



Regional Economic Report
January – March 2018



June 14, 2018

Outline

- I. Regional Economic Report**
- II. Results January – March 2018**
 - A. Economic Activity**
 - B. Inflation**
 - C. Economic Outlook**
- III. Final Remarks**

Reporte sobre las Economías Regionales

- The Regional Economic Report is a quarterly publication on the recent trends in economic activity, inflation and business agents' expectations in the Mexican regions.¹
- This information is taken into account by Banco de México's Board of Governors when evaluating the economic situation and the forecast for the Mexican economy.
- The economic performance of the regions in Q1 2018 and the prospects for regional economic activity and inflation over the following 12 months are analyzed herein.

¹ For the purposes of this Report, the states of Mexico are grouped into the following four regions. Northern: Baja California, Chihuahua, Coahuila, Nuevo León, Sonora and Tamaulipas. North-Central: Aguascalientes, Baja California Sur, Colima, Durango, Jalisco, Michoacán, Nayarit, San Luis Potosí, Sinaloa and Zacatecas. Central: Ciudad de México, Estado de México, Guanajuato, Hidalgo, Morelos, Puebla, Querétaro and Tlaxcala. Southern: Campeche, Chiapas, Guerrero, Oaxaca, Quintana Roo, Tabasco, Veracruz and Yucatán.

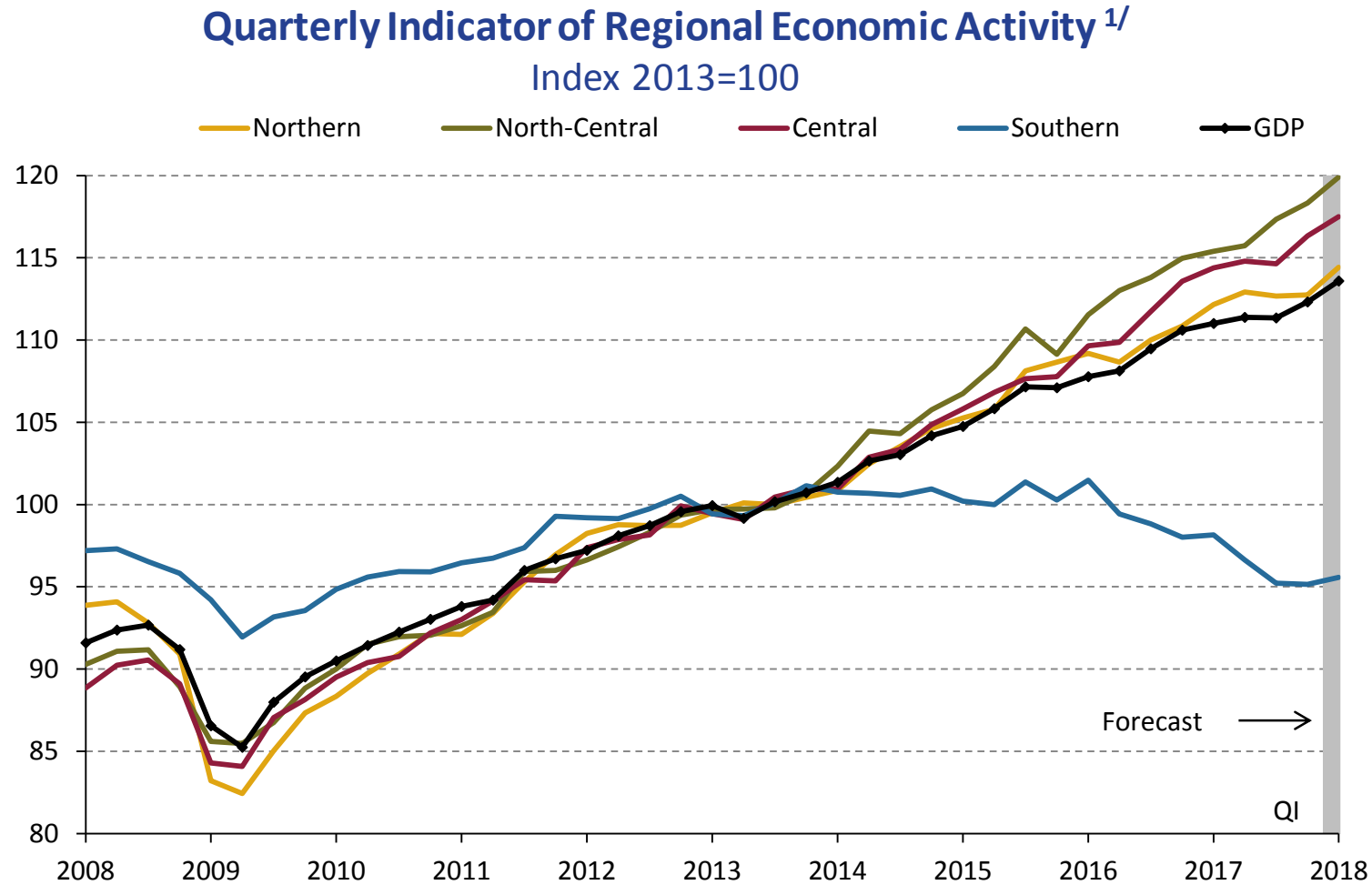
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Economic Activity

- During Q1 2018, the Mexican economy continued recovering, and even presented a growth rate higher than that in Q4 2017, which stands in contrast with the deceleration in the first three quarters of 2017 .
 - ✓ The growth of production fundamentally reflected the positive performance of the tertiary activities and the recovery of the industrial production.
 - Within the industrial sector, both the significant reactivation of the construction activity and the recovery of manufacturing are notable, which compares to their weak performance during most of 2017.
- The productive activity in the Northern and the Central regions is estimated to have continued expanding and displayed an even higher dynamism relative to the referred regions in the previous quarter. Meanwhile, in the wake of the stagnation during the previous quarter, in the first three months of 2018 the Southern region observed a rebound, which was in contrast with the negative trend registered since early 2016.

