would be somewhat weaker.

The rest of the paper is organised as follows: Section 2 briefly reviews the degree of competition in the markets for banking services and securities on the basis of indicators of outcomes. Section 3 provides a discussion of barriers to competition in financial systems and introduces the regulatory indicators used in the empirical analysis. Section 4 presents the empirical methodology and results and compares those with findings from earlier studies. This is followed by concluding remarks.

2. Competition in financial markets and financial development

A key determinant of the efficiency of the financial sector is likely to be the degree of competition markets for financial products and services. As in other sectors, stronger competition between banks and other financial institutions is likely to drive down costs and expand the choice for both savers and users of external finance in a way that is suitable for their respective needs. However, stronger competition in financial markets could conceivably also have adverse implications for the stability of financial institutions and hence economic stability, although there is no evidence that OECD countries with vibrant competition are more prone to instability than countries with more muted market forces.

Past trends in deregulation (removal of price controls, elimination of barriers to cross-border capital flows, easing of regulation of banking activities, etc.) and improvements in the technologies of information and communication have undoubtedly raised competitive pressures in most segments of banking services.

And, although the wave of liberalisation that took place in the 1980s was initially followed by a series of crises in banking or credit institutions, developments since then underscored the major role played by other factors such as inadequate regulation, skewed incentives created by tax systems, and macro-economic policies. In fact, with the exception of Asia, the banking sector in OECD countries has withstood a number of important shocks since the mid-1990s without major failures.

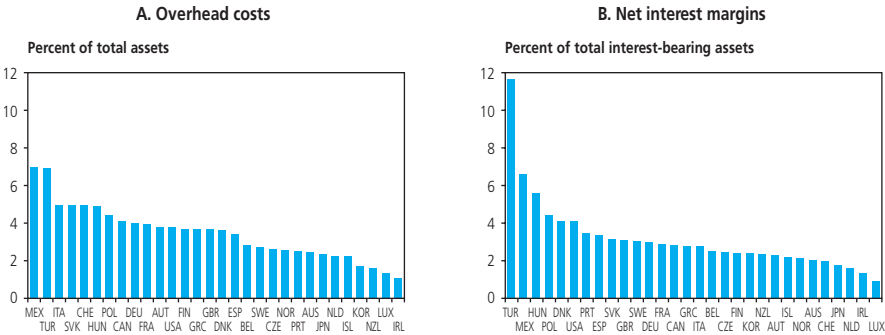
Just how intense these competitive pressures have become is more difficult to judge, however, given that the degree of competition in various markets for banking or securities issuance and trading services cannot be directly observed.⁴ Even so, a number of indicators of competition based on measures of costs, margins and import penetration rates point to sizeable differences across OECD countries, suggesting that at least for many of these markets further gains could be reaped from a more competitive financial system, not least in the area of retail banking services:

- Overhead costs as well as net interest margins show that cost structures and pricing strategies vary to a great extent (Figure 1). Banks' overhead costs tend to be relatively high in some lower-income countries, reaching nearly 7% of total assets in Mexico and Turkey, whereas it is comparatively low (less than 1.5%) in Luxembourg and Ireland. Similarly, banks' net interest margins are particularly high in Turkey (11.7% of total interest-bearing assets), while they are less than 1.5% of total interest-bearing assets in Ireland and Luxembourg.
- Measures of international competition in banking suggest that domestic banks are subject to varying degrees of competition (Figure 2). In some countries (Greece and Luxembourg), more than 30% of borrowed funds by the private sector come from across the border, whereas in countries such as Korea and Japan the share of cross-border loans is negligible.
- In retail banking services, where a physical presence is usually required, either in the form of branches or subsidiaries, foreign-owned banks play a major role in domestic lending to the private sector in a few countries (notably in Mexico, New Zealand and Central and Eastern European countries). However, in most other countries domestic loan market penetration rates by foreign

4 One traditional approach to measuring competitive pressures is based on the degree of market concentration, for instance the share of total bank assets in a given market held by the three largest banks. In the case where the domestic market is taken as the relevant market, such measures typically show that concentration is high in small countries (markets), which could be misleading given that banks operating in such markets may nevertheless be facing stiff competition from abroad. However, measures of concentration that take into account cross-border competition are difficult to construct.

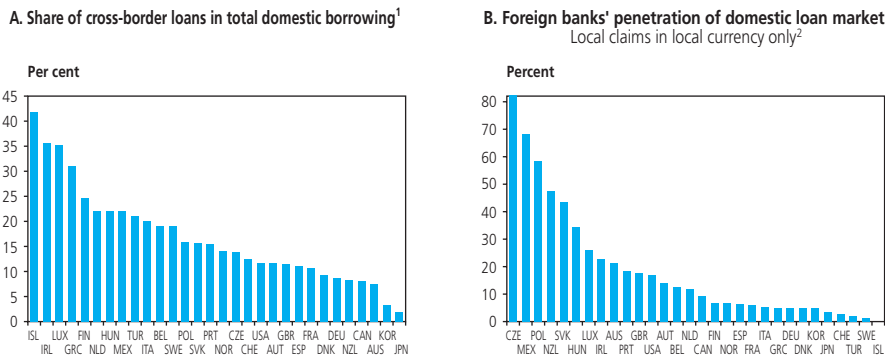
institutions remain low, particularly so in Japan and euro area countries. The latter is somewhat surprising in light of EU efforts to bolster financial integration.

Figure 1: Bank activities: costs and interest margins
Average 1996-2003



Source: World Bank financial structure database and World retail banking report, 2005.

Figure 2: International competition in banking
Average 2000-2003



1. Measured as foreign banks' cross-border claims on non-banks as a percentage of all commercial banks' local claims on non-banks plus cross-border claims on non-banks.
2. Measured as foreign banks' local claims in local currencies as a percentage of all commercial banks' local claims on non-bank sectors (i.e. household, non-bank corporations and public sectors). Since the data on local claims in local currencies are not broken down by sector, they include lending to banks as well as to non-bank sectors. As a result, the measure over-estimates the underlying rate of foreign penetration of non-bank domestic loan market.
Source: BIS and IMF.

There are indications that markets for corporate bonds and shares have also become more competitive in recent years, reflecting to a large extent the high degree of integration in the market for investment banking services. This is particularly manifest in the case of corporate bonds, where the share of domestic issuance that is underwritten by foreign banks has risen substantially over the

past ten years, in particular in the euro area (Barros *et al.*, 2005). This has allowed for a substantial reduction in underwriting fees (Santos and Tsatsaronis, 2003). As regards the equity market, cross-country variations still exist in transaction prices despite the tendency for global integration of the industry. Thus, effective spreads, which consist of brokerage fees as well as clearing and settlement fees for equity trading, differ markedly across countries (London Economics, 2002).

Behind this are structural factors that hamper competition. Securities exchanges are often fragmented along national borders, preventing scale economies from taking place. One reason for the fragmentation along national lines is that one of the main activities related to securities trading –the process of clearing and settlement– is generally fragmented due to differences in technical requirements, tax regimes and legal systems.⁵ This significantly raises the cost of cross-border transactions given the required involvement of additional intermediaries to complete the post-trade process. Furthermore, in some cases, the vertical integration structure of stock exchanges prevents different providers of clearing services from having access to a stock exchange, limiting competition for such services within a country.

While indicators similar to those shown above are often used to assess the state of competition, it is important to recognise that they need to be interpreted with care as they are influenced by a host of other factors. For example, insofar as strong competition in retail banking implies the presence of a larger number of branches in local markets, even efficient banks may come-up with relatively high overhead costs. Also, cross-border lending may be low because domestic banks are efficient. For these reasons, a better approach to assessing the state of competition might be to look directly at the strictness of various government regulations that affect competition in banking and securities markets.

3. Barriers to competition in financial markets: The role of regulation and other policies

This section discusses regulatory impediments to competition (both from domestic and foreign sources) in various segments of banking activities, as well as of the regulatory underpinnings of securities markets. Using essentially information from comprehensive regulatory databases compiled by the World Bank, the stance of regulation in banking and some aspects of securities markets is presented in

5 This issue has been particularly well documented in the context of the European Union, with reports published by the Giovannini group (2003) as well as by the CEPS (2003).

the form of quantitative indicators. In addition, the section discusses a number of less formal policy barriers to cross-border competition in securities and banking services. Such barriers include, *inter alia*, differences in national corporate tax systems as well as in legal, technical or accounting standards.

3.1 Banking regulation

Banking regulation has often been put in place with several –and sometimes conflicting– objectives in mind, such as promoting strong national financial institutions, offering consumer protection, assisting industrial and/or regional development and preserving financial stability, in particular the safeguarding of the payment and settlement system. This has led in the past to tight and widespread regulation, ranging from interest rate ceilings and branching restrictions to capital requirements and deposit insurance. While some of the most stringent rules such as interest rate controls and branching restrictions have by now been largely eliminated in OECD countries, the sector remains nevertheless one of the most intensely regulated across countries. In parallel, the main objectives of regulation have generally become more narrowly focused, with the main emphasis put on crisis prevention, in particular on limiting systemic risks should one or more institutions get into trouble. Furthermore, in an effort to level the playing field internationally, efforts have been made to harmonise prudential regulation across countries *via* the Basel I and II processes.

Against this background, the policy challenge is to strike the right balance between preserving the overall soundness of the banking system and fostering its efficiency. A minimum level of regulation is needed to ensure that financial institutions behave prudently, and this inevitably has a cost in terms of higher barriers to entry and reduced competition. However, stability concerns can be addressed through the use of specific instruments that have minimal effects on competition. Indeed, as long as measures such as capital requirements, disclosure rules and risk-based deposit insurance are in place to ensure banks' prudent behaviour, further reductions in direct barriers to competition may need not weaken financial stability or investor protection.⁶

⁶ Such a view is supported by recent empirical evidence suggesting that restrictions on bank competition has in the past brought significant real economic costs that are not offset by the alleged benefits such as wider access to credit by small and risky firms or lower frequency of bad loans (see Guiso, Sapienza and Zingales (2003) in the case of Italy). Using data on the US banking markets, Cetorelli and Strahan (2004) find that stronger bank competition in local markets (lower state-level restrictions on bank entry) is generally associated with a higher share of smaller establishments as well as with a rise in the number of establishments, while larger firms which benefit from easier access to securities markets are less affected.

3.1.1 Construction of regulatory indicators

In order to compare the stance of banking regulations across countries, the analysis relies essentially on the World Bank's *Bank, Regulation and Supervision Database*. It compiles the results from a detailed survey of banking regulation conducted in 2000 and again in 2002-03 in a large number of countries (see Annex 1 for details regarding the questionnaire and the construction of quantitative indices). As such, it provides a measure of the stance of banking regulation in the countries covered, with some indications of the enforcement powers by supervisors. The survey consists of approximately 250 questions which, for the purpose of this exercise, have been categorised under two broad headings: stability and barriers to competition (Figure 3).

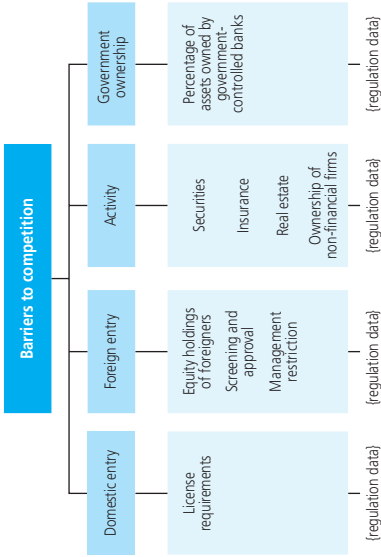
Each category is in turn divided in sub-groups according to the specific aspects of regulation covered. The sub-groups for the competition-barriers category include regulatory barriers on domestic and foreign entry, restrictions on banking activities and the extent of government ownership. The sub-groups for stability category consist of ten diverse regulatory areas. Even though the *Bank, Regulation and Supervision Database* contains some information about foreign entry and government ownership, the indicators used in the empirical work are based on alternative sources which were viewed as more comprehensive. More specifically, the index of restrictions on foreign entry in banking is based on earlier OECD work on FDI restrictions (Golub, 2003). As for the measure of government ownership of banks, it is taken from La Porta *et al.* (2002).⁷

As is common practice with regulatory indicators, qualitative answers (mostly in the form of "yes" or "no") to a questionnaire have been converted into quantitative indices by attributing a score that increases according to the restrictiveness of regulation. The scores attributed to individual questions (on a scale going from 0 to 1) have first been aggregated into sub-indices, corresponding to the groupings shown in Figure 3, and then into the two broad categories, barriers to competition and stability. Converting qualitative information into quantitative indicators is, however, not without problems. A key issue is to what extent the same weight should be given to all indicators or if some indicators should have a bigger weight, which obviously is crucial to the value of the indicator. One way to address this is to assign random weights to individual or groupings of

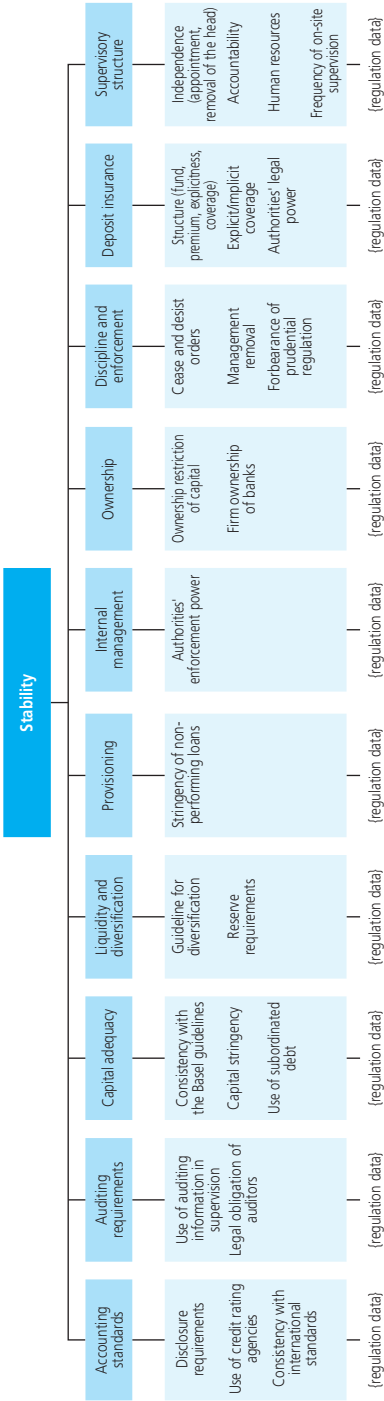
⁷ Compared to the *Bank Regulation and Supervision Database*, these two indicators are based on information that is much earlier, *i.e.* 1998-2000 in the case of restrictions on foreign entry and 1995 in the case of government ownership. As such, they are obviously not necessarily a good indication of current policies, but they are still relevant for empirical analysis over a sample period that covers most of the 1990s.

Figure 3: The system of regulatory indicators for the banking system

A. Regulatory barriers to competition



B. Regulations aimed at stability



questions and provide a range of possible values for the index as a function of changing weights, as has been done in the following.⁸

3.1.2 Results

Figure 4 shows the constructed regulatory indicators for the broad competition and stability categories. The mid-point (*i.e.* the white circle) shows the average index and the ranges shown in shaded areas are calculated using the random weights technique (using 90% confidence intervals). On the basis of this technique, only relatively few OECD countries differ from the OECD average with respect to regulatory barriers to competition –although there are some “outsiders” at both end of the spectrum. Looking at regulations aimed at stability suggests narrower confidence intervals and hence greater dispersion with a number of countries being clearly below or clearly above the OECD average.

At the time the survey was conducted (2002-03), the indicator for regulations affecting competition shows that Korea, Greece, Iceland and Central and Eastern European countries tended to have generally stricter regulation. By contrast, regulations in this area were particularly permissive in New Zealand, the United Kingdom, France and Finland. Most other countries were found to lie within a fairly narrow range around an intermediate position with respect to competition-restraining regulations in banking.

The overall indicator of barriers to competition can be further decomposed into its main sub-indices (Figure 5). Most OECD countries tend to have relatively stringent requirements to set up banking institutions, and regulations tend to be comparatively homogenous across countries. Thus, basically all countries require extensive information about financial projections for new banks and their business plan, the sources of equity and the financial status of the main potential shareholders, the planned organisation of the bank and the background of future directors and managers.

Somewhat more variations are observed with respect to activity control and restrictions to foreign entry into banking (at least as they were prevailing in the late 1990s). Controls on the types of activity that bank can engage into are particularly low in many European countries. Government ownership of banks was most extensive in Austria, Iceland, Norway and Eastern European member countries in the mid-1990s, while the banking system was fully in private hands

⁸ See Freudenberg (2003) for a discussion of how to create indicators and how to carry out the random weights technique.

Figure 4: Banking regulation indices, 2003¹

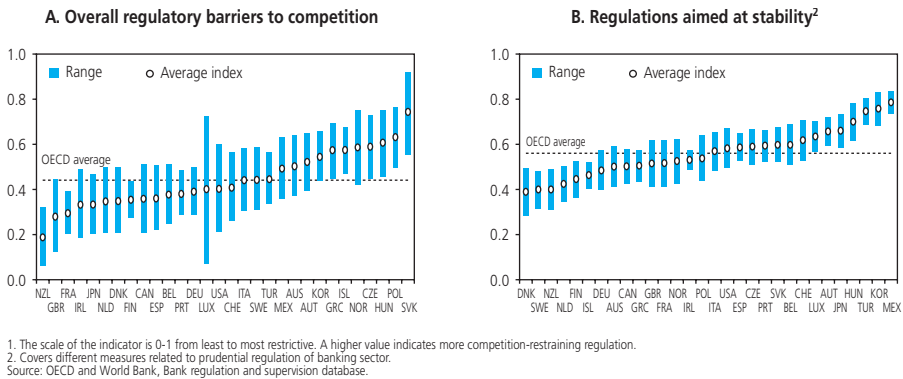
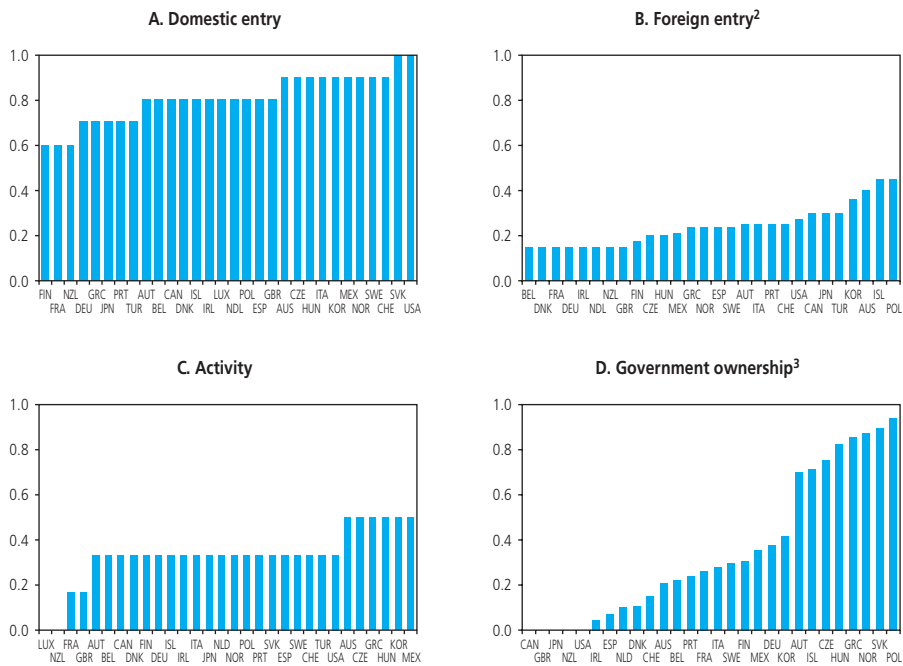


Figure 5: Barriers to competition in banking¹



1. The scale of the indicator is 0-1 from least to most restrictive. A higher value indicates more competition-restraining regulation.

