Real consequences of financial crises

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# 1.	Introduction

The financial crisis that began in August 2007 has brought on the deepest global recession since the Second World War. Unlike every other major financial crisis of the past half century, this one originated in the advanced industrial countries. In the words of one emerging market official, "This time it was not us". And the countries in which the crisis started have suffered at least as much as their less developed trading partners.

As wealth losses accumulated after the failure of Lehman Brothers in September 2008, confidence collapsed, private consumption and investment slumped worldwide, and financial markets ceased normal functions. Jobs losses mounted. Income fell. Profits turned to losses. And for the first time since the Second World War, trade contracted. At its nadir in mid-2009, the combined output of the United States, the euro area and Japan had fallen 4.9% from its peak a year earlier. Meanwhile, growth slowed dramatically in China and India, and output contracted sharply in Mexico. For major emerging market countries overall, output grew a mere 0.2% for the year ending in the second quarter of 2009, well below the previous 10-year average of 6.4%.[1]

Countries promptly initiated massive monetary and fiscal policy interventions to prevent an even further collapse: in the advanced economies, policy rates were quickly driven to zero, or close to it, with unconventional measures taking an increasingly prominent role; and in a number of countries, fiscal stimulus led to deficits in excess of 10 percent of GDP. By mid-2009, conditions appeared to have stabilised. And in the second half of the year, growth was returning, albeit slowly. Nevertheless, questions remained about both the short-term sustainability of the nascent growth and the impact of the crisis on the long-term trend. Once government spending and interest rates start returning to normal, will growth continue in the advanced economies?

Rather than engage in a forecasting exercise, we simply note that factors underlying the Great Moderation of the two decades beginning in the mid-1980s strongly suggest that the sudden collapse will be followed by an equally sudden recovery (consistent with what we are already seeing in emerging Asia and Latin America at the end of 2009). That is, the explanations for the reduced volatility of real growth through the 1990s focus on globalisation and the increased openness of trade, better monetary policy and improved inventory management[2]—and those factors still obtain today: monetary policy has done as much as it could since the crisis erupted;

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[1]	Weighted average of year-on-year real GDP growth (2005 PPP, GDP-based). We include in this calculation the following emerging market economies (EMEs): Argentina, Brazil, Chile, China, Chinese Taipei, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Thailand, Turkey and Venezuela. The 10-year average growth rate for the major EMEs (excluding Russia and Poland for lack of data) is computed for the period from the second quarter of 1998 to the second quarter of 2008.

[2]	See Cecchetti, Flores-Lagunes and Krause (2005) for a discussion.

trade channels are still open despite a few protectionist outbursts; and information technology that is the basis for improved productivity and better supply chain management remains in place.

Nonetheless, in the view of some, the apparent recovery is much weaker than some data might suggest, and the global economy could succumb to a second dip before eventually attaining a firm recovery. An even dimmer view is that growth rates will be permanently lower once economies pull themselves out of the crises. However, such a debate (if it is one) really begs the question. Certainly the impact of the crisis on welfare has been significant: factories have closed, millions of people have lost their jobs and lifetime savings are gone. But after all, social welfare ultimately depends on long-term economic growth rather than the specific short-term cyclical patterns of economic activity. It is the trajectory of the "new normal" which we need to know and understand better.

So, what are the consequences of the global financial crisis and recession for *long-term* economic growth? Will the crisis result in a permanent change to the potential growth rate? Does past experience suggest a clear pattern in the movements of output and potential output following major banking crises, which could provide some guidance for policy? In addition, what are the immediate challenges or constraints policymakers face in trying to achieve satisfactory macro performance?

These are the questions on which we focus in the remainder of this paper. As a preliminary task, we start by asking whether normal recessions have permanent effects. Unsurprisingly, our answer is ambiguous. In the third section, we turn to an examination of the long-run impact of financial crises. Here, we report results consistent with those in Cecchetti, Kohler and Upper (2009): we can find examples of every combination of a rise or fall in the level and growth rate of output. But the most common case is one in which the level falls permanently and the growth rate rises. Finally, in the fourth section, we move to a discussion of the policy challenges that arise from real-time data problems that tend to be particularly severe around turning points in the business cycle.