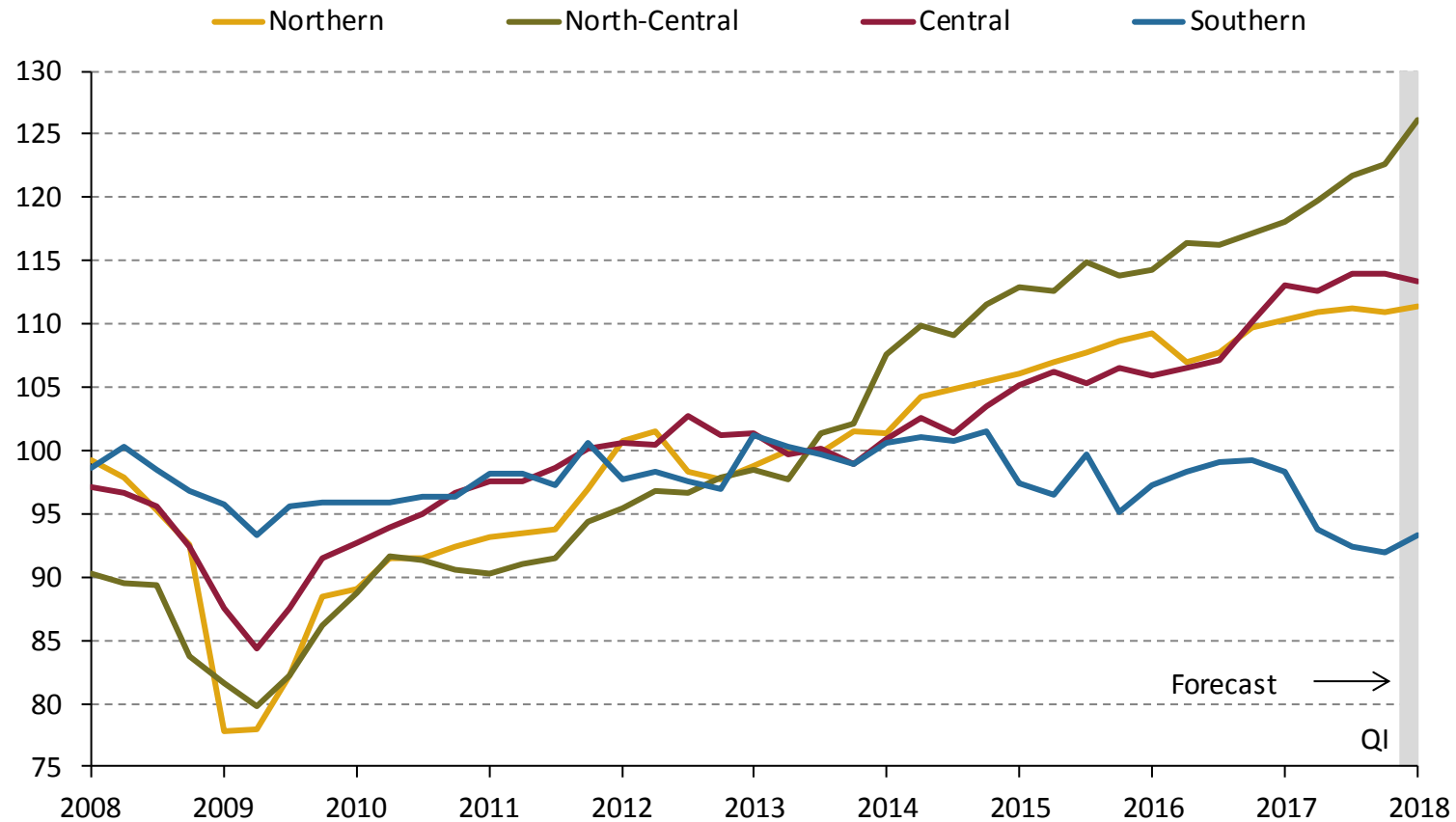
The Mexican productive activity is estimated to have expanded in all regions in Q1 2018. In the Northern and Central regions the economic activity continued growing, while in the South there was a rebound.



^{1/} The value of Gross Domestic Product (GDP) for Q1 2018 corresponds to the observed data.
 Source: Estimated by Banco de México with seasonally adjusted data from INEGI.

In Q1 2018, manufacturing production recovered incipiently. The manufacturing activity in the North-Central region is estimated to have continued expanding, while in the North and in the South it rebounded. In the Central region manufacturing contracted slightly relative to Q4 2017.

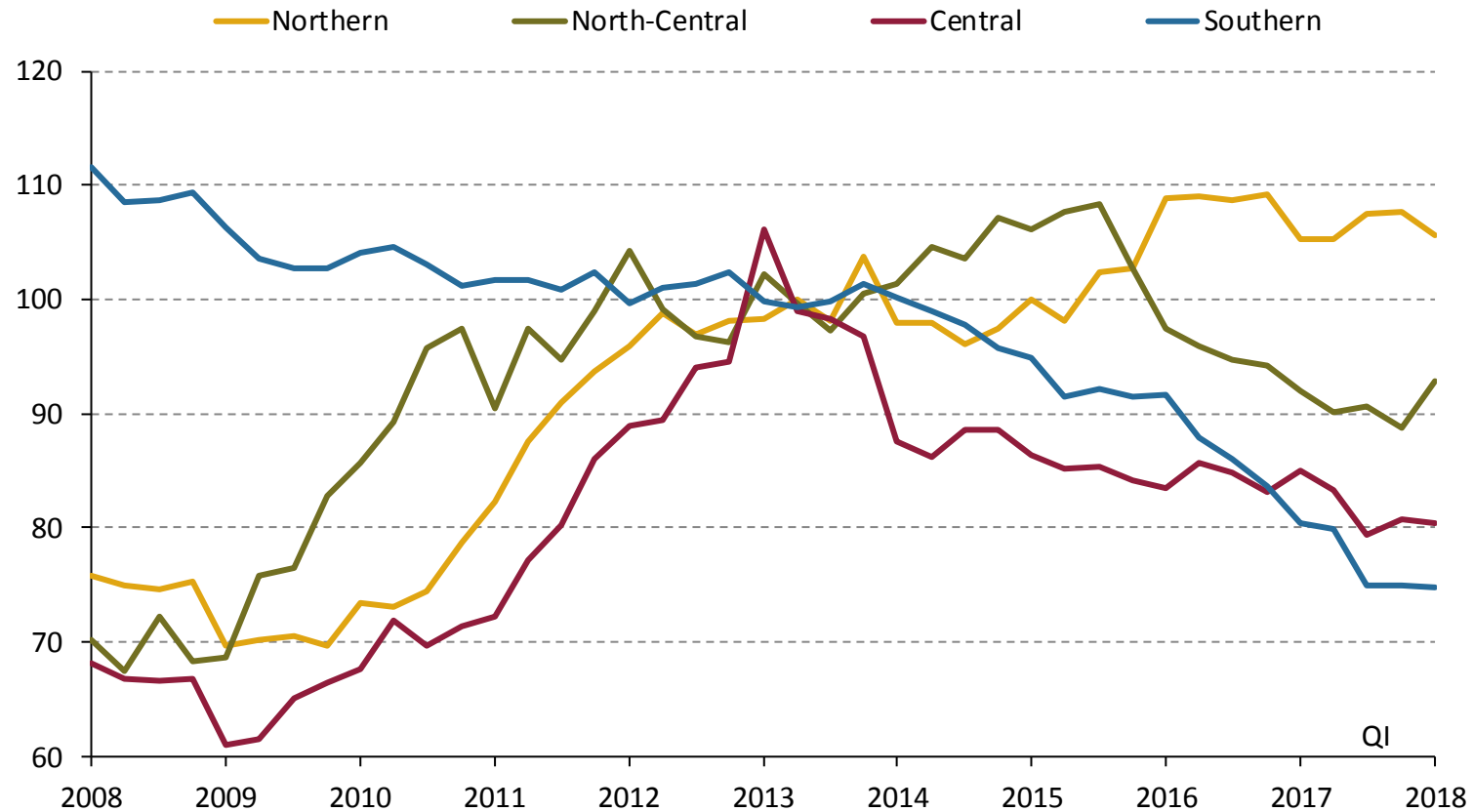
Regional Manufacturing Indicator Index 2013=100, quarterly average



Source: Estimated by Banco de México with seasonally adjusted data from INEGI.

During Q1 2018, mining activity continued a negative trajectory and remained especially low. In particular, this sector contracted in the Northern, Central and Southern regions, as compared to the level observed in the previous quarter. In contrast, in the North-Central region it rebounded.