2. Restrictions to foreign entry are taken from Golub (2003). This index reflects the stance of regulation prevailing in the period 1998-2000.

3. Measures the amount of assets held by banks (among the 10 largest) where government ownership is at least 20 per cent as a ratio of total assets (of the 10 largest banks). The measure is taken from La Porta *et al.* (2002) and applies to 1995.

Source: OECD and World Bank (Bank regulation and supervision database) and La Porta *et al.* (2002).

in many countries, including Canada, Japan, New Zealand, the United Kingdom and the United States at that time. Overall, there is little correlation between the stances of regulations across the different areas, which explains the relatively large confidence band (top panel of Figure 4).

Regulations related to prudential conduct in the banking sector are comparatively strict in some low-income member countries and relatively light in some Nordic countries, New Zealand and the Netherlands. As reflected in the comparatively narrow confidence intervals for the stability-oriented regulation index depicted in Figure 4 (lower panel), policies tend to be applied more consistently in the ten different areas making up the index. For example, countries with tight accounting standards and auditing requirements also tend to give regulators relatively strong powers to intervene in the internal management of banks.

3.1.3 Correlations of banking regulations and financial development

Simple correlation analysis shows that across countries the variables measuring aspects of regulation in the banking industry appear related to financial development and with an effect that is in conformity with priors (Table 1). More specifically, stricter anti-competitive regulation is associated with lower bank assets relative to GDP though not with private credit by banks relative to GDP. At a lower level, these indicators of banking sector development are negatively (albeit, weakly) associated with regulations on foreign entry and activities. To some extent, these results corroborate those found in an earlier study based on the same regulatory data set (albeit from an earlier vintage, see Barth, Caprio and Levine, 2002).⁹ With respect to stability-oriented regulations, the correlations reported in Table 1 suggest that they tend to be negatively associated with financial development, though the correlation is not statistically significant for some of the more specific regulatory areas.

3.2 Securities market regulation

In contrast to banking regulation, tensions between different regulatory objectives have been less of an issue in the case of securities markets. This owes much to the fact that a core objective of market regulation – investor protection

⁹ Based on the 1999 Survey of banking regulation, the authors also looked at the impact of various regulatory variables on a measure of bank development in a set of OECD and non-OECD countries. Even though their regulatory indicators were defined and constructed somewhat differently, they also found restrictions on bank activities and foreign entry as well as government ownership to have a significant negative impact on the amount of bank credit to the private sector as a share of GDP, while restrictions on domestic entry did not.

defined in a broad sense— is also viewed as contributing positively to financial system efficiency. Even so, striking the right balance between protecting the rights of various stakeholders (shareholders, creditors, entrepreneurs/managers, employees) on the one hand, while allowing firms and markets to function efficiently on the other, does involve complex policy trade-offs, cutting through a wide range of regulatory areas such as securities exchange rules, company law and bankruptcy law. Accordingly, providing a comprehensive quantification of the stance of regulation in these areas with a view to identifying best practice remains a challenge.

3.2.1 Construction of indicators

To assess the stance of securities market regulation in member countries, quantitative indicators have been derived using the *Doing Business Database* (2005) of the World Bank.¹⁰ Four broad indices of securities market regulation have been used (details are included in Annex 1): contract enforcement, access to credit, investor protection and bankruptcy procedures. Each category is constructed from sub-indices which essentially reflect aspects of transparency (information disclosure) and efficiency of legal procedures (Figure 6).¹¹ For instance, the access to credit index combines information about the coverage of public registries and private bureaus with estimates of cost to create collateral and with information on the legal rights of lenders and borrowers. As was the case with banking regulation, all individual items have been converted into a quantitative index ranging from 0 to 1. In contrast to banking regulation, however, and given the emphasis put on investor/creditor protection and information standards, the indices have been constructed in such a way that a higher value is interpreted as being good for financial development and overall economic performance.

¹⁰ Some of the indicators used from this publication are not strictly exogenous policy indicators but rather reflect the stance of policy to an important extent.

¹¹ All the sub-indices are based on the version of *Doing Business* published in 2005 except the cost to create collateral which is based on the 2004 publication. Although these indicators are associated with securities markets they cover aspects of regulation for debt instruments in general, including bank loans.

Table 1: Correlation between banking regulations and financial development

Structural indicator	Bank assets as a share of GDP						Private credit by banks as a share of GDP				
	I	II	III	IV	V		VI	VII	VIII	IX	X
Barriers to competition	-2.15** (0.04)						-1.69 (0.16)				
Domestic entry		-0.91 (0.19)						-0.03 (0.97)			
Foreign entry			-1.90* (0.05)						-1.10 (0.31)		
Activity				-1.10* (0.06)						-1.16* (0.08)	
Government Ownership					- 0.11 (0.86)						-0.32 (0.65)
Number of observations	29	29	27	29	27		29	29	27	29	27
R ²	0.15	0.06	0.14	0.12	0.00		0.07	0.00	0.04	0.11	0.01
Structural indicator	Bank assets as a share of GDP										
	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI
Stability in banking regulation	-1.43** (0.04)										
Accounting standards		-0.06 (0.92)									
Auditing requirements			-0.03 (0.96)								
Capital adequacy				-0.13 (0.79)							
Liquidity & diversification					-0.32 (0.31)						
Provisioning						-0.68*** (0.00)					
Internal management							0.08 (0.65)				
Ownership								-0.85** (0.03)			
Discipline & enforcement									-0.76* (0.07)		
Deposit insurance										-0.51 (0.22)	
Supervisory structure											-0.11 (0.85)
Number of observations	29	29	29	29	29	29	29	29	29	29	29
R ²	0.15	0.00	0.00	0.00	0.04	0.34	0.01	0.16	0.12	0.06	0.00

Note: Each column in barriers to competition and stability in banking regulation is a separate regression. Dependent variables for barriers to competition are bank assets as a share of GDP and private credit by banks as a share of GDP (average between 2000 and 2003). Dependent variable for stability is bank assets as a share of GDP. P-values are reported under the estimated coefficients. *, **, *** indicate significance at the 10, 5 and 1 per cent level respectively.

3.2.2 Results

The value of the overall index of securities market regulation is shown in Figure 7. As is the case in banking regulation, the mid-point (*i.e.* the white circle) shows the average index and the ranges shown in the shaded areas are calculated using the random weights technique. Compared with the results obtained in banking regulations, a larger set of countries (English-speaking countries as well as Norway, Japan, Iceland, Belgium and Finland) have significantly more demanding regulation (*i.e.* favourable to the development of securities markets) than the OECD average. By contrast, the indicator shows that Central and Eastern European countries, and other countries with relatively low values, have a regulatory stance that may discourage the development of securities markets.

Figure 6: The system of regulatory indicators for securities markets

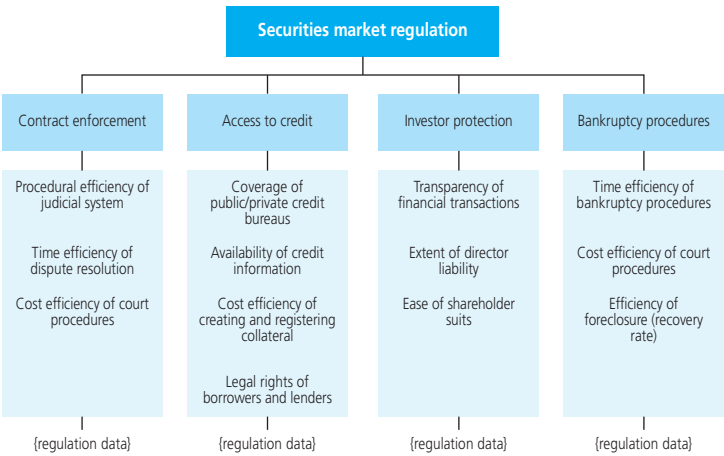


Figure 7: Securities markets regulation indices¹

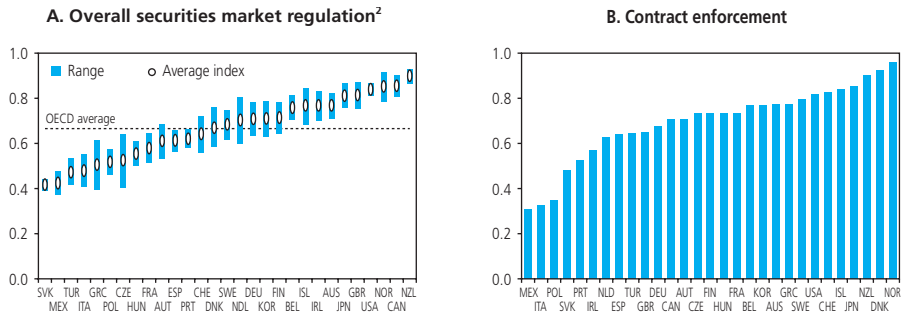
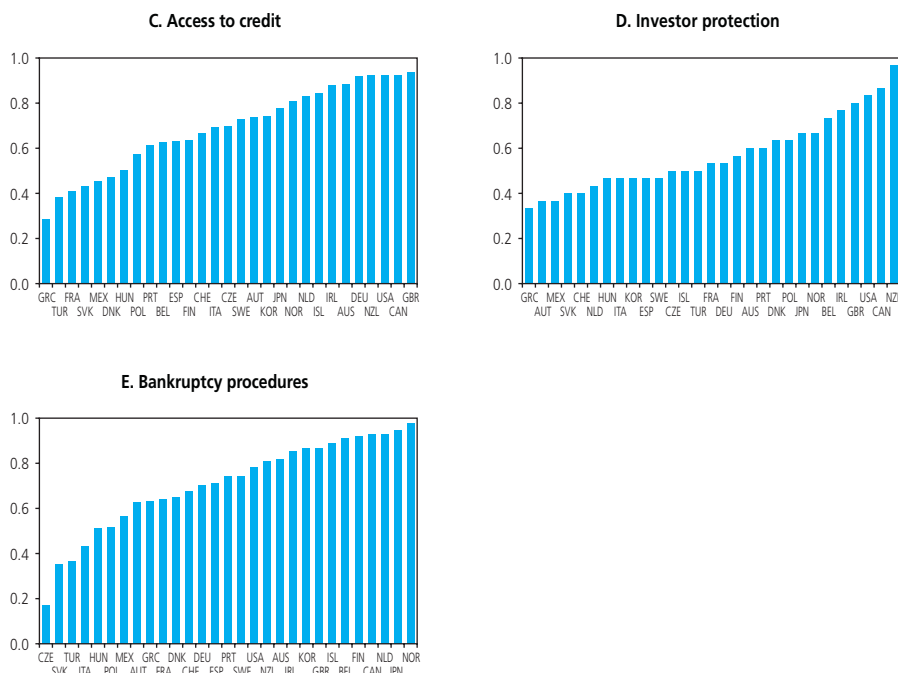


Figure 7: Securities markets regulation indices (concluded)



1. The scale of the indicator is 0-1 from least to most demanding. A higher value indicates regulation that is more conducive to financial development.

2. Covers contract enforcement, access to credit, investor protection, and bankruptcy procedures.

Source: OECD and World Bank's bank regulation and supervision database.

The overall indicator of securities market regulation can be further decomposed into four broad sub-indices:

- *Contract enforcement.* Captures essentially the efficiency of commercial contract enforcement based on the number of procedures, the number of calendar days for dispute resolution and the official cost of court procedures.
- *Access to credit.* Captures two broad elements in assessing the ease of access to credit: the amount of credit information available through public registries or private bureaus; the strength of legal underpinnings in arranging collateral in protecting secured lenders.
- *Investor protection.* Captures the strength of minority shareholder protection against directors' misuse of corporate asset for personal gain from three perspectives: transparency of transactions, liability for self-dealing and shareholders' ability to sue directors for misconduct.

- *Bankruptcy procedures.* Captures the efficiency of bankruptcy laws and its proceedings with respect to the time required to go through the bankruptcy procedure, the overall cost of procedures and the recovery rate.

Overall, the stance of securities market regulations in different areas tends to be correlated in each country. Some G-7 countries (e.g. Canada, the United States and the United Kingdom) are relatively demanding in all areas, whereas Central and Eastern European countries tend to be fairly unrestrictive across the board.

3.2.3 Correlations of securities market regulations and financial developments

Correlation analysis underlines that across OECD countries the indicators of securities market regulation appear to be related to financial development (Table 2). To be more specific, stricter regulation is associated with higher stock market and private bond market capitalisation relative to GDP. At a lower level, significant influences of contract enforcement and bankruptcy procedures are found.

Table 2: Correlation between securities market regulations and financial development

Structural indicator	Stock market and private bond market capitalization as a share of GDP				
	I	II	III	IV	V
Securities market regulation	2.41*** (0.01)				
Contract enforcement		1.69** (0.03)			
Access to credit			1.33* (0.06)		
Investor protection				0.66 (0.43)	
Bankruptcy procedures					1.71*** (0.01)
Number of observations	29	29	29	29	29
R ²	0.22	0.16	0.13	0.02	0.24

Note: Each column is a separate regression. Dependent variable is the sum of stock market and private bond market capitalisation as a share of GDP (average between 2000 and 2003). P-values are reported under the estimated coefficients. *, **, *** indicate significance at the 10, 5 and 1 per cent level respectively.

3.3 Potentially important sources of inefficiencies not captured by indicators

Apart from the formal barriers discussed above, a number of less formal or non-legal obstacles contribute to maintaining inefficiencies in financial markets. While some of these obstacles may be “natural” such as language, culture or preferences, others may result from policy settings, including unfinished agendas for facilitating international trade and market integration. Some of the most significant policy areas can be regrouped according to the type of market instrument they are most directly related to:

- In the case of *retail banking services*, including bank loans to individuals and small and medium-sized enterprises, barriers to trade include the lack of harmonisation in consumer protection rules as well as in procedures for solving cross-border or cross-region disputes (Walkner and Raes, 2005). In addition, banks wishing to expand into neighbouring countries via foreign subsidiaries are generally subject to host-country supervision rules, implying multiple reporting. Even within countries, banks operating nationwide must in some member countries deal with multiple layers of supervisory authorities, often with different reporting requirements. Finally, even though substantial progress has been achieved in lowering formal barriers to cross-border mergers and acquisition, national authorities make sometimes excessive use of special control rights, company law provisions and prudential considerations to discourage foreign acquisitions.
- In the case of *equity markets*, a number of factors contribute to limiting the consolidation of stock exchanges as well as to raising the cost of cross-border securities transactions. These include differences in national corporate tax systems as well as in reporting and accounting standards, and, in some cases, the vertical ownership structure of stock exchanges. In some member states, investors/traders wishing to transact in several regions or provinces face higher costs owing to the presence of different securities exchange commissions.
- The development of the *private equity or venture capital market* is hampered in several countries by legal restrictions on holding of high-risk instruments by pension and/or mutual funds (Thompson and Choi, 2002). In addition, high capital gains taxes have been found to adversely affect venture capital development (Gompers and Lerner, 2004). Barriers to consolidation of secondary stock markets may also play a role, given the importance of exit prospects in attracting venture capital investment (OECD, 2003a).

- In the case of the *bond market*, a number of barriers have slowed the development of asset-backed securities including, in several cases, provisions from bankruptcy legislation requiring borrowers to be individually notified that the loan they contracted via a financial intermediary is being securitised, which raises the cost of such operation. The lack of sufficient information on the historical performance of the underlying assets may also be a contributing factor. More generally, the development of an integrated asset-backed securities market is hampered by cross-country differences concerning reporting regulations, rules on withholding taxes, income tax treatment of issuing vehicles and treatment of capital gains (Lumpkin, 1999).

4. The impact of financial systems development and policies on economic performance: Empirical evidence at the industry level

This section reports on the results from panel regression analysis linking a number of indicators of regulatory policy in the areas of banking competition and securities markets reviewed in the previous section, as well as measures of financial development and costs to broad measures of economic performance. As mentioned earlier, a large number of empirical studies have shown the importance of financial systems development for growth at the aggregate level, but fewer have gone beyond standard measures of financial development and examined directly the impact of policy variables on performance at the sectoral level.

To the extent that important differences prevail across industries with respect to the use of external finance, using disaggregated data allows cross-section regression analysis to be performed over a larger and richer dataset.¹² Accordingly, the empirical investigation presented in this section is conducted on the basis of industry-level data, which are used to examine the effect of various policy indicators and measures of development on real value-added growth and labour productivity growth. In addition, given the importance of firm demographics on sector-level productivity (especially in high-technology sectors), the impact of financial development and policy on industry entry rates is also examined.¹³

¹² It also allows controlling for the possibility that important sectoral shifts in the industrial structure may bias the results from macro data analysis.

¹³ See OECD (2003b). Even though studies have shown that existing firms contribute more importantly to productivity gains than new firms, high entry rates may contribute indirectly via competitive pressures on incumbent firms.

4.1 Methodology and specification

The approach used to test whether regulations and the development of financial systems have a significant influence on economic growth follows closely the methodology introduced by Rajan and Zingales (1998). This methodology is based on the idea that firms' dependence on external sources of finance varies across industries according to differences in technology and characteristics such as the degree of capital intensity. For example, highly capital –and R&D– intensive industries may be more dependent on external funding due to large investment costs and longer periods before the profits can be harvested. Insofar as these differences across industries in the desired degree of external dependence are broadly similar across countries, this opens the possibility to test whether industries that depend more heavily on external funds grow faster in countries that have better-developed financial systems.