2. The long-term effects of recessions

Before considering the real impact of financial crises, we ask whether a regular or "normal" recession has permanent effects on output and employment.[3] During and after a cyclical downturn, an economy might go through some serious changes that could have permanent effects on the level of output, its growth rate or both. Most importantly, the industrial structure could suffer lasting changes: jobs in sectors hit hard by an economic downturn could be permanently lost; a good part of capital stock could suddenly become obsolete; and a pressing need could arise for a major shift in what is produced, as well as in how to produce it and by whom. Nevertheless, the

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[3] A normal recession is defined as one that is not associated with or accompanied by a financial crisis.

severity (magnitude) and persistence (duration) of the real effects of recessions largely depend on the nature of the shocks hitting the economy. They depend on the degree of adjustment in the private sector as well as on an economy's resilience, flexibility and ability to adapt to changes. And, of course, decisions by policymakers could make a difference as well.

More specifically, disturbances to the labour market could be one source of long-term output effects. As labour market institutions change over time, they could affect the impact of shocks on unemployment and the persistence of unemployment response to shocks. For example, Blanchard and Wolfers (2000) conclude that interactions between labour market institutions and adverse supply shocks such as oil price increases or slowdowns in total factor productivity and labour market institutions could explain the trend rise in European unemployment since the 1970s.

Demographic shifts and changes in social norms could also lead to permanent changes in labour force participation rates, effective working hours and potential supply. Hayashi and Prescott (2002) found that a fall in the growth rate of total factor productivity and a reduction in the average number of hours worked per week from 44 to 40 hours between 1988 and 1993 led to a change in the slope and level of Japan's steady-state growth path.

Other types of shocks could matter as well. Large and persistent terms-of-trade shocks that presage changes in the industrial structure can lead to recessions with permanent effects. The oil price shocks of the 1970s are a clear example.

Recessions often go hand-in-hand with increased rigidities and market frictions, some of which can be permanent. For instance, increased unemployment benefits could be hard to revoke after recovery due to political opposition. Price and wage rigidities could also harden. Greater nominal and real rigidities could magnify the initial impact of adverse shocks and make the impact much more persistent. For example, Wang and Wen (2006) show that, in the presence of a cash-in-advance constraint, a reasonable degree of price stickiness could generate highly persistent output movements.

Interestingly, both good and bad shocks appear to cluster. Moreover, it is a combination of multiple distinct shocks rather than one single large shock that often lies at the origin of a recession. In the current episode, that was clearly the case.

In considering the impact of recessions on labour market behaviour, one case provides a relatively straightforward illustration. During nearly every recession in the United States since 1970, the labour force participation rate declined before starting to rise some time after the recovery began. More significantly, the share of permanent job losses among the unemployed rose rapidly in all episodes, and the rise typically continued for several years after the recovery (Graph 1, left-hand panel). Related to this, we note that during the 1970s and into the first half of the 1980s, the series of recessions the natural rate of unemployment gradually rose (Graph 1, right-hand panel).

Graph 1

US employment

In per cent

Participation rate and job losses

NAIRU
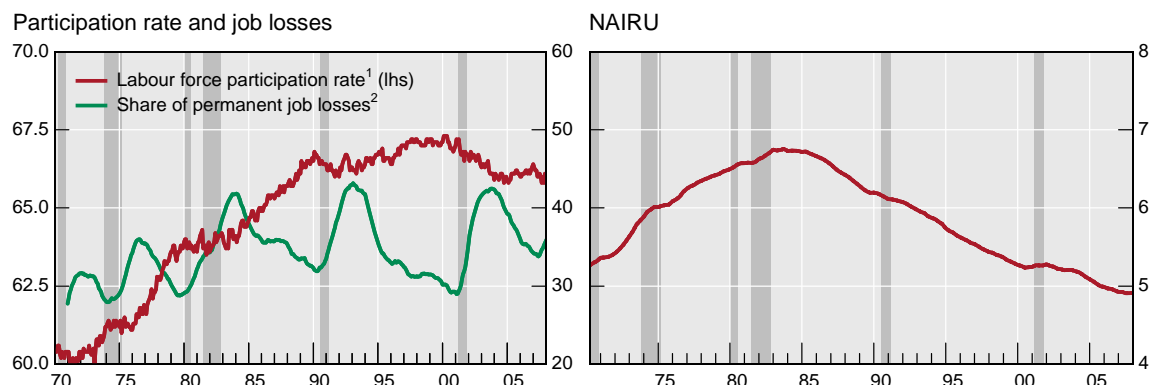
Note: Shaded areas refer to periods of recession dated by the National Bureau of Economic Research.

[1] Civilian labour force participation rate for those aged 16 or more. [2] Permanent job losers as a percentage of total unemployed; 12-month moving average.

Sources: Datastream; OECD.