Regional Indicator of Mining Activity ^{1/} Index 2013=100, quarterly average



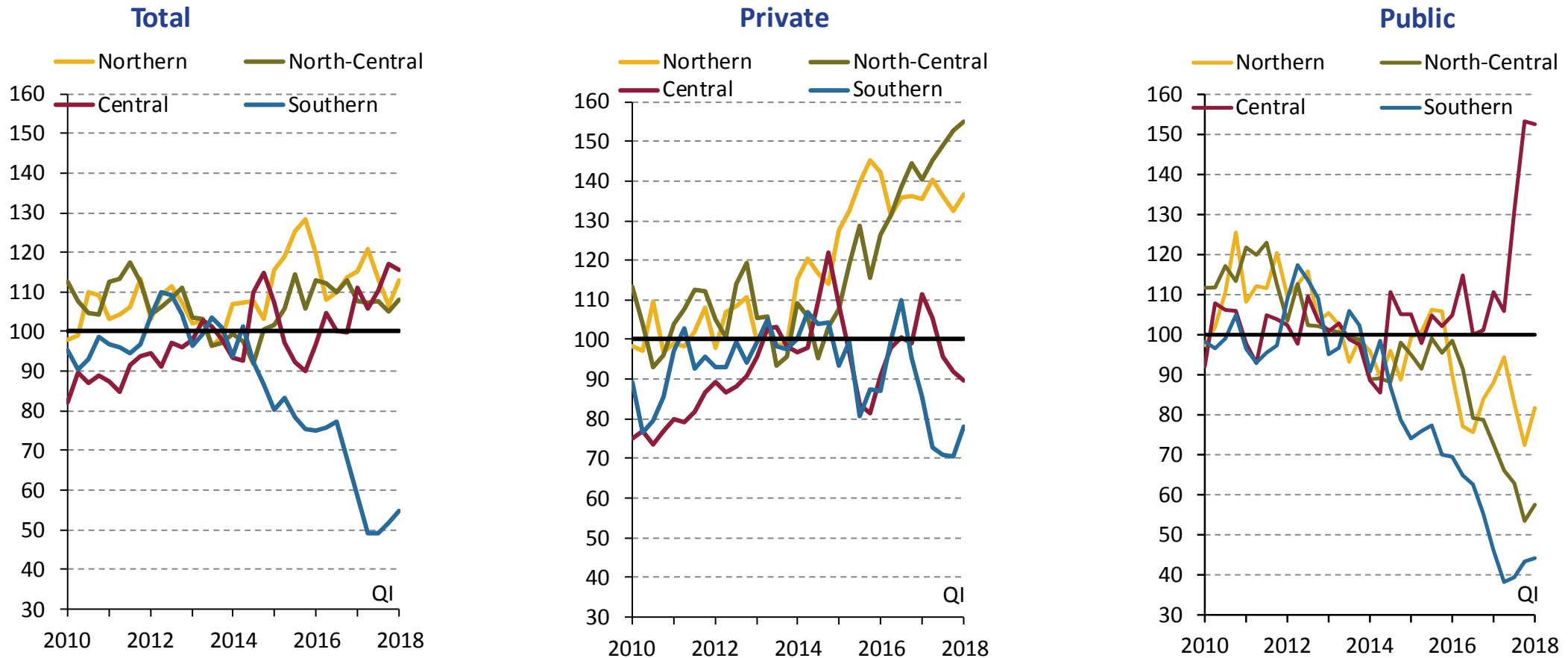
^{1/} Values in Q1 are preliminary.

Source: Prepared by Banco de México with seasonally adjusted data from INEGI.

In Q1 2018, the construction industry reactivated, which was largely attributed to the reconstruction efforts in the wake of the September twin earthquakes and to certain public infrastructure projects. In the Northern, North-Central and Southern regions, an increased level of activity was observed. Meanwhile, in the Central one the sector contracted as a result of a lower level of both private and public works.

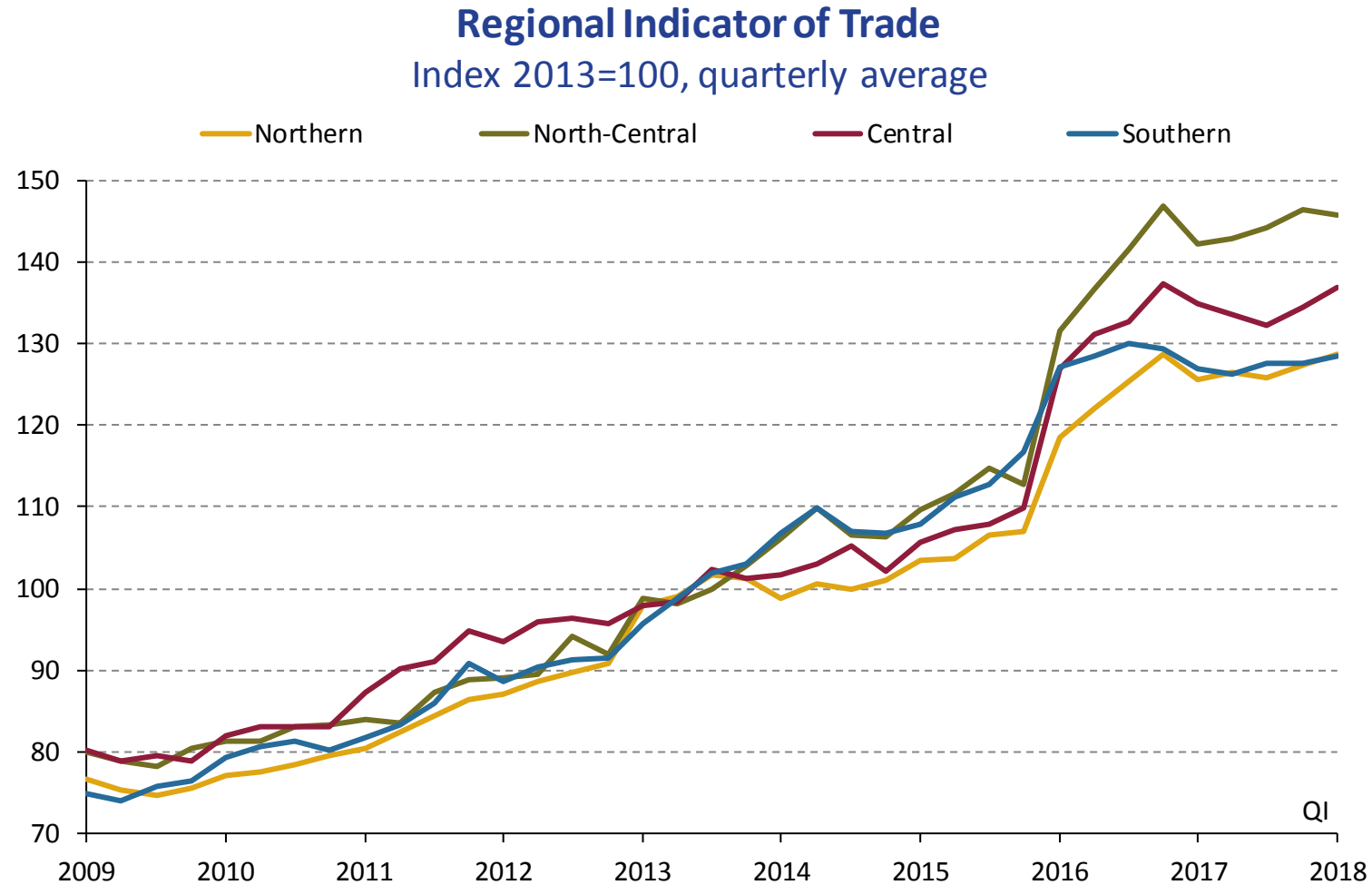
Real Value of Production in the Construction Industry by Region

Index 2013=100, quarterly average



Source: Prepared by Banco de México with seasonally adjusted data from INEGI.

During Q1 2018, trade, measured with the index of revenues from the supply of goods and services by retail business, kept displaying a positive trend in the Northern and Central regions, while it increased in the South. In contrast, trade contracted in the North-Central region after the growth observed over the last three quarters in 2017.