Concretely, this is done by interacting an industry-specific measure of external financial dependence with a country-specific indicator of financial development or regulatory policy such as those discussed in section 3. However, the *desired* amount of external financing in each industry is not observed and can only be inferred from the *actual* amount of funds raised externally. The latter is likely to be a good proxy for the former only where financial markets are sufficiently developed to provide firms with a largely unconstrained access to external financing. Following Rajan and Zingales, the assumption made is that US financial markets come closest to provide such access and accordingly, data on US listed firms can be used to identify industries' need of external finance. Each interaction term is then introduced as a potential determinant in separate regressions. In principle, it would have been desirable to include all the regulatory variables in a single regression allowing for statistical discrimination, but this was not feasible due to strong multicollinearity induced by the interaction with the measure of external financial dependence.¹⁴

This methodology is applied to examine the impact of financial systems' regulation and development on valued-added growth, labour productivity growth and firms' entry rates. In the first two cases, the analysis is conducted on a panel dataset with country and industry dimensions, using average growth rates over the 1994-2003 period. A time-series dimension is included in addition in the case of firm entry rates. The latter are defined as the number of entering firms divided by the total number of firms in a specific industry and are calculated on an annual

¹⁴ One way to partly circumvent this limitation would be to construct broad regulatory indicators using principal component analysis.

basis over the period 1990-2001. The empirical analysis is based on the estimation of the following respective equations:

A) Industry growth

$$GROWTH_{c,i} = \alpha + \beta_1 INITIALSHARE_{c,i} + \beta_2 (X_c * EXDEP_i) + \gamma_1 Dcountry_c + \gamma_2 Dindustry_i + \varepsilon_{c,i} \quad (1)$$

B) Industry entry dynamics

$$ENTRY_{c,i,t} = \alpha + \beta_1 GAP_{c,t} + \beta_2 (X_c * EXDEP_i) + \gamma_1 Dcountry_c + \gamma_2 Dindustry_i + \gamma_3 Dyear_t + \varepsilon_{c,i,t} \quad (2)$$

where $GROWTH_{c,i}$ and $ENTRY_{c,i,t}$ are the dependent variables and refer to growth of value added or labour productivity and entry rates in industry i and country c , respectively. X_c stands for indicators of financial development and regulatory stances and the variable $EXDEP_i$ captures the measure of industries' dependence on external finance. The model for firm entry includes also the time dimension with sub-index t . Dummy variables for each country, industry and year are introduced to correct for country, industry and time specific effects. An industry's initial share of the total value added, $INITIALSHARE_{c,i}$, is used to control for potential convergence effects.¹⁵ Finally, a measure of the output gap, $GAP_{c,t}$, is used to control for business fluctuations affecting firm entry.

The financial development and performance variables include an overall measure of size (sum of private credit and securities market capitalisation), venture capital, and overhead costs in the banking sector. As for policy indicators, they cover the two broad indices of securities market regulation and barriers to competition in banking, as well as some of their main sub-indices as defined in the previous section. While stability-oriented regulations have been excluded from the analysis reported, preliminary results indicated no statistically significant effects on such regulations on long-term performance. All the details concerning data sources, variable definitions and country and industry coverage are exposed in Annex 2.

4.2 Results

4.2.1 Base case results

Overall, the results for value-added growth and labour productivity growth provide further support to the view that financial systems matter for economic

¹⁵ Even though there is little reason *a priori* to expect a convergence phenomenon in industrial structure, relatively high growth rates may be observed more frequently in the case of smaller industries. To the extent that this is the case, such effect needs to be controlled for.

performance (Tables 3 and 4). Both the broad measures of financial depth, venture capital and overhead costs have a significant influence on the two growth measures, with the impact going in the expected direction. As for policy indicators, both the overall indices of barriers to banking competition and securities market regulation are found to impact significantly on value-added and productivity growth. Taken at face value, this would suggest that policies improving contract enforcement, access to credit, the efficiency of bankruptcy procedures, or reducing barriers to entry and government control in the banking sector will foster labour productivity and value-added growth, in sectors most dependent on external finance.

Table 3: Value-added growth, financial development and regulations: Empirical analysis
(Panel regressions with country and industry dimensions: Average over 1994-2003)

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Initial share	-0.19** (0.07)	-0.20** (0.08)	-0.18** (0.07)	-0.21*** (0.07)	-0.20*** (0.07)	-0.18** (0.07)	-0.19** (0.08)	-0.20*** (0.07)	-0.22*** (0.08)	-0.20*** (0.08)	-0.21*** (0.07)
Financial development*EXDEP	0.38*** (0.13)										
Venture capital*EXDEP		1.63*** (0.58)									
Overhead costs in banking*EXDEP			21.99** (9.75)								
Market regulation*EXDEP				2.20*** (0.65)							
Contract enforcement*EXDEP					1.52*** (0.55)						
Access to credit*EXDEP						0.99** (0.49)					
Investor protection*EXDEP							0.99** (0.49)				
Bankruptcy procedures*EXDEP								1.33** (0.54)			
Barriers to banking competition *EXDEP									-3.03*** (0.86)		
Regulation on entry and activity*EXDEP										-3.10** (1.30)	
Government ownership*EXDEP											-1.08*** (0.33)
Number of observations	435	444	466	466	466	466	466	466	466	466	466
R ²	0.45	0.41	0.42	0.43	0.42	0.42	0.42	0.43	0.43	0.42	0.43

Notes: EXDEP variable in the interaction terms refers to industries' dependence on external finance. Financial development is measured as the sum of private credit, stock market and private bond market capitalisation to GDP. All regressions include country and industry dummies. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at 10, 5, and 1 per cent level, respectively.

Source: OECD.

Table 4: Productivity growth, financial development and regulations: Empirical analysis
(Panel regressions with country and industry dimensions: Average over 1994-2003)

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Initial share	-0.15 (0.09)	-0.15* (0.08)	-0.14* (0.08)	-0.17** (0.08)	-0.16** (0.08)	-0.15* (0.08)	-0.16* (0.08)	-0.16** (0.08)	-0.19** (0.08)	-0.17** (0.08)	-0.18** (0.08)
Financial development*EXDEP	0.36*** (0.10)										
Venture capital*EXDEP		0.93** (0.47)									
Overhead costs in banking*EXDEP			-20.50** (9.82)								
Securities market regulation*EXDEP				1.96*** (0.56)							
Contract enforcement*EXDEP					1.32*** (0.50)						
Access to credit*EXDEP						0.81** (0.41)					
Investor protection*EXDEP							1.16*** (0.43)				
Bankruptcy procedures*EXDEP								1.13*** (0.36)			
Barriers to banking competition *EXDEP									-2.90*** (0.58)		
Regulation on entry and activity*EXDEP										-3.43*** (1.15)	
Government ownership*EXDEP											-0.96*** (0.22)
Number of observations	394	423	423	423	423	423	423	423	423	423	423
R ²	0.45	0.42	0.42	0.43	0.42	0.42	0.42	0.42	0.43	0.43	0.43

Notes: EXDEP variable in the interaction terms refers to industries' dependence on external finance. Financial development is measured as the sum of private credit, stock market and private bond market capitalisation to GDP. All regressions include average country and industry dummies. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at 10, 5, and 1 per cent level, respectively.

Source: OECD.

Turning to the impact on firms' entry rates, the results are broadly in line with those for value added and labour productivity growth, although the degree of significance is generally somewhat weaker (Table 5). One difference is that venture capital is no longer significant. Another difference is that the impact of barriers to banking competition relative to that of securities market appears to be larger than in the case of productivity and value-added growth. This finding is consistent with the view that new and small firms tend to rely more heavily on

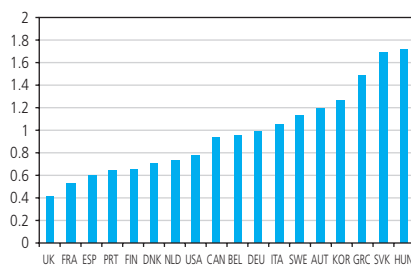
bank financing and thus regulation on this sector may have a stronger effect on such firms. Perhaps more importantly, the negative impact of barriers to competition in banking on firm entry contradicts the view according to which greater market power in banking may facilitate entry by providing easier access to credit for young and unknown firms (Peterson and Rajan, 1995).

Even if the statistical analysis supports the importance of the financial development and regulatory variables, they explain only a small fraction of the variance in sectoral value-added and productivity growth, as well as of entry rates. Indeed, these variables account for one to two per cent of the total variance, the country, industry and (in the case of entry rates) time fixed effects accounting for almost all of the multiple correlation coefficients (R^2) of the regressions. Nonetheless, since the variation is quite large, the financial development and regulatory indicators are of significant quantitative importance. For instance, based on the empirical estimates reported above, a one standard-deviation increase in financial development would lead on average to an increase in the growth rate of value-added or productivity in the business sector of a magnitude varying roughly from 0.2 to 0.5 percentage points (depending on the averaging method), while the impact on entry rates would range between 0.4 and 0.7 percentage points (Table 6). Improvements in the stance of banking regulations equivalent to one standard deviation would be associated with increases in growth and entry rates of similar magnitudes, whereas the impact of securities market regulation is somewhat lower.

A different way to show the quantitative importance of the empirical results is to compute the impact on aggregate growth of aligning regulations in all countries on those in the country with the least restraining regulations on competition in banking. Figure 8 gives the simulated increase in growth rates of

Figure 8: The growth raising effects of stronger competition in banking

Hypothetical increase in the average annual value-added growth rate in the business sector over the 1994-2003 period as a result of aligning completion-restraining banking regulations to the least constraining level in the OECD (percentage points)



total value added in the business sector over the 1994-2003 period (or the period used for estimation if it is shorter) from setting the bank regulation indicator in all countries to that of New Zealand, *i.e.* the country with the least constraining level.¹⁶ Taking the results at face value suggests that the impact would be significant, even adding one percentage point or more to the growth rate in value added in the private sector over the period in the countries with the most restrictive regulations.

The findings reported in this section are broadly in line with the few empirical papers looking at the growth and finance nexus from a sector-level perspective. For instance, the results on industry growth confirm the findings of the work by Rajan and Zingales (1998) and the more recent study by Guiso *et al.*, (2004) that analyses growth in the EU countries.¹⁷ The research at the industry level has mostly focused on value added growth and the finding that productivity growth is also positively affected by financial development provides further evidence on the relationship between finance and growth. A couple of studies examine the effects of financial development on firm entry (Klapper, Laeven, and Rajan, 2004; Vartia, 2005) and their results are consistent with those reported in this study. Beck, Demirgüç-Kunt, Laeven and Levine (2004) also find that small firms are particularly affected by financial development, in line with the above results on entry since entering firms generally tend to be small.

4.2.2 Robustness tests

In order to test the robustness of the findings on value-added and productivity growth and firm entry reported above, a number of sensitivity tests were carried out. In particular, the sensitivity to important omitted variables from the baseline regressions is tested. In the analysis of industry growth three additional variables are introduced to the baseline regressions (Tables 3 and 4; specifications IV and IX). These are *i*) the rate of change of the industry-specific regulation-impact indicator,¹⁸ *ii*) industry investment growth and *iii*) industry R&D intensity.

¹⁶ For this purpose, the coefficient in Table 3, Column 9 is used. Sectors are aggregated on the basis of their weight in total value added of the business sector on average over the period.

¹⁷ These studies focus on manufacturing whereas the current study includes also services sectors. In addition, this study uses the indicator of industries' dependence of external finance that is computed using data from 1990-2003 whereas the previous studies have used the data from the 1980's.

¹⁸ See Conway *et al.* (2006). This variable is calculated using indicators of regulatory conditions in major network industries and estimates of the importance of these industries as intermediate inputs in the production process.

Table 5: Entry rates, financial development and regulations: Empirical analysis
(Panel regressions with country, industry and time (1990-2001) dimensions)

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Financial development*EXDEP	0.58*** (0.21)										
Venture capital*EXDEP		-0.28 (0.81)									
Overhead costs in banking*EXDEP			-33.21** (13.73)								
Securities market regulation*EXDEP				2.15* (1.22)							
Contract enforcement*EXDEP					1.55* (0.91)						
Access to credit*EXDEP						1.24 (0.80)					
Investor protection*EXDEP							0.73 (0.83)				
Bankruptcy procedures*EXDEP								1.73** (0.87)			
Barriers to banking competition *EXDEP									-3.39*** (1.22)		
Regulation on entry and activity*EXDEP										-4.73*** (1.77)	
Government ownership*EXDEP											-0.91** (0.41)
Number of observations	1995	1950	2170	2170	2170	2170	2170	2170	2170	2170	2170
R ²	0.63	0.65	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63

Notes: EXDEP variable in the interaction terms refers to industries' dependence on external finance. Financial development is measured as the sum of private credit, stock market and private bond market capitalisation to GDP. All regressions include country, industry, and year dummies and output gap to control for business cycles in each country. Cluster corrected standard errors are reported in parentheses. *, **, and *** indicate significance at 10, 5, and 1 per cent level, respectively.

Source: OECD.

Table 6: Effect of a one standard-deviation change in the indicators of financial development and regulation

	Panel A Value added growth	
	Simple average effect ¹	Weighted average effect ²
Financial development	0.27	0.48
Venture capital	0.18	0.31
Overhead costs in banking (decrease)	0.20	0.34
Market regulation	0.24	0.42
Barriers to banking competition (decrease)	0.29	0.52

Table 6: Effect of a one standard-deviation change in the indicators of financial development and regulation (concluded)

	Panel B Labour productivity growth	
	Simple average effect ¹	Weighted average effect ²
Financial development	0.25	0.45
Venture capital	0.10	0.18
Overhead costs in banking (decrease)	0.18	0.32
Market regulation	0.21	0.37
Barriers to banking competition (decrease)	0.28	0.49
	Panel C Firm entry	
	Simple average effect ¹	Weighted average effect ²
Financial development	0.41	0.66
Overhead costs in banking (decrease)	0.30	0.48
Market regulation	0.24	0.38
Barriers to banking competition (decrease)	0.34	0.53

1. Calculated as a simple average of the effect on each industry.

2. Calculated as a weighted average of the estimated effect on each industry, with the weights being based on the average share across countries of respective industries in total business sector value added.

Source: Authors' calculations.

The results on the effects of financial regulation seem to be relatively robust to the inclusion of these variables (see Table 7). The estimated coefficients of investment growth, R&D intensity and change in the regulation impact indicator have the expected signs. However, only the regulation indicator and investment growth have statistically significant effects on value-added and productivity growth. Including the measure of regulation impact also reduces to some extent the statistical significance of the effect of banking competition regulation on labour productivity growth.

In the case of firm entry the robustness analysis was carried out using industry value-added growth and R&D intensity as control variables (not shown on Table). Of these, only R&D intensity was statistically significant and in neither cases were the basic results affected. On the other hand, the significance of the basic results turned out to be sensitive to the inclusion of the industry-specific regulation impact indicator, but in this case the sensitivity of results was due to the exclusion of Hungary and Mexico for which no data on the regulation impact were available. One reason for this sensitivity is that firm entry regressions are performed over a smaller set of countries than value-added and productivity growth regressions. In such a case, the exclusion of

Hungary and Mexico reduces considerably the cross-country variations in the banking and securities market regulation indicators. In contrast, the results from value-added and productivity growth regressions are not sensitive to the exclusion of these countries.

4.2.3 Results on firm turnover

So far, the analysis of firm demographics focused on entry rates. However, several studies have shown that both entry of new firms and market exit of old firms contribute to the productivity growth through a process of creative destruction where new firms replace less productive firms.¹⁹ Thus, it is not only the new firms that promote aggregate productivity growth but also industry dynamics in general. Accordingly, this sub-section extends the analysis of the main text by looking at the impact of financial system development and regulation on firm turnover rates in different industries.

The results of the effects of financial development and regulation on firm turnover are largely similar to the findings on firm entry (see Table 8). There is a clear positive relationship between firm turnover and financial development, measured as the ratio of the sum of private credit and securities market capitalisation to GDP. Moreover, overhead costs, capturing the efficiency of the financial system, have a strong negative effect on the turnover. These findings support the view that well-developed financial systems enhance reallocation of capital from low-productivity projects to high-productivity projects so that some firms are forced to exit. Financial development may, in this regard, be seen as enhancing the process of creative destruction.

19 The theoretical studies in this field include models with learning processes (see e.g. Jovanovic (1982) and Pakes and Erikson (1998)) and uncertainty as well as embodied and vintage technology (see e.g. Cooper, Haltiwanger and Power (1997) and Campbell (1997). See Schumpeter (1934) for the original formulation of the idea and Aghion and Howitt (1992) and Caballero and Hammour (1994) for more recent theoretical work. For empirical evidence on the role of creative destruction, see Scarpetta *et al.* (2002) and the results of the OECD Growth Project reported in OECD (2003b).

Table 7: Financial regulation on growth: sensitivity to the inclusion of additional variables

	Panel A Effects of securities market regulation					
	Value-added growth			Labour productivity growth		
	I	II	III	IV	V	VI
Initial share	-0.03 (0.05)	-0.19** (0.09)	-0.20*** (0.08)	-0.07 (0.07)	-0.18** (0.08)	-0.16** (0.08)
Securities market regulation*EXDEP	1.23** (0.58)	1.88** (0.76)	1.98*** (0.69)	1.32** (0.54)	1.85*** (0.56)	1.64*** (0.55)
Relative change in industry regulation (1994-2003)	-15.48* (9.33)			-29.49*** (11.43)		
Investment growth		4.09*** (1.28)			1.74 (1.44)	
R&D intensity			1.82 (5.23)			6.15 (4.20)
Number of observations	369	382	437	357	372	398
R ²	0.56	0.44	0.42	0.50	0.48	0.42
	Panel B Effects of banking competition regulation					
	Value-added growth			Labour productivity growth		
	I	II	III	IV	V	VI
Initial share	-0.03 (0.06)	-0.20** (0.09)	-0.22*** (0.08)	-0.07 (0.07)	-0.19** (0.08)	-0.18** (0.08)
Barriers to banking competition*EXDEP	-1.74** (0.77)	-2.02** (0.91)	-2.95*** (0.90)	-1.56* (0.85)	-2.27*** (0.64)	-2.50*** (0.62)
Relative change in industry regulation (1994-2003)	-14.63 (9.32)			-28.42** (11.43)		
Investment growth		4.10*** (1.28)			1.70 (1.45)	
R&D intensity			1.38 (5.08)			5.70 (4.14)
Number of observations	369	382	437	357	372	398
R ²	0.56	0.44	0.43	0.50	0.48	0.42

Notes: EXDEP variable in the interaction terms refers to industries' dependence on external finance. All regressions include country and industry dummies. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at 10, 5, and 1 per cent level, respectively.

Source: OECD.

Table 8: Effects of financial regulation on industry turnover rates

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Financial development*EXDEP	1.02** (0.40)										
Venture capital*EXDEP		-0.57 (1.68)									
Overhead costs in banking*EXDEP			-61.59** (27.63)								
Securities market regulation*EXDEP				3.87* (2.32)							
Contract enforcement*EXDEP					2.90 (1.85)						
Access to credit*EXDEP						2.47* (1.41)					
Investor protection*EXDEP							1.10 (1.50)				
Bankruptcy procedures*EXDEP								3.19** (1.60)			
Barriers to competition *EXDEP									-5.75** (2.34)		
Regulation on entry and activity *EXDEP										-7.96** (3.25)	
Government ownership*EXDEP											-1.55** (0.73)
Number of observations	1836	1791	2011	2011	2011	2011	2011	2011	2011	2011	2011
R ²	0.61	0.63	0.62	0.62	0.62	0.62	0.61	0.62	0.62	0.62	0.61

Notes: EXDEP variable in the interaction terms refers to industries' dependence on external finance. Financial development is measured as the sum of private credit, stock market and private bond market capitalisation to GDP. All regressions include country, industry, and year dummies and output gap to control for business cycles in each country. Cluster corrected standard errors are reported in parentheses. *, **, and *** indicate significance at 10, 5, and 1 per cent level, respectively.