The tendency for recessions to be followed by increases in the natural rate of unemployment seems to be characteristic that is broadly shared. Analysing 30 OECD economies from 1970 to 2008, Furceri and Mourougane (2009) report that downturns, on average, had a significant effect on the structural unemployment rate. And, the impact varied with the severity of the economic downturn: reaching an increase of almost 1.5 percentage points five years after a very deep downturn, but was around 0.6 percentage point for crises of smaller magnitude. Moreover, the effects on structural unemployment arising from banking and currency crises were found to be fundamentally similar.

Treating the current recession as if it were normal would lead us to expect the permanent loss of a substantial number of jobs in industries such as automobile manufacturing and financial services. This is consistent with the evidence in hand, as the share of permanent job losses has seen a steep rise. But the overall impact on the unemployment rate (especially outside the United States and Japan) has been less severe than past experience would suggest, at least so far.

Furthermore, the decline in the US labour participation rate accelerated as discouraged job seekers dropped out of labour force and new job entrants were deterred. According to Hall (2007), "modern recessions" in the early 1990s and 2000s were associated with severe employment losses; but unemployment rose because new jobs were hard to find, not because workers lost jobs. If past recessions are any guide, this means that the natural rate of unemployment in the United States will likely be higher in the coming years than it was before the crisis. The situation is hardly unique. For example, in Spain, where overall unemployment reached 19.3% in September, unemployment among people under the age of 25 has risen to an astonishing 41.7%. Even though they are considered better educated, these younger people are clearly more vulnerable to job market turbulence than are older cohorts.

Turning to the aggregate data, we look at the statistical properties of the log-level and growth rate of real GDP, asking if it is trend stationary or difference stationary.[4] If GDP is difference stationary, so that the series contains a unit root, then shocks are permanent. And if movements in output are well approximated by a random walk, then a shock has an infinitely long-lived effect, shifting the level of output once and for all. In that case, recessions have permanent effects on the level of output.

Our conjecture is that some fraction of the change in output is likely to be permanent. There are reasons for some shocks to be persistent. For example, substantial evidence indicates that workers benefit from experience on the job – the longer a worker has been on the job, the higher is his or her productivity. Time spent unemployed is time that is lost forever – the loss of job experience cannot be recovered by the individual or by society. Those who suffer a episode of unemployment have less job experience for the rest of their lives and, as suggested by the data, a permanently lower level of productivity.

Empirical evidence from past work is rather mixed. Results depend on the exact nature of the statistical tests used and the samples available.[5] In particular, for sample sizes that are typically available, the tests have difficulty distinguishing between random walks and near random walks with a root arbitrarily close to, but still below, unity.

Table 1

Testing for the presence of unit roots in the level of aggregate output

	Australia	**Finland**	**Japan**	**Norway**	**Sweden**	**UK**	**US**
Real GDP	Level	Level	Level	Level	Level	Level	Level
Potential GDP	Level	Level	Growth	Growth	Growth	Growth	Level

Sources: OECD; national data; BIS estimates.

That said, using data from Q1 1970 to Q2 2007, we apply the commonly used augmented Dickey-Fuller (ADF) test proposed by Said and Dickey (1984) and the Phillips (1987) z_α and z_t tests to the log-level and growth rates of real GDP and OECD potential output estimates. Our results, summarized in Table 1, suggest that shocks appear to have permanent effects on real GDP for a set of seven countries. Furthermore, tests on OECD estimates of potential output show that a unit root might be present in the growth rate for some of these countries as well. This indicates an even

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[4] These tests examine whether shocks have permanent or transitory effects, that is, whether real GDP is difference or trend stationary. In the latter case, real GDP would tend to return to a fixed deterministic path. The tests have become popular since the seminal paper by Nelson and Plosser (1982) and the important contributions from Campbell and Mankiw (1987) and Cochrane (1988).

[5] It is well known that conventional unit root and trend stationarity tests lack power in finite samples. See, for example, Cochrane (1991) and Rudebusch (1993).

higher degree of persistence: when a shock shifts potential output growth up or down, it would have no tendency to move back but rather would stay permanently higher or lower.

In summary, our results indicate that adverse shocks leading to a normal economic downturn could have long-term effects on both the output level and potential output growth.[6] That is, a normal recession could have a lasting impact on employment and output. But, turning now to our primary topic, will a recession driven by a major financial crisis have any additional long-term impact on real activity? Can we identify patterns in the dynamics of output and potential output following a crisis that will be useful for policymaking in the current circumstances?