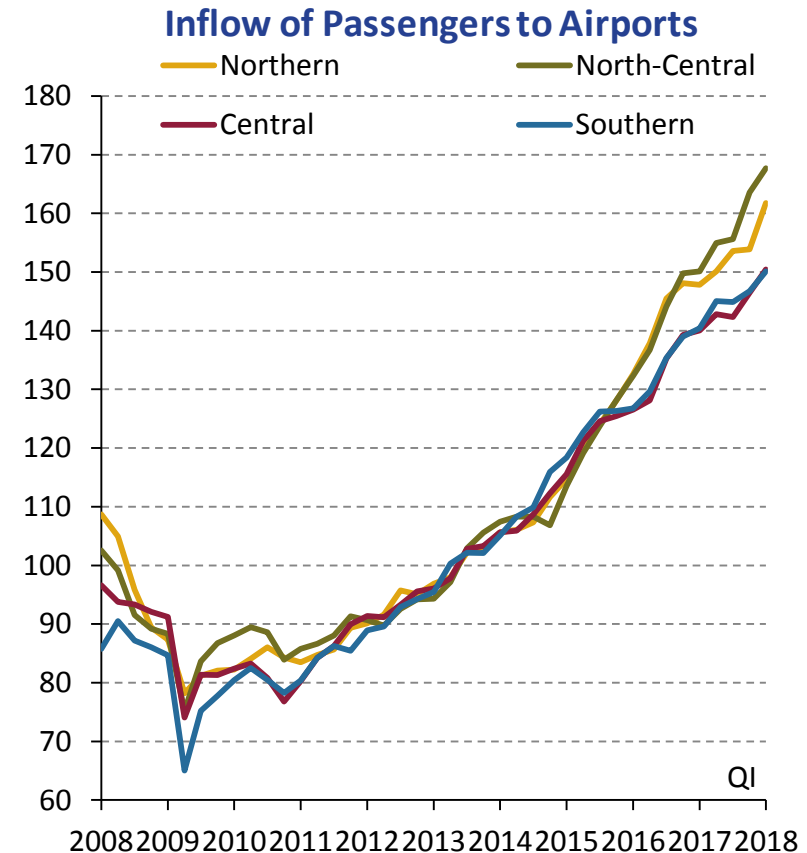
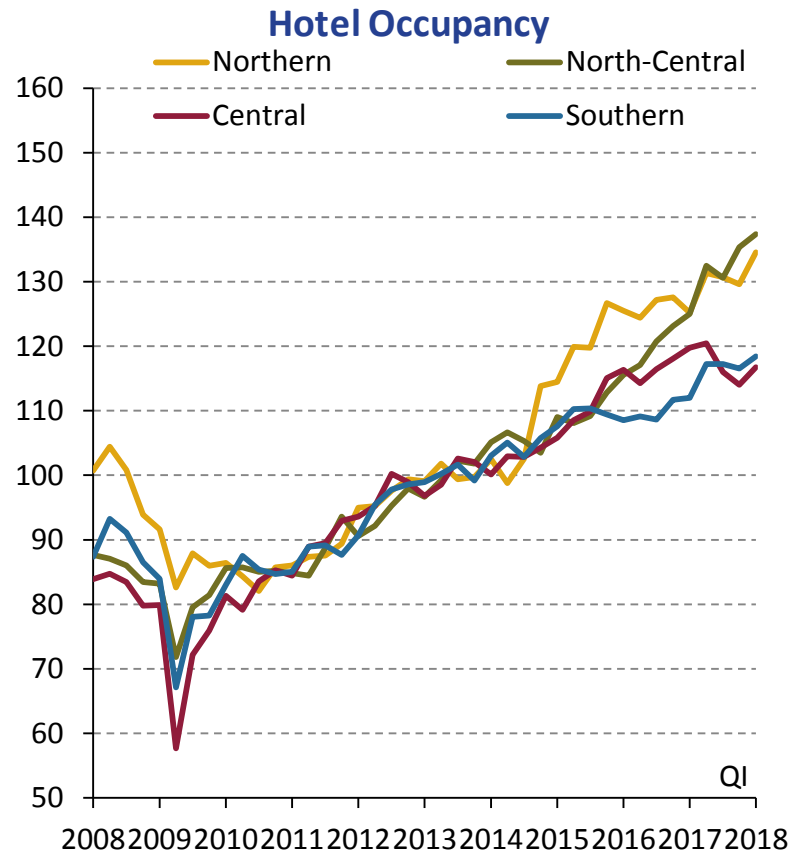


Source: Prepared by Banco de México with seasonally adjusted data from INEGI.

The evolution of tourism was positive in Q1 2018. Hotel occupancy in the Northern, Central and Southern regions rebounded, while it continued expanding in the North-Central one, albeit at a lower pace compared to Q4 2017. The inflow of passengers kept increasing across different regions of Mexico.

Regional Indicators of Activity in Tourism

Index 2013=100, quarterly average



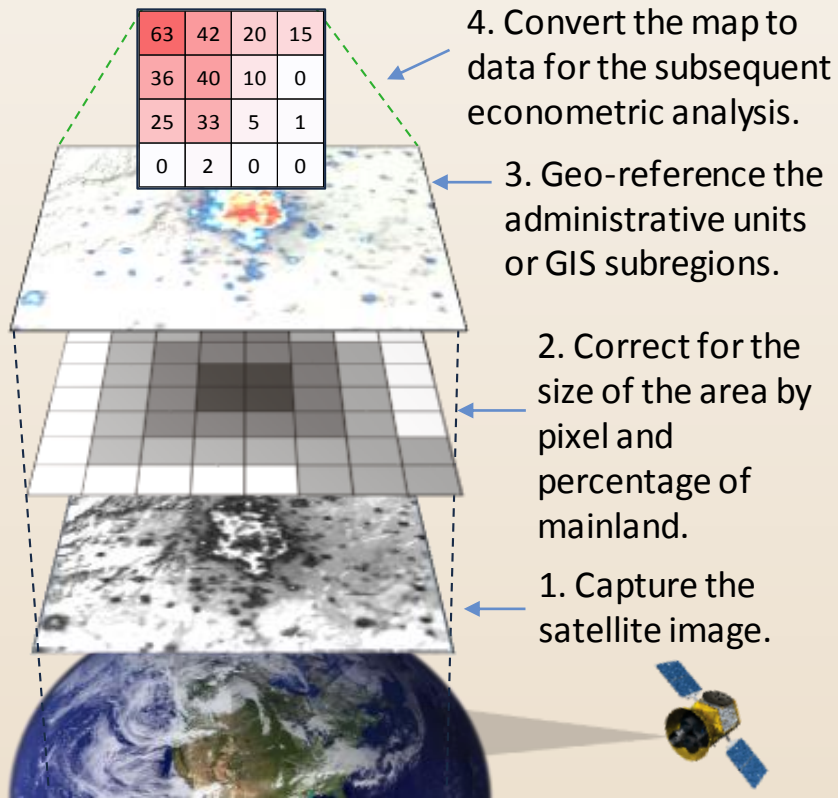
Source: Estimated and seasonally adjusted by Banco de México based on data from the Mexican Secretariat of Tourism and from Airport and Auxiliary Services (ASA).

Box:
**Measuring Economic Growth in the Main Beach Tourist Areas
via the Use of Satellite Images**

- Tourism is one of the economic activities that has strongly fuelled growth in some regions of Mexico. Currently, its share is around 9% of GDP.
- Similarly, between 2014 and 2017 it exhibited an average annual growth rate of 3.13%, which is above the total GDP of the economy of 2.72% during the same time span.
- This Box seeks to estimate the economic growth in the main beach tourist areas in Mexico between 1993 – 2017, using satellite images (nocturnal lights).
 - ✓ This method is based on the direct and positive correlation between the economic activity and the luminosity observed from space in a set geographic area, allowing to identify the economic impact of the tourist activity.