Source: OECD.

The effect of financial regulatory indicators is also similar to that observed in the case of firm entry. The overall index of securities market regulation has statistically significant positive effect on firm turnover. However, among the sub-indices only regulations on access to credit and business closures are statistically significant. When focusing on the regulatory measures of banking competition, the results suggest that they have an important role in explaining industry turnover. The higher the regulation, and thus the lower the competition, the less firm turnover there is likely to be.

5. Conclusions

This paper has used industry-level data from over 20 OECD countries to examine whether industries that rely more heavily on external sources of funds

grow more rapidly in countries where regulation allows for stronger competition in markets for banking services and financial instruments. In the case of banking, regulatory impediments to competition focus essentially on barriers to entry (both foreign and domestic), on lines-of-business restrictions and on the scope of government ownership. As for markets for debt and equity instruments, the regulatory indicators cover the following four areas: contract enforcement, access to credit, investor protection and bankruptcy procedures.

Using panel regression techniques, the results indicate that financial system regulation has a statistically significant influence on output and productivity growth as well as on firm entry, *via* the impact on industrial sectors relying more heavily on external sources of funding. The economic impact is also found to be substantial enough to matter, yet sufficiently small to remain credible.

Regulatory indicators show that member countries have at least in the past adopted different approaches to regulate banking and securities, with less significant differences found in the former case, where most countries were found to lie within a fairly narrow range around an intermediate position with respect to competition-restraining regulations. As regards the market for debt and equity, more variations was observed in the extent to which regulation is either more friendly to investors/lenders or significantly less so, as compared to the OECD average.

Despite moves to liberalise financial markets in the past, there is some indication that the degree of competition in banking has been kept weak in several member countries, especially in retail markets. The OECD countries that are characterised by strong competition in banking activities have not been subject to instability in recent decades. Weak competition in other countries cannot therefore be justified on the basis that this has fostered greater stability. One reason why stronger competition may not risk greater instability is that the authorities have refined the tools to foster prudent behaviour with less adverse impact on competition.

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Annex 1. Indicators of Structural Policies in Financial Systems

This annex provides details on the sources and coverage of the regulatory indicators used in the empirical analysis. The basic information used to develop the indicators comes essentially from two World Bank sources: the *Bank Regulation and Supervision Database* (Barth, Caprio and Levine, 2001 and 2004, henceforth BCL); and the *Doing Business Database* (World Bank, 2005).

A1.1 Bank Regulation and Supervision Database

In 1998, the World Bank initiated a survey and created a database on the regulation and supervision. Covering 107 countries including all OECD countries, the purpose of this database is to collect comprehensive information on the regulation and supervision of commercial banks. Since then, a second round of the survey was conducted in 2003, and the results from that survey serve as a basis for this paper's analysis.

A1.1.1 General methodology

The survey consists of approximately 250 questions in 12 sub-groups, each of which highlights specific aspects of banking regulation and supervision. They are namely entry requirements into banking, ownership structure, capital adequacy, banking activity, external auditing requirements, internal management, liquidity and diversification requirements, depositor protection, provisioning requirements, accounting and information disclosure requirements, discipline and problem institutions exit, and supervisory structure.

Many responses in the survey are of the yes/no type, and indicators constructed from the database are the simple aggregation of answers relevant for each indicator. In order to check the accuracy of information collected in the survey, BCL and World Bank staff have interacted with national authorities and cross-checked the information with other databases covering the same type of information. In particular, the information with respect to deposit insurance is

compared with those collected by the Office of the Comptroller of the Currency (OCC) in the US, and the Financial Stability Forum.

A1.1.2 Indicators

While BCL constructed their own indicators by re-grouping questions in different sub-groups, the analysis conducted here is broadly in line with the classification of the original database. An attempt has been made to distinguish those that have more direct implications on competition in banking from those primarily aimed at preserving stability of the banking system.

Competition

Domestic entry index

This index gathers information about licensing requirement of setting up a bank in each country. The requirement may range from drafting by-laws and preparing financial projections to collecting background information of executive members and disclosing sources of capital. The index also contains information about regulatory structure in granting licenses. Most countries require quite extensive documentation.

Foreign entry index²⁰

This index shows how restrictive it is for foreign entities to enter domestic banking system. First, it examines restrictions on foreign ownership in the form of limits on the share of banks' equity that can be held by non-residents. Second, it looks into screening and approval procedures of foreign entry, including requirements to show economic benefits of foreign takeover. Third, other formal barriers such as restrictions on the membership of the board of directors and the employment of foreign nationals are examined.

Bank activity index

This index shows the level of regulatory restrictiveness for bank participation in securities activity (ability of banks to engage in the business of securities underwriting, brokering, dealing, and mutual fund operations), and insurance activity (ability of banks to engage in insurance underwriting and selling). Each activity is categorised into four levels: unrestricted (a full range of activity can be conducted directly), permitted (a full range of activity can be conducted, but all or some must be conducted *via* subsidiaries), restricted (less than full activity can be

²⁰ This sub-index as well as the one for government ownership, come from separate sources, namely Golub (2003) and La Porta *et al.* (2002), respectively.

conducted directly or *via* subsidiaries), and prohibited (activity cannot be conducted either directly or *via* subsidiaries). Securities activity is most liberal, while insurance activity remains most restrictive in many countries.

Government ownership index

This index measures the amount of assets held by banks (among the ten largest) where government ownership is at least 20% as a ratio of total assets (of the ten largest banks). This index does not reflect competition arrangements *per se*, but it is an important indicator that proxies the extent to which competition might be distorted by the existence of government-owned entities. The measure is taken from La Porta *et al.* (2002) and applies to 1995.

Stability

Accounting standards index

This index captures the structure of financial statements. They include questions such as whether banks are required to produce consolidated accounts including their subsidiaries, or whether off-balance sheet items are disclosed. The index also includes information about the use of rating agencies, and how accounting information is used for supervisory purposes.

Auditing requirements index

As is case for accounting standards, this index is designed to capture the practice of external auditing, and how auditing information is incorporated in supervision. It not only examines whether external auditing is compulsory for banks but also how the relationship between auditors and supervisors is structured under the regulatory framework.

Capital adequacy index

Capital adequacy is at the core of prudential regulation. This index intends to collect information about the consistency of capital requirement with the Basel guidelines. It examines whether the capital adequacy ratio varies as a function of credit risk and market risk. Also it incorporates what is allowed for, or deducted from, capital such as subordinated debt, unrealised losses in securities portfolio, and unrealised losses from foreign exchange transactions.

Liquidity and diversification index

The index summarises the reserve requirement and guidelines for asset diversification. In the former, the questions focus on the minimum requirement and the types of assets allowed for reserves. As regards asset diversification, the

main question concerns whether there exists explicit, verifiable, and quantifiable guidelines.

Provisioning requirements index

This index concerns non-performing assets, *e.g.* whether there is a formal definition of non-performing assets and how its classification works in case of a customer in arrears.

Internal management index

The index summarises regulators' enforcement power to engage in bank's internal management. It is based on answers to two questions: can the supervisory authority force a bank to change its internal organisational structure and has this power been utilised in the last 5 years.

Ownership index

This index collects information about the capital structure of banks. It incorporates answers to questions as to whether there is a maximum percentage of bank capital that can be owned by a single owner, whether related parties of a bank can own capital in the bank. Furthermore, the index shows the level of regulatory restrictiveness for non-financial firms and non-bank financial firms (*e.g.* insurance companies, finance companies) to own shares in commercial banks. The restrictiveness is divided into four levels: unrestricted (firms may own 100% of equity in a bank), permitted (unrestricted albeit subject to prior authorisation or approval), restricted (limits are placed on ownership, such as a maximum percentage of a bank's capital or shares), and prohibited (no equity investment in a bank).

Discipline and enforcement index

The index shows how much enforcement power regulators can exercise against banks as part of supervisory activity. It covers a broad array of supervision enforcement methods from cease-and-desist orders and suspension of directors' decision to distribute dividends, bonuses, and management fees, to supervisors' power to supersede shareholder rights, to replace directors, to forebear certain regulations, and to insure liabilities beyond deposit insurance scheme under bank restructuring and reorganisation.

Deposit insurance index

This index covers the structure of deposit insurance. First it concerns the existence of an explicit deposit insurance protection system and second it incorporates information about funding structure (whether premium is paid by

banks, governments, or both; whether premium reflects the authorities' assessment of bank risk), limitation of coverage (whether there is a limit per person; whether there exists co-insurance mechanism), management of insurance funds (whether funds are managed by public entities, private entities, or both), and legal power of the deposit insurance authority (whether the authority can make a decision to intervene in a bank; and whether the authority can cancel or revoke insurance for any participating banks).

Supervisory structure index

This index summarises the organisation structure of supervisory authorities. It includes the number of supervisors, the frequency of on-site examination, and the liability of supervisors. With regard to the authorities' accountability and independence, the index incorporates information about to whom the supervisory agencies are accountable, how the head of the agencies is appointed, whether the head has a fixed term in office, and whether the head can be removed.

A1.2 Doing Business Database

The World Bank started the *Doing Business Database* in 2004, covering 145 countries and updating annually. Among OECD countries, however, Luxembourg is not covered, and Iceland was only added in the most recent publication. The purpose of the database is to record the scope and manner of regulations that enhance or constrain business activity. More concretely, it aims to identify obstacles faced by an entrepreneur who attempts to perform a variety of business tasks such as starting and/or closing a business, hiring and firing workers, registering a property or getting credit. It also assesses the stance of investor protection and contract enforcement.

Given the focus of this paper on the role of regulation on financial system efficiency, the following four indices, updated in early 2005, were considered in the empirical analysis: access to credit, investor protection, contract enforcement, and bankruptcy procedures. While some of the components are measured on a different scale, all indices have been re-defined on a scale of 0 to 1.

A1.2.1 General methodology

The database is based on factual information about laws and regulations. For most indices, the information is collected on the basis of concrete –albeit hypothetical– situations meant to illustrate potential real-life cases such as that

of a conflict of interest involving a firm's controlling shareholder (investor protection), overdue debt payments (enforcing contract) or a business failure (bankruptcy procedures). In each case, several assumptions underlying these hypothetical situations are specified so as to facilitate cross-country comparisons. While the methodology itself was developed in a series of academic papers, it has benefited from input and verification by a number of government officials, lawyers, business consultants and other professionals in order to ensure accuracy of information.²¹ Between the World Bank team and local experts, information was reviewed and discussed for refinement.

A1.2.2 Indicators²²

Contract enforcement index

This index captures the efficiency of commercial contract enforcement based on the following three indicators.

- Number of procedures: Mandated by law or court regulation, it counts the number of mandated interactions between parties, or between them and the judge or court officer.
- Time: Number of calendar days for dispute resolution from the moment of the lawsuit by the plaintiff until the moment of settlement.
- Official cost: Cost of court procedures including court costs and attorney fees, expressed as a percentage of the debt.

Access to credit index

Getting credit from financial intermediaries has often been regarded as the biggest obstacle, in particular for small businesses. This index intends to capture two important elements in assessing the ease of access to credit: first, how much credit information is available; and second, how strong the legal underpinnings are in arranging collateral as well as in protecting secured lenders. The intuition behind this is that broader sharing of credit information and better protection of legal rights in and out of bankruptcy can facilitate more credit flows to businesses.

21 The original methodology for deriving each index comes from the following academic papers. The *contract enforcement* index is based on Djankov *et al.* (2003); the *access to credit* index is based on Djankov, McLiesh and Shleifer (2005); the *investor protection* index is based on Djankov, La Porta and Shleifer (2005); the *bankruptcy procedures* index is based on Djankov *et al.* (2005).

22 The description of indices reported in this section follows closely the documentation available on the *Doing Business* website.

To be more specific, the index is constructed from two components: one concerns the coverage, scope, quality and accessibility of credit information available either through public or private credit registries, and the other concerns the cost to create and register collateral as well as legal rights of borrowers and lenders.

Credit information sharing

This component is built in two stages: first, to check whether public and/or private credit bureaus are present; and second, to collect information about the structure (market coverage, data access and quality) and legal framework of the registries.

- Coverage of public registries: The number of borrowers (individuals and firms) listed in the registry with information on repayment history, unpaid debts, or credit outstanding. The coverage is 0, if no public registry exists.
- Coverage of private bureaus: The number of borrowers listed in the private firm or non-profit organisation with the same types of information as included in public registries. The coverage is 0, if no private bureau exists.
- Credit information availability: The index assesses the availability of credit information at public or private bureaus, based on the following 6 features: i) both positive and negative information is distributed, ii) data on firms and individuals are distributed, iii) data from retailers to financial institutions are distributed, iv) more than 2 years of historical data is preserved, v) data on loans of above 1% of income per capita is distributed, and vi) borrowers have the right to access their data. A score of 1 is added to the index on each affirmative answer, implying that higher values indicate more information available through credit bureaus.

Collateral and legal rights

This component aims to capture how costly it is to register collateral when seeking a loan, and how well collateral and bankruptcy laws facilitate lending.

- Cost to create and register collateral: Based on research of collateral and insolvency laws, lawyers are asked to estimate costs in the following standardised scenario –a medium-sized entrepreneur in textile business seeks a loan in order to purchase industrial sewing machines which will be pledged as collateral. The costs include taxes, notary fees and duties associated with creating the security right and registering it in the collateral registry, scaled as a percentage of income per capita.

- Legal rights of borrowers and lenders: The index measures the degree to which bankruptcy and collateral laws facilitate lending. In bankruptcy laws, 3 features are identified: *i)* secured creditors can seize collateral when a debtor enters reorganisation (no asset freeze), *ii)* secured creditors are paid first in the process of liquidating a bankrupt firm, and *iii)* an administrator is responsible for managing the business during reorganisation, rather than managers of a bankrupt firm. In collateral laws, 7 features are identified: *i)* general description of assets is permitted in collateral agreements, *ii)* general description of debt is permitted in collateral agreements, *iii)* any legal/natural person may grant/take security, *iv)* a registry including charges over movable property operates, *v)* secured creditors have priority outside of bankruptcy, *vi)* parties may agree on contractual enforcement procedures, and *vii)* creditors may seize/sell collateral out of court. A score of 1 is added to the index for each affirmative answer, meaning that higher values indicate stronger protection of legal rights.

Investor protection index

This index captures the strength of minority shareholder protections against directors' misuse of corporate assets for personal gain from three perspectives; transparency of transactions, liability for self-dealing, and shareholders' ability to sue directors for misconduct. It relies on the following stylised scenario. The business, a publicly traded corporation, has a board of directors and the CEO who has the legal capacity to act on behalf of the corporation. One controlling shareholder who is also a member of the board owns another company that has idle assets. This shareholder proposes that the corporation purchases the idle assets from his other company at an unfair price, a classic case of conflict of interest. Even though all the transactions are made under compliance of disclosure requirements, minority shareholders sue the board.

- Disclosure: The index assesses the extent of disclosure, based on the following 5 features: *i)* what corporate body can provide legally sufficient approval for the transaction, *ii)* whether immediate disclosure to the public and the shareholders is required, *iii)* whether disclosure in the annual report is required, *iv)* whether disclosure by this controlling shareholder to the board is required, and *v)* whether an external body is required to review the transaction before it takes place.
- Director liability: This index examines the extent of director liability, based on the following 7 features: *i)* a plaintiff's ability to hold this shareholder liable for damages to the company, *ii)* a plaintiff's ability to hold the approving body liable for damages, *iii)* a plaintiff's ability to void the transaction, *iv)* whether

this shareholder pays damages for the harm caused to the company, *v)* whether he repays profits made from the transaction, *vi)* whether fines and imprisonment can be applied against him, and *vii)* the ability of minority shareholders to sue for damages.

- Shareholder suits: This index measures the ease of shareholder suits, based on the following 6 features: *i)* the range of documents available to a plaintiff during trial, *ii)* whether a plaintiff has the ability to directly examine the defendant and witnesses, *iii)* whether he can obtain any documents from the defendant without identifying them specifically, *iv)* whether minority shareholders can request an inspector, *v)* whether they have the right to inspect the transaction documents before filing suit, and *vi)* whether the standard of proof for civil suits is lower than that for a criminal case.

Bankruptcy procedures index

This index identifies the efficiency of bankruptcy laws and its proceedings, on the basis of the following hypothetical scenario. A business, having contracted bank loans to buy a hotel, faces liquidity problems and defaults on its loans. Since too many creditors are involved for a renegotiation, the options are either to reorganisation or liquidation. It is based on the following three indicators.

- Time: Measured in calendar years, it counts the average time necessary to complete the sequence of a bankruptcy procedure.
- Cost: Costs of court procedures, fees of insolvency practitioners, lawyers, accountants, *etc*, expressed as a percentage of the estate value of the bankrupt business. Respondents are to choose among the following options: 0-2%, 3-5%, 6-8%, 9-10%, 11-18%, 19-25%, 26-33%, 34-50%, 51-75% and more than 75%.
- Recovery rate: It estimates how many cents on the dollar claimants (creditors, tax authorities, and employees) recover from an insolvent firm, taking into account whether a firm is kept as a going concern, how much the official costs of the insolvency procedures are, and how much the value is discounted due to the time spent on closing down a business.

Annex 2. Data Coverage, Sources and Definitions

This annex describes the different datasets and definitions used in the econometric analysis. (See Box 1 for data description.) In addition, it provides descriptive statistics on the main variables used in the analysis and on the measure of industries' dependence on external finance.

The empirical analysis examines the effects of financial systems' development and regulation on economic growth and firm demographics at the industry level. The endogenous variables at the industry level are the growth rates of real value added and labour productivity, defined as real value added divided by the number of employees in a given industry, as well as firm entry and turnover. Table A2.1 reports the summary statistics of these variables.

Box 1. Data source and construction: summary

1) Value-added and labour productivity growth: industry level

Period of analysis: 1994-2003.

Dimensions:

- 26 countries (value-added growth) and 24 countries (labour productivity growth)
- 22 industries

Endogenous variables: average real value-added and labour productivity growth rates.

Construction method: industry growth rates are computed as geometric averages over the period.

Source: OECD STAN database.

Measure of dependence on external finance

Construction method: A firm's dependence on external finance is defined as its capital expenditure minus internal funds (cash flow from operations) divided by capital expenditure. To obtain the industry-wide measure, the firm-level ratios of external dependence are averaged first over time and then aggregated across firms in each industry.