3.   The long-term effects of financial crises

Looking at the current episode, it is natural question to ask whether financial factors might play a special role in magnifying the real consequences of a recession. Could a major financial crisis have greater and more persistent effects on real activity than those of a normal recession? Can we identify a specific pattern of output developments in the aftermath of a major financial crisis that could inform economic policy decisions? What are the arguments and what is the evidence?

Economic theory has yet to provide convincing arguments on the question of whether financial crises have long-term effects on real output and growth beyond those of a normal recession.[7] However, one obvious way that a financial crisis could have a long-term impact on growth is by disrupting the resource allocation role played by financial institutions. Economic theory suggests that, in normal times, any departure from perfect competition in the credit market would introduce inefficiencies impeding access to credit by creditworthy firms and households and hindering growth. In a financial crisis, the problem of information asymmetry becomes severe, magnifying credit market imperfections to a point where the market ceases to function as an efficient distributor of funds. By damaging financial intermediaries, a crisis reduces the efficiency of the investment process, bringing down productivity and long-term economic growth.

Related to this is the fact that projects that are more innovative and potentially more productive are often riskier – especially research and development activities, which are understood to be endeavours in which returns could be extraordinary but are highly uncertain. As a consequence, entrepreneurs wishing to carry out such speculative projects face greater difficulties in obtaining funding. Both the Great Depression of the 1930s and Japan's lost decade might be examples. In

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[6]   The results for potential GDP should be interpreted with some care, as they could simply reflect the fact that growth rates tend to be revised infrequently.

[7]   There is evidence that financial development promotes better economic performance: economies with better-developed financial systems have higher per capita real GDP and tend to grow faster. Dudley and Hubbard (2006) present evidence that improved allocation of capital and risk sharing facilitated by capital markets leads to higher productivity and real wage growth, greater employment opportunities and improved macroeconomic stability overall. The obvious implication is that a financial crisis, by damaging the mechanism for capital allocation and risk sharing, will have negative long-term real consequences.

the latter case, large banks kept credit flowing to zombie borrowers that would have been insolvent otherwise. Instead of being liquidated, zombie firms were kept alive in competitive markets, reducing profits for healthy firms and discouraging entry and investment. Zombie-dominated industries recorded insufficient job destruction and creation and lower productivity.[8]

The current recovery has been accompanied by improving financial market conditions, with a gradual re-opening of markets for interbank lending, commercial paper and corporate bonds. The third-quarter bank lending surveys in the United States and the euro area revealed a further decline in the net percentage of banks tightening loan standards. Yet bank credit to the private sector continued to contract in much of the industrial world, falling by more than 14% in the third quarter in the United States and between 1% and 2% in the euro area, Japan and the United Kingdom. As banks still expect large losses and write-downs, and a solid recovery is yet to be confirmed, banks are expected to shrink balance sheets in anticipation of more stringent capital requirements. A prolonged reduction in lending could be the outcome. Again, the fundamental identification problem dominates: it is almost impossible to correctly attribute the main responsibility for the current credit contraction, supply effects, demand effects, or a mixture of the two with similar weights.

On the other hand, one should not ignore the important possibility that a financial crisis could actually be growth-promoting. During a major crisis, the inefficiencies in financial and economic activities overlooked or even tolerated during the boom are often ruthlessly eliminated, paving the way for higher post-crisis productivity growth. It could well be that such cleansing effects are sufficiently powerful to make the crisis beneficial it in the long run.

This brings us to the empirical evidence on the long-term impact of financial crises on activity. While crises themselves may be relatively abundant, evidence on this question is not. A very brief summary of what is available starts with Kroszner, Laeven and Klingebiel (2007), who find that, during a banking crisis in economies with deeper financial systems, sectors highly dependent on external finance tended to experience a greater contraction in value added. Next, there is the work of Cerra and Saxena (2008), who conclude that large and persistent actual output losses are associated with financial crises, with output falling by 7.5% relative to trend over a period of 10 years after the crisis. In their view, a country rarely returns fully to its pre-crisis trend rate of GDP growth. Similarly, Hutchison and Noy (2005) find that, in emerging economies, banking crises have been very costly, reducing output by about 8-10% over a period of two to four years.

Another paper, Claessens, Kose and Terrones (2009), studies linkages between key macroeconomic and financial variables in 21 OECD economies over the period from 1960 to 2007. They find that recessions associated with credit crunches and house price busts tend to be deeper

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[8]   See Caballero, Hoshi and Kashyap (2008) for a detailed analysis.

and longer than others. More precisely, the work of Haugh, Ollivaud and Turner (2009) suggests that, compared with a "regular" downturn, output losses in cyclical downturns associated with a major banking crisis are typically two to three times greater, and the time to recovery at least twice as long.