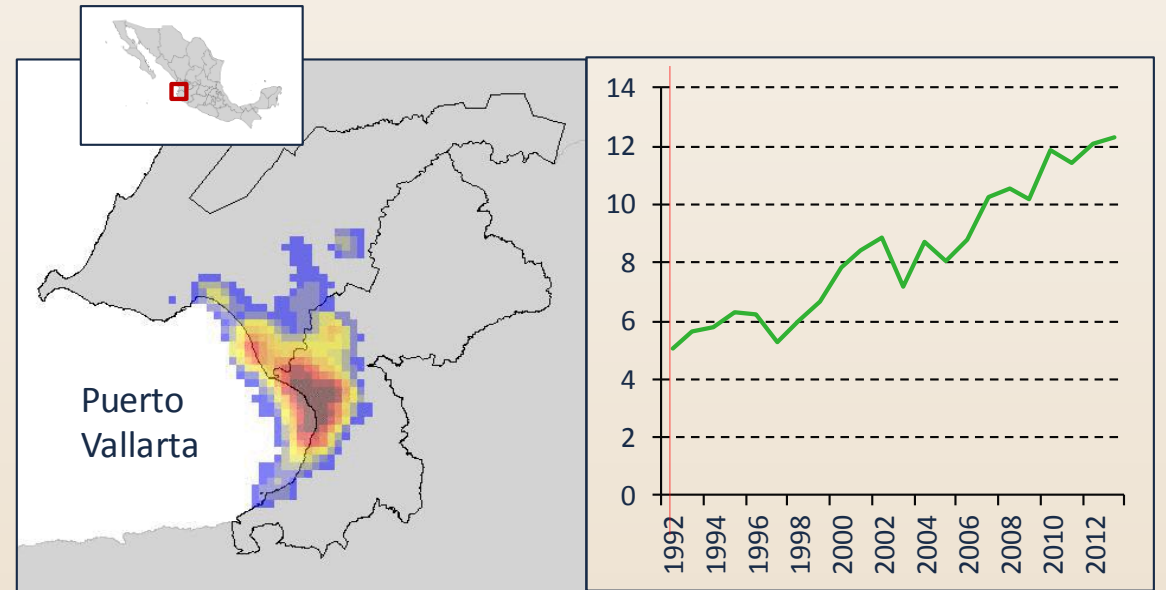
Box: Measuring Economic Growth in the Main Beach Tourist Areas via the Use of Satellite Images

Graphic Description of Data Processing



Source: Prepared by Banco de México using Henderson, Storeygard and Weil (2012).

Luminosity Satellite Images Vallarta-Riviera Nayarit 1993 - 2013



Source: Prepared by Banco de México with data from the U.S. Department of Defense.

Box: Measuring Economic Growth in the Main Beach Tourist Areas via the Use of Satellite Images

- Great heterogeneity can be observed in the degree of economic growth in different beach tourist areas in Mexico.
- At the regional level, albeit with certain exceptions, less dynamic beach resorts are found in the South of Mexico, while more dynamic ones are at the Pacific, which corresponds to the North-Central and Northern regions.
- Notably, those tourist areas that are estimated to have performed better tend to be relatively more oriented to receptive tourism and display lower levels of insecurity.

**Estimated GDP Growth in the Main Beach
Tourist Areas, 1993 - 2017**

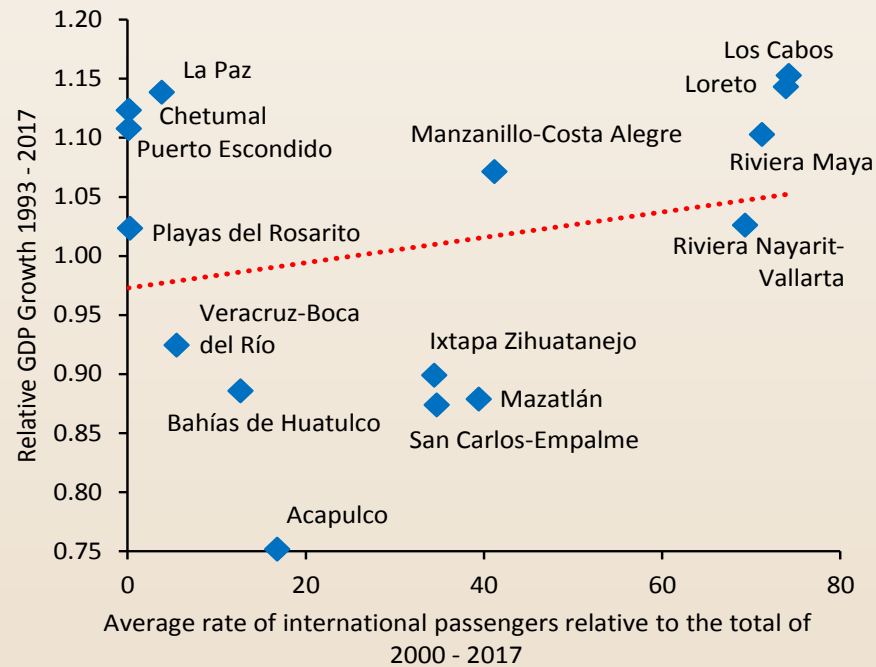
Tourist area	Luminosity by km2			Relative growth* 1993- 2017
	1993	2013	2017	
Los Cabos	1.42	5.12	5.84	1.15
Loreto	0.18	0.40	0.99	1.14
La Paz	0.48	1.12	1.92	1.14
Chetumal	0.59	1.16	1.97	1.12
Puerto Escondido	1.93	4.52	5.52	1.11
Cancún- Riviera Maya	2.18	5.63	6.70	1.10
Manzanillo- Costa Alegre	4.89	8.99	11.50	1.07
Vallarta- Riviera Nayarit	5.65	12.29	13.36	1.03
Playas de Rosarito	7.28	15.55	19.13	1.02
Veracruz- Boca del Rio	19.89	34.13	35.21	0.92
Ixtapa Zihuatanejo	2.88	4.14	3.99	0.90
Bahías de Huatulco	11.22	13.58	16.89	0.89
Mazatlán	18.80	29.23	31.64	0.88
San Carlos- Empalme	14.28	22.55	21.54	0.87
Acapulco	21.54	26.91	22.21	0.75

Note: The selection was realized based on the list of beach resorts published by the Secretariat of Tourism on the Hotel Occupancy Monitoring of 70 tourist centers.

Source: Estimated by Banco de México with data from INEGI, the U.S. Department of Defense, and the Earth Observation Group, NOAA National Geophysical Data Center.