Source: Thomson Financial Worldscope database.

Control variables (industry level): Initial share (year 1994) of each industry in business sector value added, average rate of change in the indicator of regulation impact, investment growth and R&D intensity. Construction method: control variables are computed as simple annual averages over the period.

Source: OECD STAN database and Conway *et al.*, 2006.

2) Firm demographics: industry level

Period of analysis: 1990-2001.

Dimensions:

- 16 countries
- 25 industries
- varying time spans within the 1990-2001 sample depending on each country

Endogenous variables: firm entry and turnover rates.

Source: OECD firm-level database, Eurostat Structural Business Statistics database, World Bank and Statistics New Zealand.

Construction method: entry rate is defined as the number of entering firms as a per cent of the total number of firms and firm turnover rate is defined as the sum of entering and exiting firms as a per cent of the total number of firms.

Control variables: output gap, indicator of regulation impact, industry R&D intensity and value-added growth.

Source: OECD Analytical database, OECD STAN database, OECD ANBERD database and Conway *et al.*, (2006).

The country coverage of the analysis varies depending on the availability of data. Table A2.2 displays the country coverage according to the dependent variables. Industries are identified using International Standard of Industrial Classification (ISIC Rev. 3) at the two digit-level. The industries covered in the analysis of value-added and productivity growth rates are reported in Table A2.3.²³

The data on firm entry and turnover are obtained from two main data sources: i) the OECD firm-level database²⁴ and ii) Eurostat Structural Business Statistics database.²⁵ In addition, data provided by the World Bank and Statistics New Zealand are used. The data from these different sources are merged to obtain a dataset with comparable data on firm entry and turnover for as many OECD countries as possible. The different data sources on firm dynamics include information on the total number of entering and exiting firms. In addition, for most countries data are also available according to the size of firms. The size classification differs in the OECD and Eurostat databases. In order to have a consistent size classification in the merged dataset, firms are classified into two size groups that exist in all data sources: i) firms with less than 20 employees, and ii) firms with 20 or more employees. The focus of the analysis is on small firms, i.e. on the former group, since the entrants in this size group are likely to represent the “true entrants” and not the outcome of mergers and acquisitions or some other organisational arrangements of firms.²⁶

The OECD and Eurostat databases differ in the way they define entry and exit. The OECD database defines entry as those firms in year t that did not exist in the database in year $t-1$ but exist in year $t+1$. Similarly, exit in year t is defined as those firms that existed in the database in $t-1$ but disappeared in year $t+1$. This enables identification of firms that appear in the database for only one year. In the Eurostat database, “one year” firms are not identified separately. To be consistent, these firms are included in both datasets.

The variable measuring industries’ dependence on external finance is computed from the firm-level information contained in the Thomson Financial Worldscope database. As in Rajan and Zingales (1998), the dependence of a given

23 The industry coverage differs slightly in the analysis of firm demographics where the industry *Electrical and optical equipment* (ISIC 30-33) is analysed at a more disaggregated level. Given the focus on financial development as one of the key determinants, the *Financial intermediation* sector (ISIC 65-67) has been left out from the analysis.

24 The OECD firm-level database is available on line at: http://www.oecd.org/document/4/0,2340,en_2649_37451_1962948_1_1_1_37451,00.html. See Scarpetta, *et al.* (2002) and Bartelsman, Scarpetta and Schivardi (2003) for a detailed description and discussion of the database.

25 See Brandt (2004) for discussion on the Eurostat data and comparison between OECD and Eurostat databases.

26 Firms with zero employees are excluded since the OECD database does not include information on these firms for all countries.

industry is computed using data on US listed firms. A firm's dependence on external finance is defined as its capital expenditure minus internal funds (cash flow from operations) divided by capital expenditure. Given that large firms tend to have more internal funds available to finance investment, external dependence was calculated excluding such firms (>1000 employees) so as to have more industries with positive dependence ratios. However, the relative ranking of industries according to their dependence on external finance only changes marginally and the overall empirical results are robust to the use of the whole sample of US listed firms.

In order to obtain the industry-level measure of dependence on external finance, the external dependence of firms is averaged first over time and then aggregated across firms in each industry. Following Rajan and Zingales (1998), the time-averaging is done by summing individual firm's external finance (difference between its capital expenditure and cash flow) over the period of interest and then by dividing the result by the sum of each firm's capital expenditure over the same period. The industry-level measure of external dependence is then defined as the median of this ratio across firms in each industry. Table A2.3 displays the external dependence by industry, and shows that industries related to ICT services and manufacturing as well pharmaceuticals are most heavily dependent on external finance.

Table A2.1: Summary statistics of the dependent variables

	Number of observations	Mean	Median	Standard deviation	Minimum	Maximum
Real value-added growth	466	2.65	2.46	3.35	-13.83	13.35
Labour productivity growth	423	2.37	2.12	3.25	-15.80	13.51
Entry rate	2 170	12.75	11.20	8.09	0.00	60.16
Turnover rate ¹	2 011	23.43	21.55	12.29	0.00	106.16

1. The turnover rate may be larger than 100 if there are several firms that both enter and exit in the same year relative to the total number of firms in a certain industry.

Source: OECD

Table A2.2: Country coverage

Country	Variable		
	Value-added growth	Productivity growth	Firm demographics
Australia	X	X	
Austria	X	X	
Belgium	X	X	X
Canada	X	X	
Czech Republic	X	X	
Denmark	X	X	x
Finland	X	X	x
France	X	X	x
Germany	X	X	x
Greece	X	X	
Hungary	X	X	x
Italy	X	X	x
Japan	X	X	
Korea	X	X	
Mexico	X		x
Netherlands	X	X	x
New Zealand	X	X	x
Norway	X	X	x
Poland	X	X	
Portugal	X	X	x
Slovak Republic	X	X	
Spain	X	X	x
Sweden	X	X	x
Switzerland	X		
United Kingdom	X	X	x
United States	X	X	x

Source: OECD

Table A2.3: Industries' dependence on external finance

Industry	Dependence on external finance
Wood and products of wood and cork (ISIC 20)	-0.45
Fabricated metal products except machinery and equipment (ISIC 28)	-0.25
Construction (ISIC 45)	-0.19
Other non-metallic mineral products (ISIC 26)	0.00
Pulp paper, paper products, printing and publishing (ISIC 21-22)	0.09
Electricity gas and water supply (ISIC 40-41)	0.12
Manufacturing n.e.c.; recycling (ISIC 36-37)	0.17
Machinery and equipment n.e.c. (ISIC 29)	0.19
Textiles, textile products, leather and footwear (ISIC 17-19)	0.19
Other transport equipment (ISIC 35)	0.19
Motor vehicles, trailers and semi-trailers (ISIC 34)	0.20
Transport and storage (ISIC 60-63)	0.43
Basic metals (ISIC 27)	0.44
Food products, beverages and tobacco (ISIC 15-16)	0.53
Rubber and plastics products (ISIC 25)	0.56
Hotels and restaurants (ISIC 55)	0.64
Wholesale and retail trade; repairs (ISIC 50-52)	0.75
Coke refined petroleum products and nuclear fuel (ISIC 23)	0.78
Electrical and optical equipment (ISIC 30-33)	1.62
Post and telecommunications (ISIC 64)	1.67
Real estate renting and business activities including computer and R&D services (ISIC 70-74)	3.35
Chemicals and chemical products (ISIC 24)	6.20

Source: Authors' calculations.

abstract

Financial intermediaries have been considered in the last three decades as one of the key engines of economic development and growth. The intensity of the current integration and globalization trends all over the world are causing major changes in the structure of financial and banking markets and the subsequent competition trends have become one of main ingredients in the debate on the link between finance and growth and its effects on financial stability. This note aims to provide some review and reassessment of these issues and to offer some lessons and empirical evidence on the mechanisms that favor the achievement of higher economic growth by promoting institutional and competitive developments in the banking systems. Some guides and critiques on the stage and application of competition analysis are also provided.

²⁷ University of Granada and Federal Reserve Bank of Chicago.

The views in this paper are those of the author and may not represent the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.

1. Measuring competition in international banking sectors: A review and reassessment

1.1. Measuring competition

The competitive environment in which banks operate has long been of interest to researchers and policymakers. Most of the early literature on competition in banking markets was based on the structure-conduct-performance (SCP) paradigm. This paradigm relies on two competing hypotheses. According to the 'collusion hypothesis', high concentration reduces the costs of collusion, resulting in higher rates being charged on loans, lower interest paid on deposits and higher fees. Alternatively, the 'efficiency hypothesis' explained the relatively high profitability of banks operating in concentrated markets by a tendency for larger banks to operate more efficiently than their smaller counterparts. However, most of the previous empirical research has failed to resolve the collusion *versus* efficiency 'contest'. Some banking studies have shown that SCP empirical methodologies present a number of inconsistencies and, in particular, that concentration measures are not good proxies of market power in the banking industry (Gilbert, 1984; Molyneux and Thornton, 1992; Berger, 1995; Goddard *et al.*, 2001; Berger *et al.*, 2004; Carbó and Rodríguez, 2007a).

The limitations of the SCP hypotheses go beyond methodological concerns. The welfare consequences of banking market power have not only effects on economic efficiency (as the SCP stated) but also key implications for financial stability and, therefore, economic growth. These implications have received some attention in the recent banking literature (Carletti, 2006; Carbó, Kane and Rodríguez, 2008). However, these effects have produced a big deal of controversy and opposing views. On the one hand, some analysts argue that financial stability may be improved if an increase in market concentration leads to higher interest charges and profitability, and if the banks consequently become less willing to jeopardize their improved market valuations by undertaking risky investments (Hellman *et al.*, 2000). An alternative view, however, is that borrowers may be encouraged to take greater risks in order to generate the returns needed to service their higher interest payments. In this sense, empirical research based on the SCP paradigm has been widely criticized for over-emphasizing structure and under-emphasizing conduct.

Both the methodological and welfare analysis limitations of SCP analysis gave rise to a new strand of approaches to competition. The so-called New Empirical Industrial Organization (NEIO) perspective draws inferences about

market or competitive structure from the observation of conduct (Lau, 1982; Bresnahan, 1982, 1989; Panzar and Rosse, 1982, 1987). This involves the estimation of behavioral equations that specify how firms set their prices and quantities. A behavioral relationship such as 'marginal revenue equals marginal cost' cannot be estimated directly, because data on marginal revenue and marginal cost are unobserved and that was an important limitation for a long time. However, such a relationship may be estimated indirectly, by observing the implications of this pricing rule for patterns of variation in other variables and the econometric techniques over the last 30 years have permitted to do so. Diagram 1 shows the main pros and cons of the various typical approaches to analyze market power.

A first general approach is the estimation of the so-called Lerner index, as the ratio of price minus marginal cost to price. A second approach in the NEIO's studies is that of Bresnahan (1989), which is based on a structural model of competition, including a parameter (λ) representing conjectural variation: the responses (output or price adjustments) a firm (i.e. a bank) anticipates from its competitors following an adjustment to its own output or price. Accordingly, the parameter can be interpreted directly as an indicator of market power.

Similarly, the non-structural Rosse-Panzar test is based on empirical observation of the impact on firm-level revenues of variations in input (factor) prices (Panzar and Rosse, 1982, 1987). The intuition underlying the H-statistic, representing the sum of the elasticities of total revenue with respect to each of the factor prices, is straightforward in the polar cases of perfect competition and monopoly, while the intermediate cases are often interpreted as monopolistic competition.

Both the SCP and the NEIO approaches to measuring competition in banking markets are based on static models of competitive equilibrium. In contrast, recent empirical research concerning the dynamics of profitability recognizes the possibility that markets are out of equilibrium at the moment when the data are observed. Persistence or autocorrelation in profitability and revenue data appears to be an overlooked empirical regularity (Berger *et al.*, 2000; and Goddard *et al.*, 2004).

It is worth noting that even if there are several alternative methodologies available for competition analysis, most of the competition authorities throughout the world still rely almost exclusively in the SCP methodologies and concentration indicators.

1.2. Banks, information production and competition: Advantages of relationship banking

Insights into the nature of competition in banking can also be obtained from investigation of specific aspects of bank behaviour and, in particular, of small and regional banks in territories where households and firms are dependent on bank finance. One such topic is relationship banking, which can be defined simply as the provision of financial services repeatedly to the same customer (Sharpe, 1990; Rajan, 1992; Rajan and Zingales, 2003; Elyasiani and Goldberg, 2004). According to Degryse and Ongena (2006), switching costs for bank customers represent an important source of rents for banks, and an important motive for the development of relationship (as opposed to transaction) banking. Switching costs include search costs and shoe-leather costs (the time and effort required to open a new account, transfer the funds and close the old account), and informational costs arising from the private information that is available to the borrower's current bank, but not to that bank's competitors. The size of the lending bank's informational advantage may depend on borrower characteristics. For example, new firms are harder to screen than established firms (Petersen and Rajan, 1995; Ongena and Smith, 2001); or it may be difficult to assess the probability of default for a firm with a high proportion of intangible assets (Houston and James, 2001). As noted by Dell'Ariccia (2000), banks face a trade-off between borrower quality (enhanced by screening leading to the development of relationship lending), and market share (most easily achieved through transaction lending).

The effect of competition between banks on the incentive to screen is ambiguous. An increase in competition, by reducing the number of loan applicants per bank, increases the adverse selection problem and increases the incentive to screen. However, with more banks there is more incentive for any bank to defect from the screening equilibrium, and pursue market share rather than borrower quality. This may result in a prisoner's dilemma, in which all banks defect and switch from relationship to transaction lending.

Capital market competition is assumed to reduce the number of banks, and therefore has a diametrically opposite effect: the volume of relationship lending decreases but the unit rent increases. This is a threat for those territories in which the private sector depends heavily on bank lending. In the empirical literature on relationship banking, there are studies (as Degryse and Ongena, 2005) that find loan rates for SMEs tend to decrease with the distance between the firm and the lending bank, and increase with the distance between the firm and competing banks. This finding is consistent with models of spatial price discrimination due to transport costs.

1.3. Size and M&A: Is this a common path for the new competitive environment?

Deregulation and the integration in banking sector have had profound implications for the size and concentration of banking markets. Geographic diversification, in the form of increased cross-border activity, has played an important role in the business and growth strategies of banks all over the world. In general, the impact of an increase in market size on the growth of individual firms depends on industry product and technological characteristics. Any tendency towards fragmentation as the market expands nowadays seems to be offset by a competitive escalation in endogenous sunk cost expenditure. Accordingly, the potential for management strategy to influence performance may be high if there is scope for vertical product differentiation and certain types of discretionary sunk cost expenditure. For banking, Vives (2001) and Barros *et al.* (2005) emphasize investment in information technology as a major form of endogenous sunk cost competition. There are even some studies (ie. Kim *et al.*, 2005) that consider that bank capital ratios, loan-loss provisions, size and branch networks as possible 'quality' attributes for which the bank's customers may be prepared to pay a premium.

All these trends have led to the emergence of new financial conglomerates through M&As. However, the empirical evidence on the impact of bank mergers is mixed. There is some event study evidence that stock markets prefer focused mergers to those that involve diversification (Beitel *et al.*, 2004). Several event studies report that merger announcements involving banks from the same country tend to create a positive abnormal return on average (Cybo-Ottone and Murgia, 2000; Campa and Hernando, 2006). This positive effect reflects expectations of significant cost savings, as well as possible gains from enhanced market power. However, it seems that such expectations are often not realized: several studies of ex-post performance suggest efficiency and other performance indicators are little changed on average (Vander Vennet, 1996; Carbó *et al.*, 2003). Event studies suggest announcements of cross-border acquisitions tend to produce negative stock price reactions on average (Cybo-Ottone and Murgia, 2000; Beitel and Schiereck, 2001). However, studies of post-merger performance have produced mixed results (Vander Vennet, 1996, 2002; Buch and De Long, 2004). Altunbas and Marques Ibanez (2004) report that cross-border mergers between banks with similar objectives resulted in enhanced performance.

1.4. Efficiency and competition

Closely linked to the concept of market power, allocative efficiency refers to the maximization of social welfare that is achieved under perfect competition,

when price is set equal to marginal cost. Considering both operational and allocative efficiency, efficiency could affect market power and social welfare in various ways. It may, for example, enable banks to depart from marginal cost pricing (allocative inefficiency). It may also affect the efforts of bank managers to control costs (operational inefficiency). The latter refers to the so-called 'quiet life hypothesis', which describes the notion that market power may have a detrimental impact on operational efficiency. Bank ownership is an important factor here, since public, mutual and cooperative banks pursue clearly stated social and economic development objectives (and may be subject to a lack of capital market discipline), their performance may be expected to compare unfavorably with that of profit-maximizing privately owned banks. However, in practice the evidence on the issue of whether private banks outperform mutual and cooperative banks is inconclusive (Wilson and Williams, 2000; Williams, 2004). There is some cross-sectional evidence that higher state ownership leads to reduced competition in banking, even though public banks tend to charge borrowers less than private banks (Chakravarty and Williams, 2006). Goddard *et al.* (2004) find some variation in the estimated year-to-year persistence of profit between ownership types. Measured persistence is higher for savings and cooperative banks than for commercial banks. If profit does not enter the objective functions of the former, the competitive mechanism through which high (low) profit sends signals encouraging entry (exit) may be ineffective or inoperative. Financial services liberalization, the intensification of competition, and an increased emphasis on shareholder value may have contributed to the problem of financial exclusion in recent years, with many profit-oriented banks tending to focus attention increasingly on their wealthier customers (flight to quality). In many European countries it has been left to specialized financial institutions such as savings banks, cooperative banks and other 'proximity banks' to offer specific products for otherwise excluded households and small firms (McKillop *et al.*, 2007).

2. Banking for growth: Some lessons and policy implications

2.1. Financial sector structure and growth

With the availability of systematic evidence during the past decade, the relevance of finance for development is now widely accepted.²⁸ Concurrently, an extensive theoretical literature on financial institutions has emerged. Finance is relevant for growth and development for the following reason. Better developed

²⁸ See Levine (2005) for a comprehensive review of the literature on the field since the 1960s.

financial systems resolve agency problems more efficiently, enabling firms to borrow at cheaper rates and invest more.

While research in corporate finance has examined firm financing choices, growth theorists have studied the role of finance in capital and knowledge accumulation. In corporate finance, the organization of financial activities is seen to affect growth through corporate governance and a firm's ability to raise external funds. Financial intermediaries reduce costs of acquiring and processing information about firms and their managers and thereby reduce agency costs by assuming the role of 'delegated monitors'. We can then distinguish between bank- and market-finance according to their information content: bank monitoring resolves moral-hazard problems at the level of the firm. Firms with lower marketable collateral and higher incentive problems borrow from banks, while wealthier firms rely on unintermediated market-finance.

Some authors have also highlighted how market finance creates appropriate incentives for a firm. Equity markets encourage corporate governance through hostile takeovers of under-performing firms. Rajan and Zingales (1998) argue that market-finance transmits price signals which guide firms into making worthwhile investments. Relationship-based bank finance, in contrast, could lead firms facing weak cash flows to undertake misguided investments.