Finally, Cecchetti, Kohler and Upper (2009) analyse 40 financial crises and report that in one fourth of these, cumulative output losses exceed 25% of pre-crisis GDP, while in one third the crisis-related contraction lasts for three years or more. And when a banking crisis is accompanied by a currency crisis, it deepens the recession by 6 percentage points and lengthens it by one and a half years. Finally, that study reports permanent effects on both the level and growth rate of output in a number of cases.

We note various limitations of the several works just summarised. First, in hindsight, it is always possible to identify excesses of various kinds that lead to a crisis. Almost inevitably these involve some combination of credit booms and asset price bubbles. Rapid increases in lending and in equity and property prices clearly distort growth, driving output levels above where they should have been. This means that growth before the crisis should have been lower than what was actually observed. Empirically this makes things difficult, as it is hard, if not impossible, to construct the proper counterfactual.

Graph 2

Output before and after a financial crisis: Finland and Japan
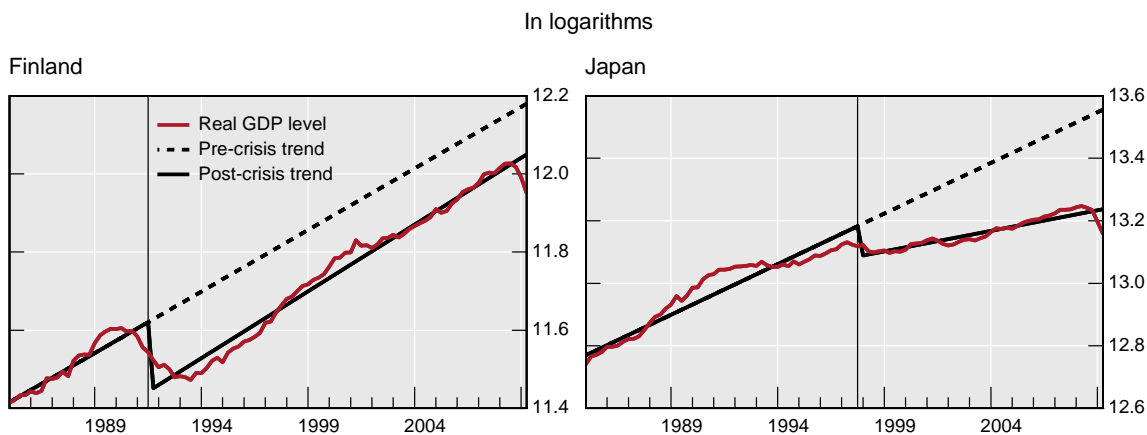
In logarithms

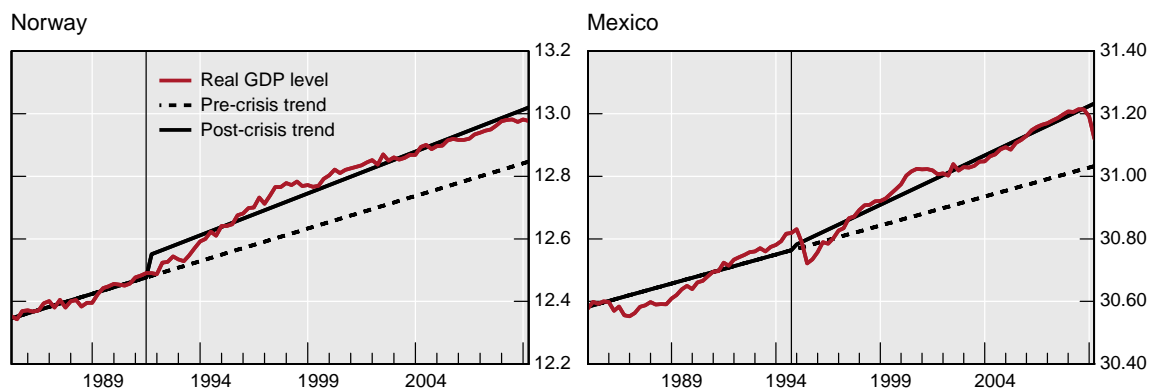Note: In each panel, the vertical line denotes the onset of a financial crisis.