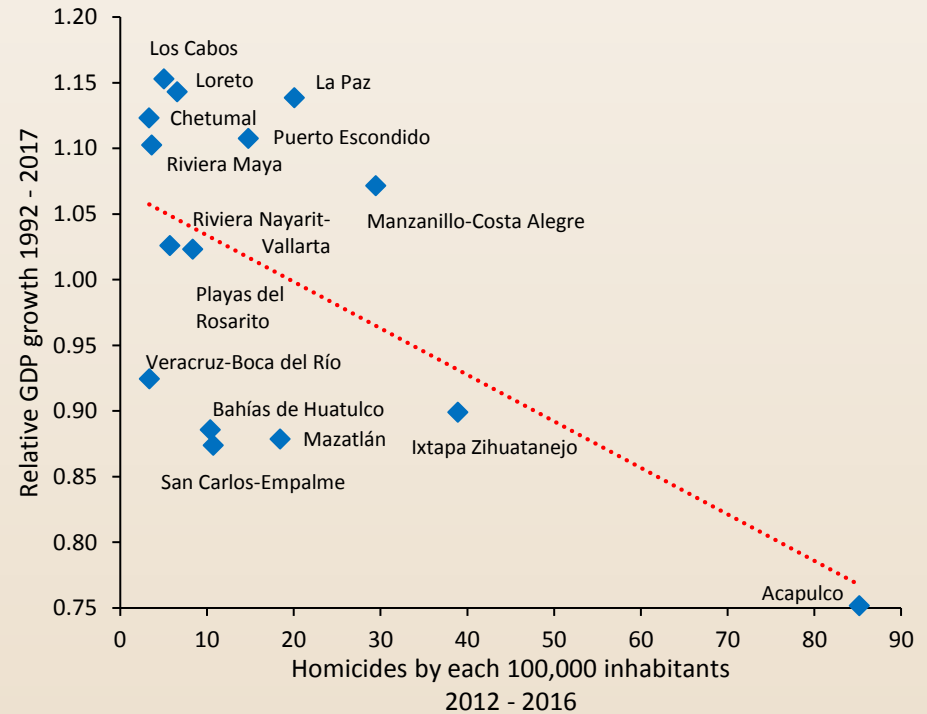
Box: Measuring Economic Growth in the Main Beach Tourist Areas via the Use of Satellite Images

**Economic Activity Growth vs. Share of International
Passengers per Tourist Area**



Source: Estimated by Banco de México and data from Airport and Auxiliary Services.

**Economic Activity Growth vs. Homicides by 100,000
Inhabitants by Tourist Areas**



Source: Estimated by Banco de México and data from the General Death Statistics by INEGI.

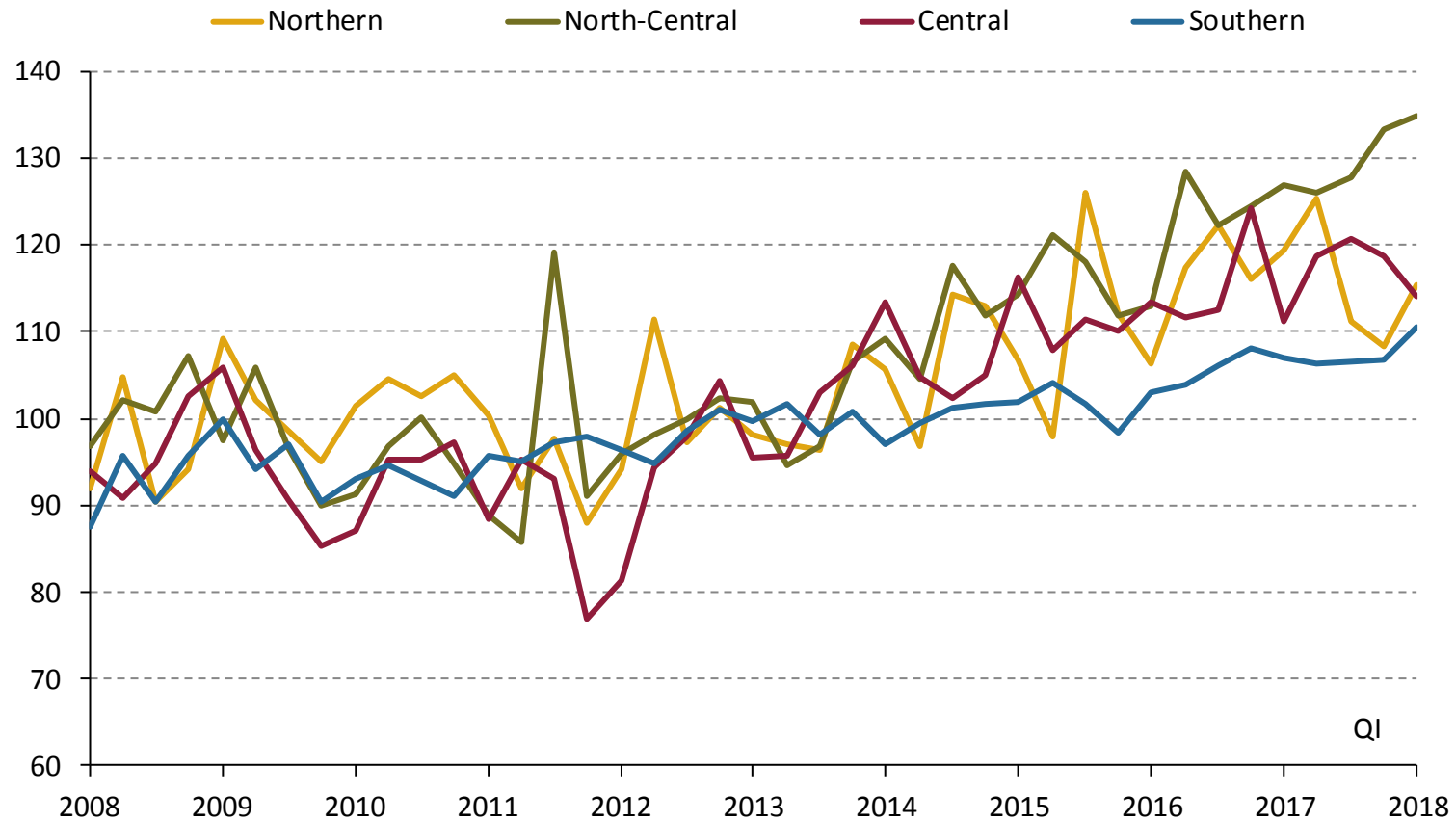
Box:
**Measuring Economic Growth in the Main Beach Tourist Areas
via the Use of Satellite Images**

- The results of this Box exhibit an estimation of the economic growth in the main beach tourism areas via the use of satellite images.
 - ✓ Specifically, it is observed that the areas characterized by a higher dynamism in the analyzed period tend to be more oriented to receptive tourism and display lower insecurity levels.
 - ✓ Thus, it is key to continue implementing actions that boost tourism appeal and foment better safety conditions.
- It should be noted that the use of satellite images opens up new possibilities for the regional economic analysis, as it allows to measure the evolution of economic activity at a less aggregate level, and in some cases more timely than that based on the available information. In particular, this allows to study the impact of the relevant phenomena and the public policies on the regional economic performance.

In Q1 2018, the evolution of agriculture and livestock production generally remained favorable. In the Southern and North-Central regions, this sector's production kept expanding, although in the latter at a lower rate than in Q4 2017, while in the North it rebounded. In contrast, in the Central region the agricultural activity maintained a negative trend in the period covered in this Report.