Although neither a bank-based nor a market-based system is specifically better for growth, there are some advantages to having a bank-based system under certain circumstances. In particular, since bank monitoring substitutes for entrepreneurial wealth, it enables all modern-sector firms to make larger investments than is possible under purely unintermediated finance. It also lowers the minimum entrepreneurial wealth required to obtain external finance so that the traditional sector is smaller under a bank-based system. Critiques of bank-based systems point to a number of drawbacks and weaknesses of such systems in their ability to enhance investment and economic performance. First, banks may be tempted to extract rent from the information collected on prospective investment projects, thus reducing the payoff that accrues to firms.

2.2. Financial intermediaries and economic growth

Following the seminal contribution by King and Levine (1993), several empirical studies have provided evidence that strongly supports the view that financial intermediaries development has a positive effect on various aspects of real economic activity, including investment, employment, productivity, and long-run economic growth (Levine, 2005, Demirgüç-Kunt *et al.* 2006a and 2006b;

Beck, and Demirgüç-Kunt, 2006; Beck *et al.* 2006a and 2006b). The evidence suggests that the expansion and deepening of the financial system lead to faster economic growth. As financial systems develop, they become more efficient in providing these services, which enhances economic performance. According to the financial services view, whether the financial system is predominantly bank-based or stock-market based is largely irrelevant for economic outcomes.

Banks can enhance domestic investment in various ways. First, banks increase the amount of funds available for investment by pooling savings. Financial intermediaries are able to economize on the costs of collecting savings from heterogeneous saving units by exploiting economies of scale in information gathering and processing. As a result, for given levels of per capita income and potential saving rate, the actual saving and investment rates should be higher in countries that have more developed banking systems (Pagano, 1993). The development of banks should be accompanied by better allocation of resources and a healthier balance between short-term and long-term investment in the private sector.

Financial intermediaries also play an important role in reducing the costs of acquiring and processing information about prospective investment activities and in exerting control over the management of existing firms. Large firms obtain funds from a diffuse pool of external investors who individually cannot monitor the use of their funds inside the firm. Banks play the role of “delegated monitors” of the behavior of firm managers on the behalf of individual investors. The ability of banks to perform this monitoring function provides more incentives to outside investors to part with their savings and improves the allocation of funds across projects. A developed banking system, therefore, should induce higher volumes of investment and more efficient allocation of capital. Banks specialize in offering customized financial products that are tailored to the needs of individual firms. They are especially the primary source for external finance for investors (borrowers) who have little access to financial markets, such as new and small firms. Banks are also important in the Schumpeterian destructive creation process of innovation both in the real sector by financing innovating entrepreneurs and in the financial sector by creating new financial instruments.

2.3. Competition and financial stability

The consolidation of banks around the globe is fueling an active public policy debate on the impact of consolidation on financial stability. Indeed, economic theory provides conflicting predictions about the relationship between

concentration (and competitiveness) of the banking industry and banking system fragility. Motivated by public policy debates and ambiguous theoretical predictions, this paper investigates empirically the impact of bank concentration and bank regulations on banking system stability. Some theoretical arguments and country comparisons suggest that a less concentrated banking sector with many banks is more prone to financial crises than a concentrated banking sector with a few banks (Allen and Gale, 2006). First, concentrated banking systems may enhance market power and boost bank profits. High profits provide a “buffer” against adverse shocks and increase the charter or franchise value of the bank, reducing incentives for bank owners and managers to take excessive risk and, thus, reducing the probability of systemic banking distress (Hellman *et al.*, 2000). Second, some hold that it is substantially easier to monitor a few banks in a concentrated banking system than it is to monitor lots of banks in a diffuse banking system. From this perspective, supervision of banks will be more effective and the risks of contagion and, thus, systemic crisis less pronounced in a concentrated banking system. According to Allen and Gale (2006), the US, with its large number of banks, supports this “concentration-stability” view since it has had a history of much greater financial instability than the UK or Canada, where the banking sector is dominated by fewer larger banks. Caminal and Matutes (2002) show that less competition can lead to less credit rationing, larger loans and higher probability of failure if loans are subject to multiplicative uncertainty.

An opposing view is that a more concentrated banking structure enhances bank fragility. First, the standard argument that market power in banking boosts profits and hence bank stability ignores the potential impact of banks’ market power on firm behavior. They confirm that concentrated banking systems enhance market power, which allows banks to boost the interest rate they charge to firms (Jiménez *et al.*, 2008).

Second, advocates of the “concentration-fragility” view argue that (i) relative to diffuse banking systems, concentrated banking systems generally have fewer banks and (ii) policymakers are more concerned about bank failures when there are only a few banks. Based on these assumptions, banks in concentrated systems will tend to receive larger subsidies through implicit “too important to fail” policies that intensify risk-taking incentives and hence increase banking system fragility.

Typically, the definition of a systemic banking crisis refers to an episode when the entire national banking system has suffered sufficient losses such that non-performing loans exceed 10% of total banking system assets, or when the government has taken extraordinary steps, such as nationalizing much of the

banking system. There is empirical evidence on which regulations and institutions are associated with bank stability. The bulk of the evidence indicates that crises are less likely in more concentrated banking systems, which supports the concentration–stability view. Beck *et al.* (2006a) show that the negative relationship between concentration and crises holds when conditioning on macroeconomic, financial, regulatory, institutional, and cultural characteristics and is robust to an array of sensitivity checks. It is also shown that fewer regulatory restrictions on banks reduce banking system fragility, and that countries with national institutions that facilitate competition in general have a lower likelihood of suffering a systemic banking crisis.

Less attention has been devoted to what happens to the economy and the banking sector after a banking crisis breaks out. A first question that we take up is whether banking crises are characterized by large declines in deposits. A second question is whether bank distress has contributed to propagate adverse economic shocks, thereby, prolonging recessions. This is difficult to assess because a decline in bank credit may reflect a lack of demand as much as problems on the supply side. In addition, the adverse shocks that accompany bank distress are often also plausible negative shocks to loan demand.

2.4. Institutional aspects: An ‘evolutionist view’ and some evidence

The law and finance view, initiated by La Porta *et al.* (1997, 1998), emphasizes the role of creditor and investor rights for financial intermediation. In countries where the legal system enforces these rights effectively, the financial system also becomes more efficient in providing services to the private sector. Consequently, the quality of the legal system is a strong predictor of financial development. Empirically, this view suggests a positive relationship between economic performance and the component of financial development identified by the legal environment. Evidence from cross-country growth analysis supports this view (La Porta *et al.*, 1997, 1998; Levine, 2005). The implication of the law and finance view is that the establishment of an appropriate legal environment will facilitate the development of banks and stock markets, which enhances economic performance. The remainder of this section discusses the role of banks and stock markets in promoting domestic investment.

Considering the institutional aspects, the conventional distinction between bank-based and market-based systems seems to be at odds with the reality of banking markets today. There is a new wave of ideas that give institutional aspects a major role and that can be labelled as the “evolutionist view” of

banking systems and economic growth. The architecture of this new perspective is shown in Diagram 2. The main argument is that there are more relevant filters than the relative weight of bank or market assets to classify financial sectors. These filters are:

- i) The stage of economic development itself.
- ii) The 'quality' of the institutional environment.
- iii) The level of competition and its relationship with the attitudes towards risk and financial stability.

This new perspective is 'evolutionist' in the sense that the relationship between financial development and economic development largely depends on the factors shown in i) and ii) (the stage of development and the institutional factors). Therefore, the effects and the characteristics of the financial systems on economic growth are not constantly the same but the change over time –both qualitatively and quantitatively– with the institutional environments and the initial stage of economic development.

This perspective also helps analyzing the link between financial intermediary development and economic growth in both developed and developing countries no matter if they are bank-based or market-based financial systems. In order to offer some empirical evidence of these tests, we have selected some indicators from the World Bank's Financial Structures Dataset on 163 countries.

As preliminary evidence, we have run a simple regression of financial development on bank concentration (using the Herfindahl-Hirschman index). The results are shown in Figure 1 and corroborate that this relationship is almost flat (no statistically significant) and that market power analysis requires a territory/ market-specific analysis with other measures.

In order to test the significance of the 'evolutionist view' of banking systems and economic growth, we have divided the 163 countries into high-income OECD countries, on one side, and low-to-middle income countries and non-OECD members on the other and we have run the following dynamic equation using dynamic panel techniques:

$$GDP(Investment)growth_{i,t} = \alpha GDP(Investment)growth_{i,t} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t}$$

The dependent variables are, alternatively, GDP growth and investment (Gross-Fixed Capital Formation) growth. The explanatory factors (X vector) are the lagged values of the dependent variables, the ratio "credit to the private sector/ GDP", the ratio "stock-market capitalization/GDP", the growth rate of commercial

activities, the Heritage Foundation indices of “economic freedom” and “quality of governance in the country”.²⁹ The results are shown in Table 1. The evidence for high-income OECD countries suggests that both bank-market (credit to the private sector) and stock-market (stock market capitalization) development promote economic growth. The growth in commercial activities, the economic freedom and quality of governance also have a positive and significant impact. However in low-to-middle income and non-OECD countries banks seem to play a more significant role than markets and the growth of commercial activities is not related to economic growth or investment while the institutional indicators (economic freedom and governance) are.

2.5. The competition-growth link: Additional evidence from microdata

Together with cross-country studies, the analysis of regions within a single country permits to identify some additional links between bank competition and economic growth. The relationship between bank competition and firm financing has been studied in the context of two main competing hypotheses. The ‘market power’ view holds that concentrated banking markets are associated with less credit availability and a higher price for credit. An alternative view, the ‘information hypothesis’ argues that competitive banking markets can weaken relationship-building by depriving banks of the incentive to collect soft information (Petersen and Rajan 1995). Therefore, according to the information hypothesis, higher bank market power reduces firm financing constraints.

Carbó *et al.* (2006) offer new evidence on the relationship between bank market competition and firm financing constraints. They provide evidence at the regional level for Spain using microdata. A basic assumption is that Spanish SMEs are heavily dependent on banks for their financing. The results show that the HHI and the Lerner index produce opposite results. The Lerner index is found to be a considerably more accurate measure of competition and supports the ‘market power’ hypothesis (Table 2).

The relative lack of accuracy of the HHI is in line with other findings in the banking literature that shed doubt on the strength of concentration as a measure of market power (e.g. Berger, 1995; Dick, 2007). This casts some doubt on studies that find support for the information hypothesis using the HHI as their measure of market power.

²⁹ These are composite indices that consider ten criteria to define economic freedom and governance quality across countries.

The geographical scope is relevant since it conditions the methodology, the empirical evidence and the subsequent policy implications of any economic or financial analysis. Despite the contributions of studies dealing with regional aspects within a country (e.g. Carbó *et al.*, 2006 and Carbó, Rodríguez and Udell 2008), cross-country studies also offer some interesting insights and lessons on integration and deregulation processes with implications for bank competition and the finance-growth nexus. Some of these studies are showing a variety of macroeconomic effects of large-scale integration processes such as the expansion of the European Union. Prior to integration, the performance of banks is likely to be positively correlated with the business cycle in the domestic economy. Since the activities of an integrated bank are spread across several countries, the risk originating from a country-specific macroeconomic shock to the stability of an individual bank, or to the banking system as a whole, is reduced with the integration process. On the other hand, increased business cycle synchronicity within an integrated EU may reduce or eliminate this geographical diversification benefit (Gropp and Vesala, 2004). As shown by Carbó and Rodríguez (2007b) there are also significant asymmetries in bank market power in countries joining the EU area and former members (see Table 3 with an example for the EU-27), thereby imposing dramatic changes in bank market structures and, subsequently, in firms and households finance. There is a need for further analysis in this area.

3. Some policy implications

The analysis and the empirical evidence in this note may have some implications for policy design in, at least, four ways:

- 1) Measuring competition in international banking can not rely on simple studies of bank concentration and its relationship with prices. It actually requires a more comprehensive analysis of some structural and dynamic indicators and two compare their results and the influence of risk and business cycle on these comparisons.
- 2) Risk and financial instability are becoming major threats in financial markets. In this sense, there is recent evidence that competition do not always result in more financial stability at least as innovations (ie. off-balance sheet activities) due to this competition may carry new risks that may not be appropriately reflected in accounting standards so that bank activities may become less transparent.
- 3) It is not possible to define a single and definite relationship between bank competition and growth since this relationship is heavily dependent on the

institutional environment, the risk exposition of banks and the type of industry analyzed. The territorial definition of the 'relevant market' becomes a major issue here and may have important implications for firms and households financing.

- 4) The link between financial intermediary development and economic growth is particularly relevant in developing countries, where households and firms are heavily dependent on bank lending to undertake their investment projects. However, other factors such as the quality of the institutional and legal environment and governance practices may be even more relevant.

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Diagram 1: Measuring market power in banking

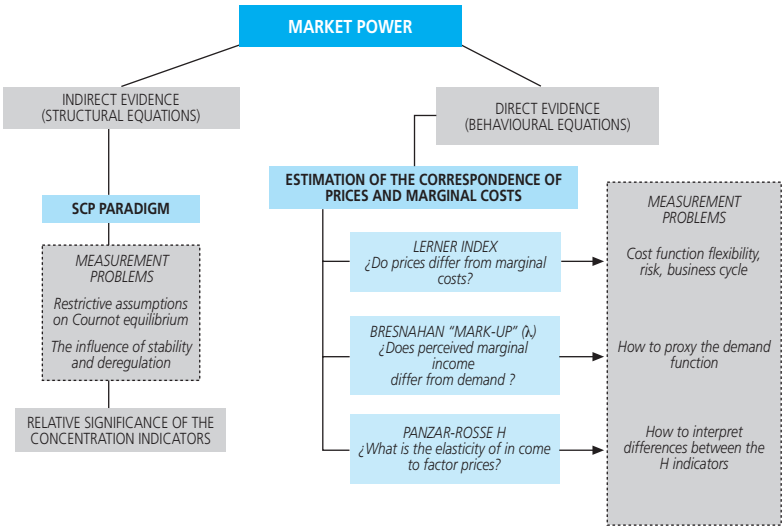


Diagram 2: An evolutionist view of financial systems, competition and growth

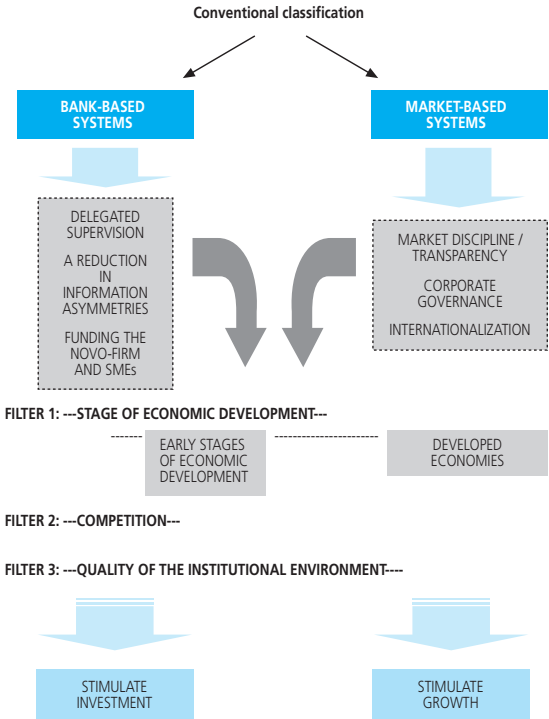


Figure 1: Relationship between bank concentration and growth

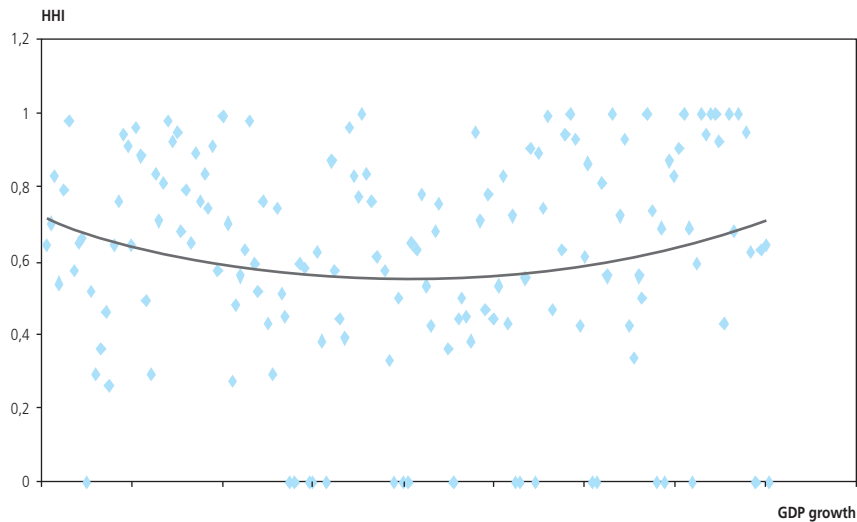


Table 1: Economic growth, investment, financial factors and quality of the institutional environment. An international analysis with panel data (1996-2004)

GMM-system estimator				
Standard errors in parentheses				
-High income OECD countries-				
	GDP Growth		Investment Growth	
	Bank-based countries	Market-based countries	Bank-based countries	Market-based countries
C	0.299** (0.063)	0.371* (0.054)	-0.312*** (0.066)	-0.197** (0.112)
Investment/GDP (t-1)	-	-	0.633*** (0.192)	0.387*** (0.063)
GDP growth (t-1)	0.031*** (0.044)	0.128*** (0.041)	-	-
Lending to the private sector/GDP	0.346*** (0.192)	0.171*** (0.082)	0.440*** (0.183)	0.406* (0.167)
Stock market capitalization/GDP	0.211*** (0.095)	0.301*** (0.041)	0.326** (0.115)	0.406** (0.322)
Growth rate in commercial activities	0.163*** (0.057)	0.177** (0.041)	0.149*** (0.046)	0.144** (0.077)

Table 1: Economic growth, investment, financial factors and quality of the institutional environment. An international analysis with panel data (1996-2004) (concluded)

GMM-system estimator				
Standard errors in parentheses				
-High income OECD countries-				
	GDP Growth		Investment Growth	
	Bank-based countries	Market-based countries	Bank-based countries	Market-based countries
Economic freedom index	0.329*** (0.081)	0.477*** (0.108)	0.371*** (0.093)	0.402*** (0.180)
Governance quality	0.302*** (0.058)	0.632*** (0.143)	0.426*** (0.188)	0.352*** (0.109)
Joint significance test (F-test)	0.001	0.001	0.001	0.001
Sargan test	0.242	0.327	0.263	0.270
- Non-OECD countries and low-to-middle income OECD countries -				
	GDP Growth		Investment Growth	
	Bank-based countries	Market-based countries	Bank-based countries	Market-based countries
C	0.132* (0.082)	0.202* (0.041)	-0.201** (0.067)	-0.229* (0.113)
Investment/GDP (t-1)	-	-	0.203** (0.072)	0.175** (0.076)
GDP growth (t-1)	0.226** (0.069)	0.211*** (0.041)	-	-
Lending to the private sector/GDP	0.127*** (0.042)	0.113** (0.046)	0.269** (0.079)	0.204* (0.091)
Stock market capitalization/GDP	0.011** (0.056)	0.123** (0.057)	0.026* (0.132)	0.084 (0.147)
Growth rate in commercial activities	0.082* (0.055)	0.074 (0.080)	0.147* (0.067)	0.140 (0.020)
Economic freedom index	0.609** (0.097)	0.577*** (0.117)	0.318*** (0.171)	0.448*** (0.099)
Governance quality	0.558*** (0.149)	0.716*** (0.166)	0.652*** (0.139)	0.554*** (0.236)
Joint significance test (F-test)	0.008	0.006	0.004	0.005
Sargan test	0.129	0.137	0.151	0.202

* statistically significant at 10%.