Source: BIS calculations

That said, it is still instructive to look at results of a simple statistical exercise. In an effort to estimate the permanent effects of financial crises on output and growth, we run simple regressions from real GDP on a constant and trend, allowing for structural breaks at crisis dates. Consistent with the results in Cecchetti, Kohler and Upper (2009), our results suggest that the impact of major banking crises on trend GDP is ambiguous. It could be negative or positive. And in some cases, we are not able to find any significant impact.

We start with the cases of Finland and Japan, where output falls (Graph 2). For Finland, output falls permanently, and the growth rate returns to the pre-crisis trend. In the case of Japan, the initial decline is also clear, but the trend is permanently lower as well. As a result, over time, there is an ever-increasing wedge between the pre- and post-crisis output trends. One possible explanation for Japan's poor performance could be the repeated postponement of the much needed credit and labour market reforms. One example was the continued lending by zombie banks to zombie firms during the 1990s — zombies are dead, and some way has to be found to bury them.

Things need not be this bad. The cases of Norway in 1991 and Mexico in 1994 are quite a bit better than those of Finland and Japan (Graph 3). In Norway's case, the level of real GDP shifted upward immediately following the crisis, whereas in Mexico the level of GDP did not change significantly after the 1994 peso crisis. But more significantly, in each of the two episodes, trend GDP grew faster following the crisis than it did before.

Graph 3

Output before and after a financial crisis: Norway and Mexico

In logarithms

Note: In each panel, the vertical line denotes the onset of a financial crisis.
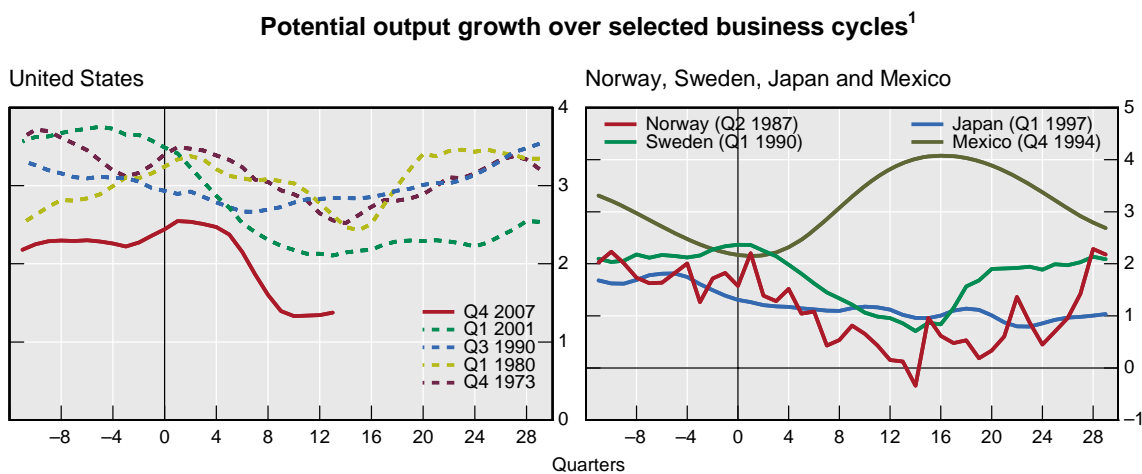
Source: BIS calculations

Why such disparate output behaviour in these two pairs of episodes? One possible explanation for the two better outcomes is that the large amount of excessive capacity built up during the boom period was quickly shed during the crises. Another possibility is that a rapid restructuring of banks and industrial companies promoted more efficient resource allocation and improved productivity. In addition, timely and effective policy responses could also have made a difference. In these specific cases, there is evidence to suggest that pro-active policy measures, which met with reasonably quick private-sector adjustment, were more readily adopted in Norway and Mexico than in Finland and Japan. Finally, both Mexico and Norway, unlike Japan and other Nordic countries, are large oil exporters, so favourable external factors could also help explain the distinct post-crisis output dynamics.

Finally, we look at the impact of major banking crises on trend GDP using data either provided by the OECD and national sources or computed by us using standard filtering techniques. We begin with the current crisis in the United States and four previous recessions there (Graph 4, left-hand panel). Among the four previous downturns, only the recession of 1990–91 can be considered to have been associated with severe banking sector distress. And interestingly, the growth of potential output was least affected in that case. It was the 2001 recession, considered the mildest downturn in the post-war period, in which potential output seemed to have taken the biggest hit. This rather limited information provides no reason to expect a dramatic decline in trend GDP because of the current recession.