Index of Regional Agriculture and Livestock Production

Index 2013=100, quarterly average

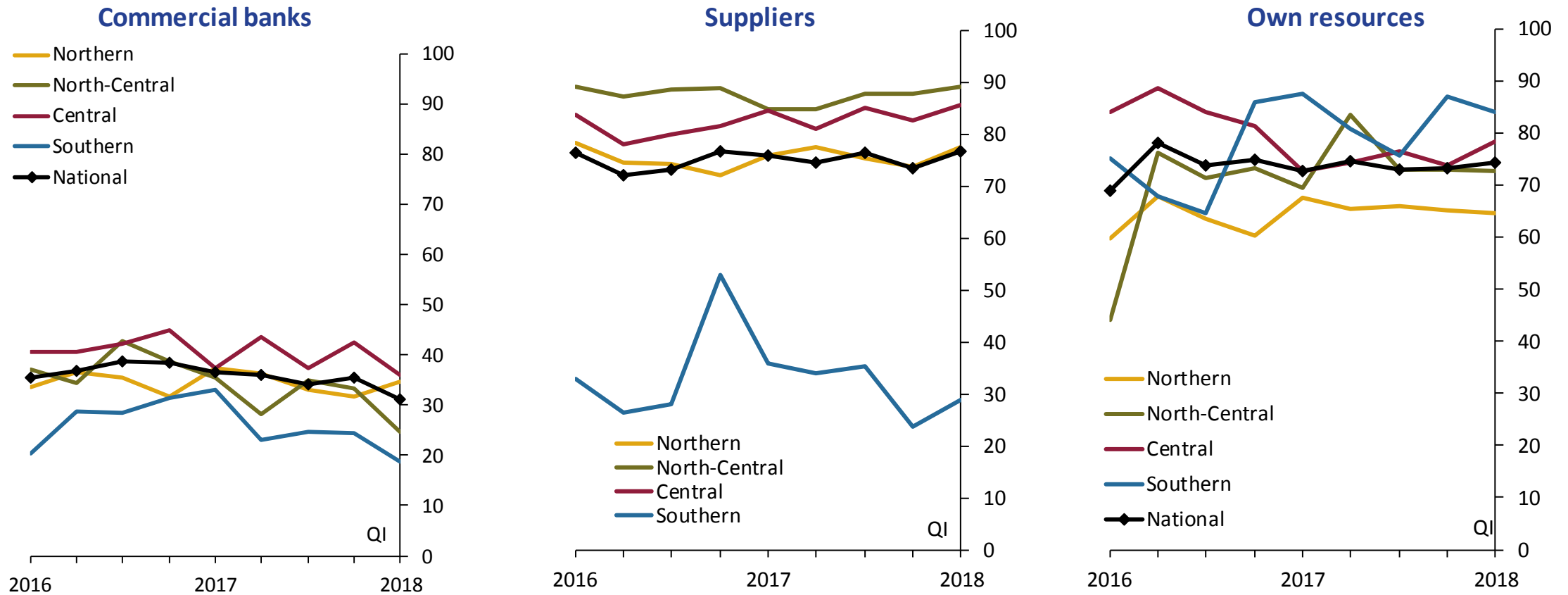


Source: Estimated and seasonally adjusted by Banco de México with data from SAGARPA. It should be noted that, unlike the GDP estimate, this indicator excludes information relative to the value generated by land cultivation and approximates a measurement of the gross production value, rather than that of value generated in the sector.

The percentage of firms that used bank credit to fund their activities subsided in all regions, except for the Northern one. In contrast, the share of businesses that resorted to financing by suppliers increased across different regions. Finally, the share of firms that used own resources declined in all regions, with the exception of the Central one.

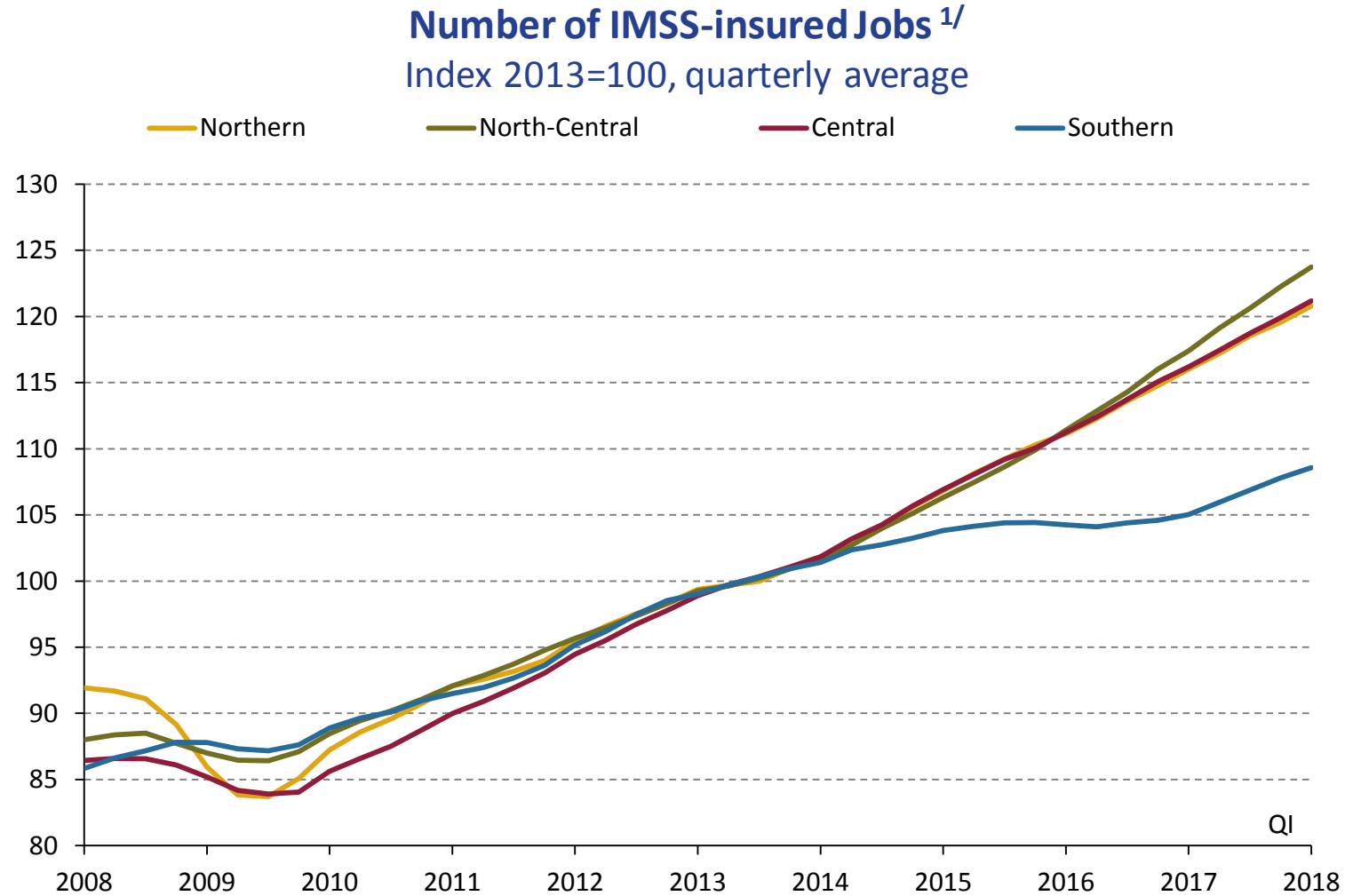
Main Sources of Financing by Firms in Q1

Percent of businesses that used each source of financing



Source: Banco de México.