** statistically significant at 5%.

*** statistically significant at 1%.

Table 2: SME financing constraints: Trade credit regression

p-values in parenthesis. The errors are clustered at the regional level				
Dependent variable (financial constraint)	Trade credit/(total liabilities)			
	Instrumental variables		GMM-system estimator	
	(I)	(II)	(III)	(IV)
Constant	-5.0163*** (0.000)	-5.3140*** (0.000)	-5.0094*** (0.000)	-5.3915*** (0.000)
Lagged dependent variable	-	-	-1.7720*** (0.000)	-1.1741*** (0.000)
Bank market power				
HHI bank deposits	-0.19483** (0.019)	-	-24.53423*** (0.000)	-
Lerner index	-	0.03800*** (0.002)	-	0.07194*** (0.000)
Other bank market characteristics				
Average bank size	-0.229655*** (0.000)	-0.08952*** (0.000)	-0.29851*** (0.000)	-0.06552*** (0.000)
Bank credit risk	-5.16237*** (0.000)	-7.6893*** (0.000)	-8.1593*** (0.000)	-27.1427*** (0.000)
Number of bank branches	-0.07033*** (0.000)	-0.07702*** (0.000)	-0.0037*** (0.000)	-0.00566*** (0.000)
Bank profitability	-0.9830*** (0.000)	-1.5456** (0.030)	-4.2174*** (0.000)	-3.0704** (0.013)
Bank inefficiency	0.00582*** (0.000)	0.01266*** (0.000)	0.04012*** (0.000)	0.04575*** (0.008)
Firm characteristics				
Firm inefficiency	-0.04569 (0.338)	-0.0426 (0.566)	-0.02599 (0.172)	0.0581** (0.041)
Firm profitability	0.01786 (0.880)	0.03086 (0.888)	0.0934 (0.326)	-0.06622* (0.050)
Firm size	0.13152*** (0.000)	0.05671*** (0.000)	0.12027*** (0.000)	0.38701*** (0.000)
Environmental regional control variables				
GDP	-0.60E-06*** (0.000)	-0.81E-06*** (0.000)	-0.35E-05*** (0.000)	-0.25E-05*** (0.000)
Taxation	-0.00021 (0.959)	0.00044* (0.069)	-0.00014 (0.681)	0.00022** (0.017)
Percentage urban population	2.4579*** (0.000)	2.54061*** (0.000)	2.8454*** (0.000)	9.9948*** (0.000)

Table 2: SME financing constraints: Trade credit regression (concluded)

p-values in parenthesis. The errors are clustered at the regional level				
Dependent variable (financial constraint)	Trade credit/(total liabilities)			
	Instrumental variables		GMM-system estimator	
	(I)	(II)	(III)	(IV)
Number of bankruptcies/total number of SMEs in the region	0.04518*** (0.000)	0.04574*** (0.000)	0.04415*** (0.000)	0.06332*** (0.000)
F-statistic	0.009	0.011	0.015	0.014
Sargan test	0.144	0.151	0.139	0.153
Observations	278,073	278,073	278,073	278,073
Number of firms	30,897	30,897	30,897	30,897

* Statistically significant at 10% level.

** Statistically significant at 5% level.

*** Statistically significant at 1% level.

Source: Carbo *et al.* (2006).

Table 3: Competition and financial integration processes: Evidence from the European Union

		EU-15	NEW EU COUNTRIES	EU-27
SMALL BANKS	LERNER INDEX (%)	28.27	39.02	34.22
	H-STATISTIC (TOTAL REVENUE)	0.58	0.24	0.46
	BRESNAHAN OUTPUT DEVIATION (%)	14.4	27.6	21.8
MEDIUM-SIZED BANKS	LERNER INDEX (%)	29.72	33.04	31.54
	H-STATISTIC (TOTAL REVENUE)	0.62	0.41	0.51
	BRESNAHAN OUTPUT DEVIATION (%)	14.8	25.1	19.8
LARGE BANKS	LERNER INDEX (%)	24.21	28.14	26.16
	H-STATISTIC (TOTAL REVENUE)	0.60	0.52	0.57
	BRESNAHAN OUTPUT DEVIATION (%)	14.0	22.3	17.2

Source: Carbo and Rodríguez (2007b).

Discussant

Hoon Kim, Senior Economist, The Bank of Korea

Optimal financial industry structure for economic growth

1. Competition in the financial sector and economic growth

Theoretical and empirical evidence

Recently, a large number of papers have provided evidence that greater financial development stimulates growth and that finance matters for growth both at the macroeconomic and microeconomic levels. However, thus far the literature has not paid much attention to competition in the financial sector although such competition matters for a number of reasons.

It has been shown theoretically that the degree of competition in the financial sector can affect the efficiency of the production of services, the quality of services, and the performance of innovation in that sector. For instance, a less-competitive banking system can be more costly and exhibit a lower quality of services.

Moreover, it has been provided that the degree of competition in the financial sector can affect the access of firms to external financing and finally economic growth although whether less or more competitive financial industry is favorable to the firms is unclear.

Empirical studies, also, have not shown any strong nor sufficient evidence regarding the causal relationship between competition in the financial sector and economic growth. However, thus far a few empirical studies using cross-country data provide evidence that concentration has a depressing impact on all industry sectors, and hence also economy-wide effects.

Benefit and cost of financial sector concentration

High banking sector concentration, which induces a less-competitive environment, may affect economic growth negatively as a purely monopolistic market tends to impose welfare losses compared to a competitive market.

Market power usually allows large banks to charge higher loan rates and offer savers lower deposit rates. This tends to reduce equilibrium quantity of funds available for credit and therefore also the rate at which an economy can grow. Specifically, the function of the financial system to transfer available resources to the most efficient means is hampered.

Simultaneously, however, a highly concentrated banking sector may boost growth due to its stronger resistance to financial crises via financial stability resulting from enhanced depositor protection.

Apart from its financial stability-enhancing impact, banking sector concentration may also be expected to have a positive effect on bank lending. Concentrated banking sectors may take advantage of economies of scale in the production of banking services

Furthermore, monopolistic banks may have an incentive to pursue profitable projects that are only successful in the longer term, whereas in a competitive market such investment would have a lower probability of getting funded.

2. Optimal financial industry structure for economic growth - focusing on Korea's experience

A momentum for the financial restructuring in Korea

Korea undertook a strong drive for financial liberalization and market opening from the early nineties. But the structural weakness brought about by high costs and low efficiency in its thirty-year process of concentrated growth meant that its financial and economic system had become destabilized and unable to stand the associate strains.

Most notably, in 1997, a string of large corporate insolvencies and the consequent rapid build-up of financial institutions' bad loans undermined their soundness and threatened the soundness of the financial system. Furthermore, the negative effect of the Southeast Asian currency crisis deepened foreign investors' misgivings about the health of the Korean economy. Accordingly, there was a large net outflow of foreign portfolio capital.

This left the government no option but to turn to the IMF for stand-by credit. An emergency package was agreed under the conditionalities attached to which Korea began an economic reform program focused on macroeconomic stability and restructuring of the financial and corporate sectors, as well as the labour market.

Change in competition level in the Korean financial sector

The top priority in financial sector restructuring was given to the earliest possible resolution of unsound financial institutions. In 1998, five banks whose capital adequacy ratios were below the 8% BIS guideline were forced to exit the

market. Nine banks merged to form four successor banks in 1999, and two merged to form one successor bank in 2000.

In the case of non-bank financial institutions, 29 merchant banking corporations, 15 securities companies, 11 asset management companies, and 17 insurance companies were closed following exits or mergers in the period between 1998 and June 2006.

As a result, the number of banks decreased from 33 in 1995 to 18 in 2006 at the end of the year. Therefore the concentration index, CR_3 , of the banking industry increased from 28.0 in 1995 to 44.5 in 2006 and HHI (Herfindahl-Hirschman index) increased from 615.6 in 1995 to 1,105.9 in 2006.

Change of concentration index of the banking industry

	1995	2000	2001	2003	2005	2006
CR3	28.0	35.7	46.8	45.4	43.6	44.5
HHI	615.6	815.8	1,115.3	1,075.5	1,008.0	1,105.9

We also endeavored to heighten prudential regulation and improve the corporate governance of financial institutions. The asset quality classification standards of banks and other financial institutions were strengthened in order to take into consideration the future repayment capacity of borrowers.

In addition, an outside director system and an audit committee system were introduced to improve corporate governance in 1999. At the same time, efforts have been taken to strengthen market discipline and enhance the transparency of financial information. Standards for accounting and public disclosure were heightened to enable shareholders, creditors and others to examine a financial institution's management performance accurately from its financial statements.

Optimal financial industry structure for economic growth

Before the financial crisis in 1997, Korea had been showing relatively high real GDP growth rate, which was 7.9% on average from 1990-96. In addition, financial industry structure had been more competitive than the current structure during that time. However, we are not sure whether the high economic growth rate in the 1990s (pre-crisis) was primarily attributable to competition in the financial industry or not.

On the contrary, high competition among the financial institutions, which had been fueled by rapidly increasing foreign capital inflows, induced lending more and more to less productive companies. Furthermore, loose prudential regulation and supervision of financial institutions escalated the size of bad loans before the crisis.

Therefore, although tight competition in the financial sector is likely to induce efficient production of services, high quality services and innovation in that sector theoretically, it also easily amplifies financial instability without tight and elaborate prudential regulations and supervision.

In conclusion, the implication being generated from the Korea's recent experience shows that optimal financial industry structure-less-competitive or competitive-for the economic growth should be decided in consideration of legal framework of supervision on the financial institutions.

Dietrich Lingenthal, Head of Division, German Federal Ministry of Finance

As requested by the organizers my contribution will focus on the role of competition patterns in the German financial sector and the European integration process as factors to stimulate investment and economic growth. First, I will give a short overview of the structure of the banking market in Germany, the challenges it currently faces and in particular issues regarding consolidation, competition and stability.

Banks and banking market structure in Germany

The German banking structure is characterised by the so-called three pillars, embedded in a long tradition of universal banking. These three pillars are firstly the private and commercial banks, secondly the public banking sector –these are savings banks and “Landesbanken” which means regional state banks– and thirdly the co-operative banks.

All banks in Germany are classified as “credit institutions” being subject to the same supervisory regulation –the German Banking Act (Kreditwesengesetz - KWG). Responsible for banking supervision in Germany are the Federal Financial Supervisory Authority –BaFin– and our central bank, the Deutsche Bundesbank.

In the early 1960s, there were approximately 12,000 banks operating in Germany. Since then this number has fallen to around 2,100, mainly due to mergers. Over time this restructuring process gained more momentum, and thus the number of banks has dropped by half since German reunification alone,

corresponding to an increase in average total assets during this period from 0.6 bn to 3.5 bn Euro. The rationale behind this principally lies in cost savings and synergy effects. However, despite this development towards more concentration, still the number of banks is high and competition remains intense.

Taking a closer look at this highly fragmented German banking market, the five so-called “large commercial banks” should be mentioned first. These are Deutsche Bank, HypoVereinsbank (HVB, part of the Italian Unicredit-Group), Commerzbank, Dresdner Bank (part of the Allianz-Group) and Postbank. Together, these five large commercial banks have a market share of some 25% (based on total banking assets). In addition, there are another 360 private and commercial banks with a market share of approximately 15%.

Then we have the “second pillar” with 450 local and regional savings banks –in German “Sparkassen”, including the 11 “Landesbanken”. To a large degree, these are owned by municipal or regional authorities. Their focus lies on ensuring the widespread provision of financial services and the financing of local business. Together, the banking institutions of this second pillar have a combined market share of nearly 45%.

Last but not least there are 1,220 co-operative banks with a market share of 15%. The co-operative banks are owned by their members, focusing their work on local industry and agriculture.

So you can see that Germany remains extremely well-banked with around 25 institutions for every million residents. This banking market structure results in a wide network of branches –some 40,000– nationwide. Savings banks and the co-operative banks have the highest number of branches, while Postbank is most prominent within the pillar of private banks in this respect. Taken together, there is on average one branch per 2,100 inhabitants in Germany, which certainly is very convenient for the customers.

Taking a look at the European banking market, the German market is less concentrated and has a higher density of branches. Taking the share of the five largest commercial banks in total assets of all credit institutions as a yardstick, their market share stands at only 22% in Germany, compared with 42% in EU-average and UK or France reaching some 36 and 52 % respectively.

Consolidation, competition and stability in the GER financial sector

These figures illustrate, that in comparison with other advanced economies, the financial sector in Germany is still at a comparatively low level of consolidation.

However, there has been rapid progress in recent years. As mentioned already, the number of banking institutions has declined considerably over the decades –with about 40% in the last ten years alone.

However, consolidation does not only take the form of mergers and acquisitions. Consolidation is also about cooperation and outsourcing of services, e.g. using IT and other services on a shared basis. The motives for consolidation are numerous:

1. targeting economies of scale,
2. an institution with a high level of cost efficiency takes over an institution of low cost efficiency that may have run into problems,
3. seeking a diversification of risk, and
4. seeking to attain a market position that is not easily contestable by competitors.

A common objective of bank consolidation is to improve the cost efficiency of the new entity. Whether this aim is achieved depends on specific circumstances, like for example integration costs. Interestingly some empirical studies suggest that on balance, cost-efficiency has not increased in connection with bank mergers, but this may be no final assessment.³⁰

Another question is about the level of competition in the German banking system and how it has evolved following consolidation. Empirical studies suggest that despite the substantial consolidation experienced already, overall competition increased during the 1990s³¹, presumably spurred by increasing integration and liberalization of financial markets as well as technological progress affecting not only operational banking business but also banks' distributive channels –mainly direct banking.

Considering the intense competition in Germany's banking market, it is not really surprising, that the return on equity (RoE), some 11%, is traditionally low compared to other countries, like for example France, the UK and Scandinavian countries with an average of roughly around 20%.

Regulatory authorities in Germany (as elsewhere) are mainly concerned with the stability of the financial system, especially, its resilience to crises. A

30 Koetter, M. (2005), "Evaluating the German bank merger wave", Deutsche Bundesbank Discussion Papers Series 2, 12/2005.

31 Fisher, K.H., Hempell, H.S. (2006), "Regional Markets, Oligopoly and Market Power in Banking", Deutsche Bundesbank, Forschungszentrum (forthcoming).

crisis could interrupt the availability of credit to the real economy, especially to small and medium sized enterprises, which in Germany are the “backbone” of the economy. This would affect growth negatively.

Cost efficiency, in general, is a stabilizing factor in the banking system. Thus, to the extent that cost efficiency is enhanced by consolidation, regulators will rather welcome it. A recent study that established a positive link between cost efficiency of individual banks and GDP per worker³², would support this stance.

When reflecting on consolidation I should say one word to the present financial turmoil that unfortunately affected some German banks like in other countries as well. Although the German banking system as a whole has shown to be stable, the high level of competition, resulting in low profitability, drove some banks to heavily engage in risky business, not always supported by adequate risk management structures. This caused at least two “Landesbanken”, with an insufficient basis in retail banking, to be severely affected by the sub-prime crisis. Against this backdrop the discussion about restructuring and consolidating the “Landesbanken” has intensified in Germany, some demanding the public sector to withdraw completely from the banking business.

European financial market integration

Let me now briefly refer to European financial integration: A high degree of financial integration increases the efficiency of the economy, by reducing the cost of capital and improving the allocation of financial resources. This will ultimately lead to higher and more sustainable non-inflationary growth.

Financial integration also fosters the diversification of activities and risks of financial institutions and thus the efficiency and soundness of the financial system.

This provides immediate benefits to consumers and businesses and, through interaction with other economic developments such as technological innovation, should allow faster productivity increases and economic growth. However, these dynamic effects are hard to quantify and disentangle.

The European authorities follow a pragmatic approach towards integration, identifying and eliminating specific obstacles, while leaving it up to market participants to turn integration into reality. This pragmatism is motivated by the

³² Koetter, M., Wedow, M. (2006), “Finance and growth in a bank-based economy: is it quantity or quality that matters?”, Deutsche Bundesbank Discussion Papers Series 2, 02/2006.

complexity of the challenges and by the fact that radical solutions –such as a single EU legal, regulatory, and supervisory system– are not considered politically feasible yet.

The approach has worked well insofar as many of the purely technical obstacles to integration have been tackled, delivering major benefits in terms of cheaper capital and better service for businesses and consumers. The most recent achievement in this regard is the Single Euro Payments Area, making it possible for customers in the EU and some other participating countries to make and receive payments under the same basic conditions, regardless of their location.

Certainly the most important stimulus has been the establishment of the Economic and Monetary Union, in particular Stage Three with the introduction of the euro and a single monetary policy in the monetary union. But there are still barriers to full financial integration, and their removal will require strong political commitment.

There has been major progress in creating a single European market for *wholesale* financial services –which ranges from capital markets to the provision of financial services to large corporate and public sector clients. Financial services providers, their large clients and institutional investors now operate on a European –and even a global scale.

However, the integration of retail markets, such as loans to households and small and medium-sized enterprises, is still lagging behind compared to the wholesale markets.

Conclusion

The German banking market is traditionally highly fragmented, but it is not the task of any authority or the federal government to intervene in this structure. Consolidation has to be market-led. Supervision focuses on stability and crisis resilience. The German universal banking market is characterised by high competition that on the one hand benefits clients and supports market discipline. On the other hand, the return on equity is rather low compared internationally. Therefore consolidation in all sectors, but particularly with regard to the “Landesbanken”, is likely to continue.

Regarding European integration, the European Council and the Commission are constantly working on resolving remaining integration deficits. Stable financial markets which are resilient to crises do contribute to global development and economic growth. Therefore, it is of utmost importance to find an appropriate

response to the current financial turmoil and I am convinced that the Financial Stability Forum and the European Union are in a good way.