The experiences of Norway, Japan, Sweden and Mexico around the time of their respective crises provide a slightly broader perspective (Graph 4, right-hand panel). For the two Scandinavian countries, we see a relatively long-lived decline in potential output growth, with a return to pre-crisis rates within four to seven years. For Japan, the decline is slow and long lasting, an outcome consistent with the previous results. On the other hand, Mexico's case, which is also consistent with the results in Graph 3, shows that post-crisis potential output growth increased relatively quickly, to a rate well above the pre-crisis standard.

Graph 4

Potential output growth over selected business cycles[1]

[1] Annual changes, in per cent; period zero and dates in the panel legends refer to the peak of the output cycle; for the United States, peak dates are from the National Bureau of Economic Research.

Sources: OECD; national data; BIS calculations.

Overall, our results suggest varied and complex behaviours of both actual and potential output following a major banking crisis. While the level of GDP tends to fall initially around the time of the crisis – there is a recession – trend growth rates sometime fall and sometimes rise. Policymakers clearly face increased uncertainty when trying to assess the direction and the magnitude of movements in both real and potential GDP following a crisis. But that uncertainty arises not only from the ambiguous potential long-term impact of the crisis, but also from the fact that policy is made in real time, so it requires real-time data. And, as we will now demonstrate, real-time data revisions tend to be biggest around business cycle turning points.

4.   Challenges posed by real-time data

Data revisions are an unpleasant fact of life for anyone trying to analyse current economic conditions. History is constantly changing, often years after the fact. Not only are data revisions frequent, but occasionally they are substantial. For instance, the US Bureau of Economic Analysis make three successive revisions of its "current quarterly" estimates of GDP, plus three annual revisions of quarterly GDP estimates, and a comprehensive revision every five years. And we know that the biggest revisions tend to come around business cycle turning points; given that such turning points are when policymakers need to be their most attentive, the fact is particularly unfortunate. Obviously, such data uncertainties further complicate the ongoing assessment of the real consequences of the current financial crisis.

Experience indicates that the mean absolute revisions to GDP growth can be large, ranging from 0.5 percentage point in the first annual revision to 1.3 percentage points in the third. Around cyclical turning points, mean absolute revisions became substantially larger, often well more than 2 percentage points. One frequently used set of estimates of potential output and output gaps comes from the OECD, which are revised regularly in their semiannual *Economic Outlook*. Mean absolute revisions vary across countries, with three-year revisions ranging from less than 0.2 percentage point for the United Kingdom, to more than 0.3 percentage point for Germany and more than 0.7 percentage point for Japan. Data revisions appear to have been even larger around recessions centred on financial crises and of international dimension, as seen during the Japanese and Nordic banking crises.

There is little evidence of significant consistent bias. But difficulties are especially acute when there is a need to capture shifts in economic conditions. The problem is that the early data, which are the most vital in driving changes in policy stance, are rather incomplete. Instead, the first releases are largely based on extrapolations of recent trends. As more data come in, these estimates are revised, but the corrections can easily be too late for policymakers.

As we have already noted, figuring out what is happening is difficult during normal times. Around business cycle turning points, it is nearly impossible. Dynan and Elmendorf (2001) report that provisional estimates have tended to miss business cycle turning points rather systematically, overstating activity when output growth was slowing and understating activity while growth accelerated.

A concrete example helps illustrate the challenges that data revisions can create for policymakers: initial official GDP estimates for the fourth quarter of 2001 – the turning point in the global business cycle at that time – in the United States, Germany and Japan and the subsequent revisions (Graph 5).

One notable feature of this particular example is that over time, the direction of revisions changes, and more than once. Furthermore, note that the revisions we report here are substantial. Changes

to the initial estimate in the cases of Germany and the United States were well over 1 percentage point. And finally, it takes quite a bit of time for the revisions to settle down: most of the revisions become roughly stable around the final estimates in a three- to four-year period.

Graph 5

GDP data revisions for Q4 2001

Annualised change, in per cent

United States   Germany and Japan[1]
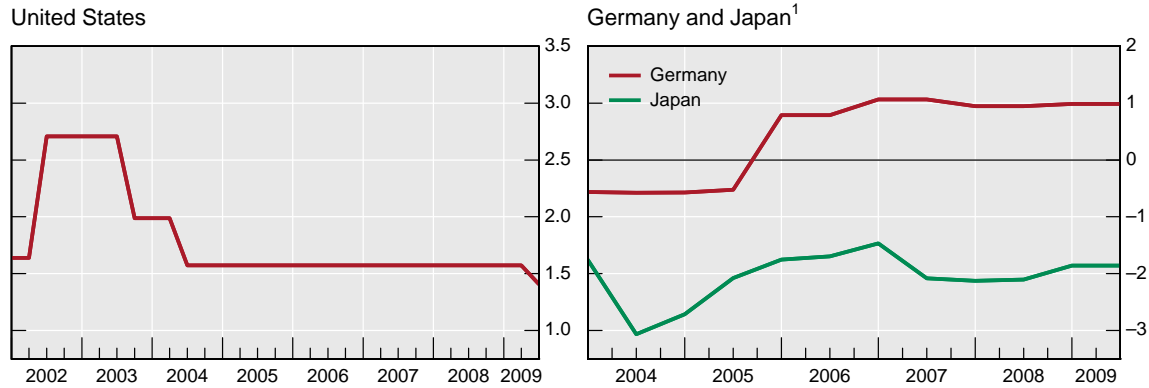
[1] Quarterly OECD vintage data started in Dec 2003.

Sources: US Bureau of Economic Analysis; OECD.

Regardless of what national statisticians report initially or what is contained in their subsequent revisions, policymakers need to make their decisions. Unsurprisingly, if such real-time decisions are based on misleading initial estimates, then the consequences can be serious. It is instructive to recall the lesson from the United States in the 1970s. From today's vantage point, the declines in output then are viewed as reductions in potential output. Estimates of the output gap are much lower now than they were then. As Orphanides (2003a,b) suggests, overestimation of the level and trend in potential GDP led Federal Reserve policymakers to overestimate the downward pressure on inflation. The result was overly accommodative monetary policy that resulted in a surge in inflation. Difficulties in estimating productivity trends in the 1990s could have also affected the correct understanding of potential output.

In the current cycle, uncertainties surrounding initial estimates of actual and potential output are high. Estimates of the output gap or economic slack could be misleading. On top of this, as suggested by the analysis in the previous section, there is little knowledge of a clearly discernable pattern in output trends following major banking crises. Current output estimates are highly uncertain, and historical experience seems to provide little guidance. This could easily lead to an incorrect calibration of monetary and fiscal policy stances.

5.   Conclusion and policy implications

We draw several conclusions from our examination of the long-term real consequences of financial crises. First, normal recessions appear to have a long-lasting impact on both real and potential

output. However, somewhat surprisingly, evidence is mixed on the additional impact of major financial crises on real activity in the long run. In particular, our analysis reveals varied and complex behaviours of both actual and potential output following a major banking crisis: the output level tends to fall, but trend output growth rates could rise, decline or remain unchanged. Furthermore, we are unable to differentiate movements in potential output after a normal recession from those following a major financial crisis. All of this leads us to conclude that empirical evidence provides little clarity or comfort for policymakers faced with the need to assess the likely trajectory for trend output following a crisis.

Adding to the already enormous uncertainties are those arising from the need for real-time estimates of output and output gaps. Data revisions are frequent and occasionally substantial, often changing the direction of estimated movements in GDP around business cycle turning points more than once, and sometimes three or more revisions occur before the statisticians settle on a final estimate.

We see several lessons for policy in all of this. For monetary policymakers there is a need to be wary of decisions that are based on initial estimates that could well be misleading. Yet, while central bankers must be cautious, caution means different things in different circumstances. Sometimes it may mean taking quick action to head off incipient inflation, even if the threat is relatively low. On other occasions, it may mean policy settings that are designed to reduce the probability of an economy going into a deep and protracted downturn. There could be value in tracking a wide range of economic and financial indicators and remaining attentive to different sources of information, particularly at times that seem to be turning points in the business cycle.

There are important implications for fiscal authorities as well. Without a clear picture of the future evolution of trend output, it is difficult to estimate the structural budget balance and evaluate the current fiscal position. This can make it difficult to calibrate the size and timing of important policy interventions – especially reforms that can promote long-term growth. Again, caution is an important ingredient in policy decisions. Here, though, the challenge is to provide the support necessary for the economy to recover from the crisis as quickly as possible in the short run at the same time that authorities ensure fiscal sustainability in the long run. Given the possibility that output will be permanently lower in the future, this means fiscal authorities need to take the politically difficult position of adhering to a conservative view of future revenues.

In closing, we note that the recent financial crises have clearly tested the mettle of monetary and fiscal policymakers. So far, they have managed to avert the worst. But the challenges of the next few years, with tremendous uncertainties over the level and growth rate of output, are likely to be much more difficult than those of the past few years.

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