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Biographic Information of Speakers

Stijn Claessens

Professor Claessens is currently Assistant Director/Division Chief, Financial Studies, Research Department, International Monetary Fund as well as Professor of International Finance at the University of Amsterdam. A Dutch national, he holds a Ph.D. and Master in Business Economics from the Wharton School of the University of Pennsylvania, and a Master in Business Economics from Erasmus University, the Netherlands.

Prior to joining the University of Amsterdam, Professor Claessens worked at the World Bank in a variety of assignments, including its Finance Complex, Chief Economist's Office, Debt and International Finance Division, Finance and Private Sector Development Division for the Europe, Central Asia, Middle-East and North-Africa Regions, and East Asia and Pacific Region of the World Bank. He was the principal author of the 1989/90 World Debt Tables and one of the principal authors of the 1996 World Development Report on Transition Economies, From Plan to Market. His last assignment at the World Bank was as Lead Economist, Financial Sector Strategy and Policy Group, Financial Sector Operations Vice-Presidency. Prior to coming to the World Bank, Stijn taught at New York University.

Jacob A. Bikker

Jacob A. Bikker is senior researcher at the Strategy Department, Supervisory Policy Division, De Nederlandsche Bank (DNB) and Professor on Banking and Financial Regulation at Utrecht School of Economics, Utrecht University, the Netherlands. His research interests include banking, insurance & pensions, financial conglomerates, risk management, competition & efficiency, procyclicality of regulation and the extended gravity model. Before joining the Supervisory Policy Division in 1997, he was unit head of research at the European Monetary Institute

(predecessor of the European Central Bank) in Frankfurt am Main and senior researcher at the Research Department of DNB. He held a position at the Vrije Universiteit in Amsterdam from 1977-1983 and, part-time, from 2003-2004. From 1999-2002, he was a member/advisor of the Modelling Task Force (Pillar I), the Transparency Group (Pillar III) and the Secretariat of the Basel Committee, and from 2002-2004 he was a member of the Working Group on Internal Ratings of the European Commission.

Jacob holds a Master and Ph.D. in econometrics from the Vrije Universiteit. He was recently published in the *Journal of Banking & Finance*, *Journal of International Money and Finance*, *Applied Economics* and *Journal of Forecasting*.

Jeffrey Carmichael AO

Jeffrey Carmichael is the Chief Executive Officer of Promontory Financial Group Australasia and advises governments on regulatory structure, design and effectiveness. Prior to joining Promontory he was Chairman of the Australian Prudential Regulation Authority (APRA) responsible for regulating and supervising banks, insurance companies and pension funds. His career includes senior positions in a 20-year tenure with the Reserve Bank of Australia, seven years as Professor of Finance at Bond University, and appointment to a number of Government inquiries including the Wallis Inquiry into the Australian financial system. He has served on a number of Government and private sector Boards. Jeffrey has published over 40 professional articles in a number of the world's top economics and finance journals, has a Ph.D. in economics from Princeton University, and in 1995 was awarded an Officer of the Order of Australia (AO) for his service to finance, education and the community.

Philip Turner

Philip Turner has been at the Bank for International Settlements (BIS) since 1989. He is currently Head of Secretariat Group in the Monetary and Economics Department, responsible for economics papers produced for central bank meetings at the BIS. His main area of research interest during a previous position at the BIS was financial stability in emerging markets and he has written on banking systems and on bank restructuring in the developing world. Between 1976 and 1989, he held various positions including Head of Division in the Economics Department of the Organisation of Economic Co-operation and Development (OECD) in Paris. From 1985-86 he was a Visiting Scholar at the Institute for Monetary and Economic Studies at the Bank of Japan. He received his Ph.D. in Economics from Harvard University in 1976.

Andrew Powell

Andrew Powell is the Lead Research Economist of the Research Department at the Inter-American Development Bank. He holds a BA, MA and Ph.D. (Dphil.) from the University of Oxford and won the Deloitte Prize for the best economics paper as an undergraduate. Through 1994 he dedicated himself to academia as the Prize Research Fellow at Nuffield College, Oxford and Lecturer at London University and the University of Warwick.

In 1995, he joined the Central Bank of Argentina, reaching the position of Chief Economist. While at the Central Bank, he represented Argentina at a G10 working party on emerging debt market instability, as a G20/G22 deputy and as a member of three G22 working groups (on crisis resolution, financial system strengthening and transparency). In 2001, he returned to academia, joining the Universidad Torcuato Di Tella as Director of Graduate Programs in Finance at the Business School. He has been a consultant to the World Bank, Inter-American Development Bank and various governments as well as Visiting Scholar at the IMF and Harvard University.

Andrew Sheng

Andrew Sheng, a Chartered Accountant by training, is Chief Adviser to the China Banking Regulatory Commission and a Board Member of the Qatar Financial Centre Regulatory Authority. He is also currently Adjunct Professor at the Graduate School of Economics and Management, Tsinghua University, Beijing and the University of Malaya, Kuala Lumpur. He is on the Governing Council of the International Centre for Education in Islamic Finance.

Andrew was Chairman of the Securities and Futures Commission (SFC) of Hong Kong from 1st October 1998 to 30th September 2005. Between October 1993 and September 1998, Andrew was the Deputy Chief Executive responsible for the Reserves Management and External Affairs Departments at the Hong Kong Monetary Authority. Between 1989 and 1993, he was Senior Manager, Financial Sector Development Department at the World Bank. From 1976 to 1989, he held various positions with Bank Negara Malaysia, including Chief Economist and Assistant Governor in charge of Bank and Insurance Regulations.

Andrew co-chaired with Mervyn King, the Work Group on Transparency and Accountability, which was established by the Group of Twenty Two in 1998. He also chaired the Financial Stability Forum's Task Force on Implementation of Standards in 1999. From October 2003 to September 2005, Andrew chaired the Technical Committee of the International Organisation of Securities Commissions

(IOSCO). He currently chairs the Annual OECD/ADB Roundtable on Capital Market Reform in Asia. He has an Honorary doctorate from the University of Bristol and was awarded the title of Datuk Seri Panglima given by the Yang di-Pertua of Negeri Sabah in September 2006.

James R. Barth

James R. Barth is currently the Lowder Eminent Scholar in Finance at Auburn University and a Senior Finance Fellow at the Milken Institute. His research has focused on financial institutions and capital markets, both domestic and global, with special emphasis on regulatory issues. Most recently, he served as leader of an international team advising the People's Bank of China on banking reform. Barth was an appointee of Presidents Ronald Reagan and George H.W. Bush as chief economist of the Office of Thrift Supervision and previously of the Federal Home Loan Bank Board. He has also held the positions of professor of economics at George Washington University, associate director of the economics program at the National Science Foundation and Shaw Foundation Professor of Banking and Finance at Nanyang Technological University. He has been a visiting scholar at the U.S. Congressional Budget Office, Federal Reserve Bank of Atlanta, Office of the Comptroller of the Currency and the World Bank. He has authored more than 200 articles in professional journals and has authored and edited several books, including *The Great Savings and Loan Debacle*. James is included in the *Who's Who in Economics: A Biographical Dictionary of Major Economists, 1700 to 1995*.

Thorsten L. Beck

Thorsten L. Beck is a Senior economist in the Finance and Private Sector Development Team of the Development Research Group of the World Bank. His research, academic publications and operational work have focused on two major questions: What is the relationship between finance and economic development? What policies are needed to build a sound and effective financial system? Recently, he has concentrated on access to financial services, including SME finance, as well as the incentive-compatible design of financial safety nets.

Beck has published numerous academic papers and is co-author of the "Making Finance Work for Africa" Flagship report and the Policy Research Report "Finance for All? Policies and Pitfalls in Expanding Access". His country experience, both in operational and research work, includes Bangladesh, Bolivia, Brazil, China, Colombia, Mexico, Peru, Russia and several countries in Sub-Saharan Africa. He holds a Ph.D. from the University of Virginia and an MA from the University of Tübingen in Germany.

Sveinbjörn Blöndal

Sveinbjörn Blöndal is Head of the Structural Policy Analysis Division II in its Policy Analysis Branch in the Economics Department, OECD and has authored and co-authored articles and publications in the fields of labour markets, regulatory reform, ageing and asset markets. Mr Blöndal is in charge of the preparations for the reassessment of the OECD Jobs Strategy. After successfully reading his first degree from the University of Iceland and a subsequent Ph.D. from the University of Cambridge, Sveinbjörn joined the OECD in 1986. He was a member of the OECD Jobs Study Task Force in 1993/1994.

Santiago Carbó Valverde

Santiago Carbó Valverde is the Professor of Economics at the Department of Economic Theory and History, University of Granada and Federal Reserve Bank of Chicago. He holds a Ph.D. in economics from the University of Wales in Bangor (UK), where he also read for a Master in Banking and Finance. He also holds a Bachelor of Arts in Economics from the Universidad de Valencia (Spain).

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Programme of the Workshop

February 15 - 17, 2008

The Laguna Resort & Spa, Nusa Dua, Bali, Indonesia

Friday February 15, 2008

13:00 - 18:00 Registration
(Pre-Function Area)

13:00 - 17:00 Pre-Workshop tour

18:30 - 20:30 Welcome cocktail
(Cascade Terrace)

Saturday February 16, 2008

08:00 - 08:30 Registration
(Pre-Function Area)

08:30 - 08:50 Opening remarks

Mrs. Miranda S. Goeltom, Senior Deputy Governor, Bank Indonesia

Mr. Javier Guzmán Calafell, Director of International Affairs, Banco de México

08:50 - 09:00 Remarks from G-20 Chair 2008

Mr. Marcos Galvao, Secretary for International Affairs, Ministério da Fazenda, Brazil

09:00 - 10:30 Session I
Overview of competition policies

Chair: **Mrs. Miranda S. Goeltom**, Bank Indonesia

	<p>Speakers: Mr. Stijn Claessens, IMF (20 minutes each) Mr. Jacob A. Bikker, De Nederlandsche Bank</p> <p>Discussants: Mr. Marcio Nakane, Brazil (10 minutes each) Mr. Servaas Deroose, EU Presidency</p> <p>General discussion (30 minutes)</p>
10:30 - 10:45	Coffee break
10:45 - 12:15	<p>Session II</p> <p>Changes in the financial services industry</p> <p>A) Consolidation and financial conglomeration</p> <p>Chair: Mr. Malcolm Edey, Reserve Bank of Australia</p> <p>Speakers: Mr. Jeffrey Carmichael, (20 minutes each) Promontory Financial Group Australasia (PFGA)</p> <p>Discussants: Mr. Philip Turner, BIS (10 minutes each) Mr. Gian Paolo Ruggiero, Ministry of the Economy and Finance, Italy</p> <p>Mr. Jim Haley, Ministry of Finance, Canada</p> <p>General discussion (30 minutes)</p>
12:15 - 13:30	Working lunch, Venue Ocean Terrace
13:30 - 15:00	<p>Session II</p> <p>Changes in the financial services industry</p> <p>B) Foreign bank entry</p> <p>Chair: Ms. Celina Arraes, Banco do Brasil</p> <p>Speakers: Mr. Andrew Powell, IADB (20 minutes each) Mr. Mario Lamberte, Asian Development Bank Institute</p> <p>Discussants: Mr. Halim Alamsyah, Bank Indonesia (10 minutes each) Mr. Pascual O'Dogherty, Banco de México</p> <p>General discussion (30 minutes)</p>
15:00 - 15:15	Coffee break
15:15 - 16:45	<p>Session III</p> <p>Challenges for regulation and stability</p> <p>A) Regulation</p> <p>Chair: Mr. Sulaiman Mohammed Ali Al-Turki, Ministry of Finance, Saudi Arabia,</p>

Speakers: **Mr. Andrew Sheng**,
 (20 minutes each) China Banking Regulatory
 Commission
Mr. James R. Barth, Auburn University
 Discussants: **Mr. Nick Joicey**, UK Treasury
 (10 minutes each) **Mr. Takamasa Hisada**, Bank of Japan
 General discussion (30 minutes)

19:00 - 21:00 Dinner, Venue Jendela Bali
 Hosted by **Mrs. Miranda S. Goeltom**, Senior Deputy Governor,
 Bank Indonesia

Sunday February 17, 2008

08:30 - 10:00 Session III
 Challenges for regulation and stability
 B) Stability
 Chair: **Ms. Renosi Mokate**,
 South African Reserve Bank
 Speaker: **Mr. Thorsten Beck**, World Bank
 (20 minutes)
 Discussants: **Mr. Malcolm Edey**,
 (10 minutes each) Reserve Bank of Australia
Mr. Mark Sobel,
 Department of the Treasury, and
Mr. Richard Freeman,
 Federal Reserve System, United States
Mr. Jean-Pierre Landau, Banque de France
 General discussion (30 minutes)

10:00 - 10:15 Coffee break

10:15 - 11:45 Session IV
 Lessons for competition and growth
 Chair: **Mr. Javier Guzmán Calafell**,
 Banco de México
 Speakers: **Mr. Sveinbjörn Blöndal**, OECD
 (20 minutes each) **Mr. Santiago Carbó**, University of Granada
 and Federal Reserve Bank of Chicago
 Discussants: **Mr. Hoon Kim**, The Bank of Korea
 (10 minutes each) **Mr. Dietrich Lingenthal**,

	Federal Ministry of Finance, Germany
	General discussion (30 minutes)
11:45-12:15	Special session: presentation by Mr. Thorsten Beck , World Bank, on the main findings of the book <i>"Finance for all - policies and pitfalls in expanding access"</i> (20 minutes).
	Questions and answers session (10 minutes)
12:15-12:35	Concluding remarks
	Mrs. Miranda S. Goeltom , Senior Deputy Governor, Bank Indonesia
	Mr. Javier Guzmán Calafell , Director of International Affairs, Banco de México
12:45-14:00	Lunch, Lagoon Cafe
14:00-17:30	Cultural activity (Uluwatu Temple)

List of Participants

Gustavo Gonzalez, Central Bank of Argentina, Argentina

Jorge Carrera, Central Bank of Argentina, Argentina

Norberto Pagani, Central Bank of Argentina, Argentina

Malcolm Edey, Reserve Bank of Australia, Australia

Lamorna Rogers, Reserve Bank of Australia, Australia

Olaf Schuermann, The Treasury, Australia

Susan Bultitude, The Treasury, Australia

Pedro Erik Carneiro, Brazilian Ministry of Finance, Brazil

Diogo Souza Carmo Nogueira, Central Bank of Brazil, Brazil

Maria Beatriz Costa, Central Bank of Brazil, Brazil

Luis Gustavo Mansur Siqueira, Central Bank of Brazil, Brazil

Ronaldo Malagoni de Almeida Cavalcante, Central Bank of Brazil, Brazil

Marcos Galvao, Ministry of Finance, Brazil

Alvaro Vereda, Ministry of Finance, Brazil

Marcos Guimaraes, Ministry of Finance, Brazil

Marcio Nakane, University of São Paulo, Brazil

Eric Santor, Bank of Canada, Canada

Jim Haley, Finance Canada, Canada

Andrew Sheng Len Tao, China Banking Regulatory Commission, China

Bin Han, Ministry of Finance, People's Republic of China, China

Li Rui, Ministry of Finance, P.R.C., China

Bei Quan, People's Bank of China, China

Jie Peng, People's Bank of China, China

Servaas Deroose, European Commission, Eu Presidency

Jean-Pierre Landau, Banque de France, France

Jean-Charles Rouge, Embassy of France in Indonesia, Economic Department, France

Sveinbjörn Blöndal, OECD, France

Marc Uzan, Reinventing Bretton Woods Committee, France

Christoph Lindemann, Deutsche Bundesbank, Germany

Petra Kohler-Ulbrich, European Central Bank, Germany

Dietrich Lingenthal, German Federal Ministry of Finance, Germany

Dharam Bhardwaj, Ministry of Finance, Department of Financial Services, India

Mohua Roy, Reserve Bank of India, India

Miranda Swaray Goeltom, Bank Indonesia, Indonesia

Eddy Azhar, Bank Indonesia, Indonesia

Halim Alamsyah, Bank Indonesia, Indonesia

Iss Savitri, Bank Indonesia, Indonesia

Made Sukada, Bank Indonesia, Indonesia

Sjamsul Arifin, Bank Indonesia, Indonesia

Solikin M. Juhro, Bank Indonesia, Indonesia

Viraguna Bagoes Oka, Bank Indonesia, Indonesia

Wijoyo Santoso, Bank Indonesia, Indonesia

Wimboh Santoso, Bank Indonesia, Indonesia

M. Chatib Basri, LPEM - FEUI, Indonesia

Adi Cahyadi, Ministry of Finance, Indonesia

Muhammad Imran, Ministry of Finance, Indonesia

Vincentius Krisna Juli Wicaksono, Ministry of Finance, Indonesia

Giorgio Gobbi, Bank of Italy, Italy

Gian Paolo Ruggiero, Department of the Treasury - Ministry of the Economy and Finance, Italy

Mario Lamberte, Asian Development Bank Institute, Japan

Takamasa Hisada, Bank of Japan, Japan

Kazuhiko Koshikawa, Ministry of Finance, Japan

Teruhiro Ozaki, Ministry of Finance, Japan

Hoon Kim, The Bank of Korea, Korea

Javier Guzmán, Banco de México, México

Pascual O'Dogherty, Banco de México, México

Rodolfo Padilla del Bosque, Banco de México, México

Enrique Seira Bejarano, Secretaría de Hacienda y Crédito Público, México

Jacob A. Bikker, De Nederlandsche Bank, Netherlands

Maxim Kulikov, Bank of Russia, Russia

Vladimir Smenkovskiy, Bank of Russia, Russia

Boris Minin, The Central Bank of the Russian Federation (Bank of Russia), Russia

Sulaiman Mohammed Ali Al-Turki, Ministry of Finance, Saudi Arabia

Ahmed Al-Kholifey, Saudi Arabian Monetary Agency, Saudi Arabia

Jeffrey Carmichael, Promontory Financial Group Australasia (PFGA), Singapore

Analisa Ribeiro Bala, National Treasury, South Africa

Katherine Lee Gibson, National Treasury of South Africa, South Africa

Renosi Mokate, South African Reserve Bank, South Africa

Antoinette van den Boogaard, South African Reserve Bank, South Africa

Jason Milton, South African Reserve Bank, South Africa

Johan Delport, South African Reserve Bank, South Africa

Santiago Carbó-Valverde, University of Granada & Federal Reserve Bank of Chicago, Spain

Philip Turner, Bank for International Settlements, Switzerland

Almira Karasoy, Central Bank of Turkey, Turkey

Ozgu Evirgen, Central Bank of Turkey, Turkey

Omer Ethem Bayar, Undersecretariat of Treasury, Turkey

Utkan Oktay, Undersecretariat of Treasury, Turkey

Nicholas Joicey, H M Treasury, United Kingdom

James R. Barth, Auburn University, United States

Mark Sobel, Department of Treasury, United States

Richard Freeman, Federal Reserve Board, United States

Andrew Powell, Interamerican Development Bank, United States

Stijn Claessens, International Monetary Fund, United States

Thorsten Beck, World Bank, United States