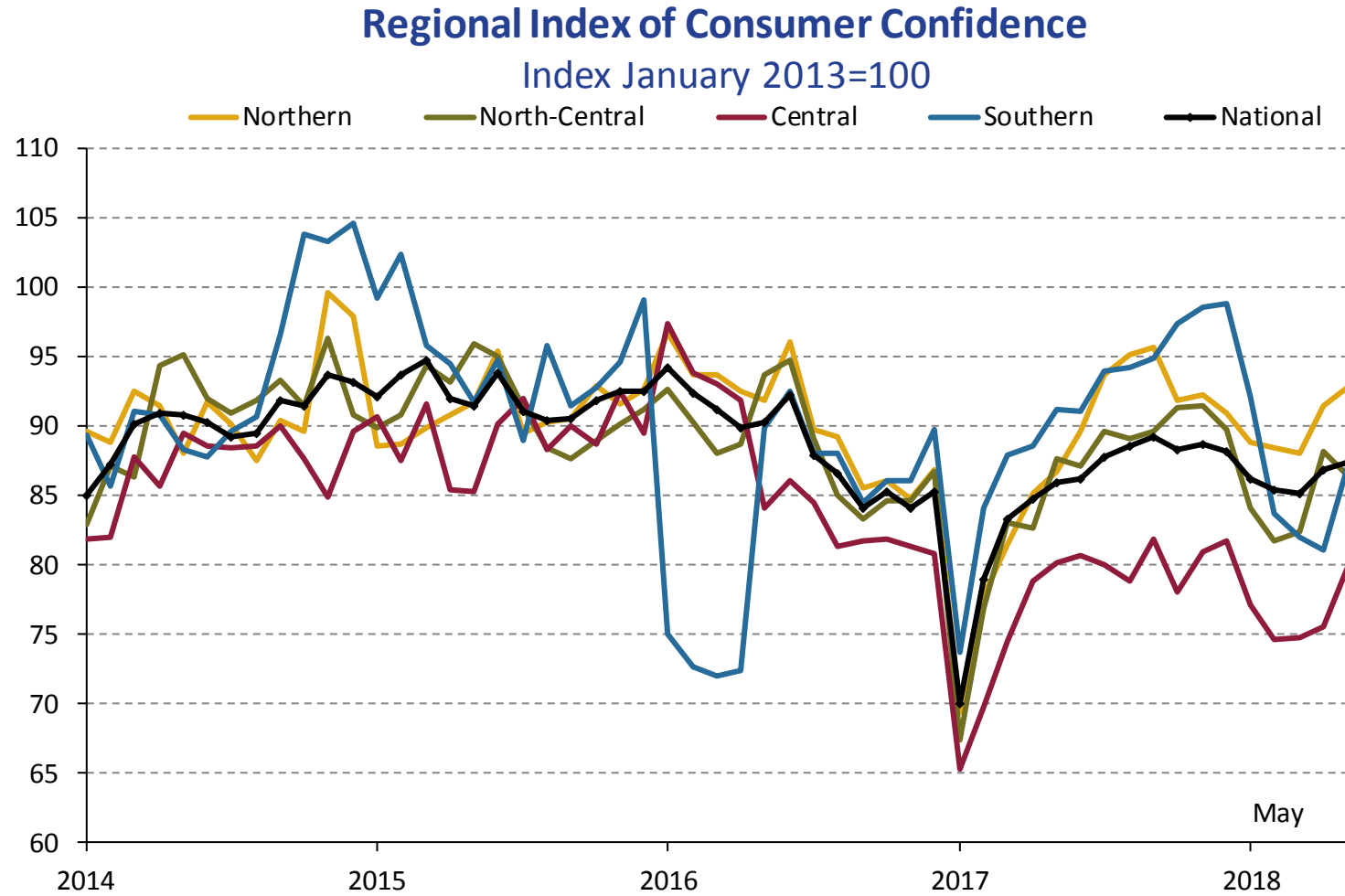
During Q1 2018, the number of IMSS-insured jobs continued to increase across all regions.



1/ Permanent and temporary jobs in urban areas.

Source: Estimated and seasonally adjusted by Banco de México with data from IMSS.

The Consumer Confidence index increased in the period of April – May 2018, in particular in the Northern and Central regions, after the deterioration during Q1 2018.



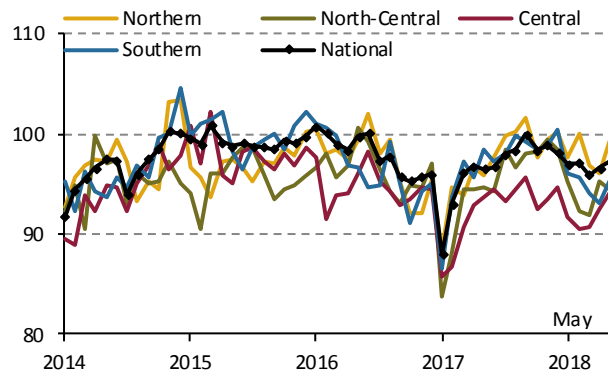
Source: Prepared and seasonally adjusted by Banco de México with data from INEGI and own data .

The increase in the consumer confidence index mainly derived from an improved perception of the current economic situation of Mexico and of the expected economic situation of both households and the country, although in general all components of this index have improved at the margin in all regions.

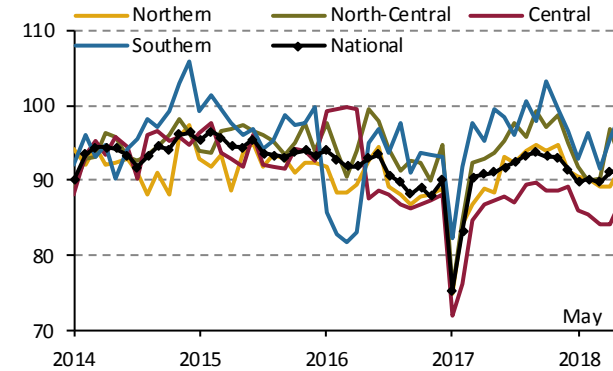
Components of the Regional Consumer Confidence Index

Index January 2013=100

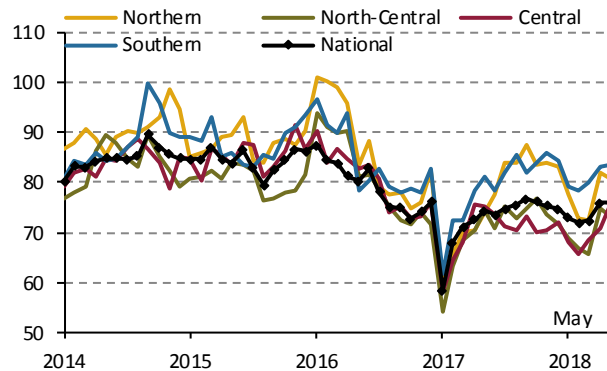
Households' Current Economic Situation



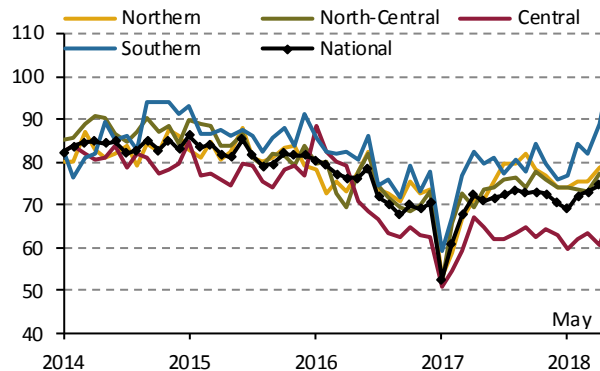
Households' Future Economic Situation



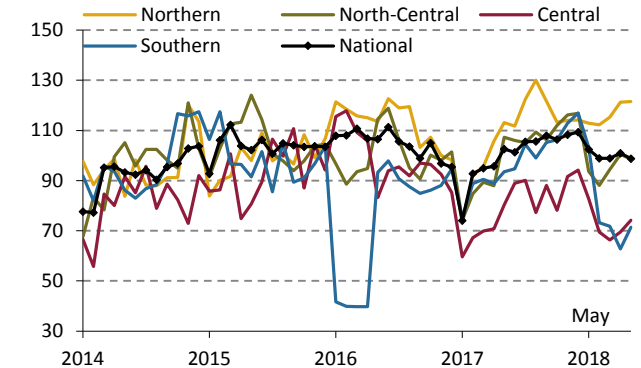
Mexico's Current Economic Situation



Mexico's Future Economic Situation



Opportunity to Purchase Durable Goods

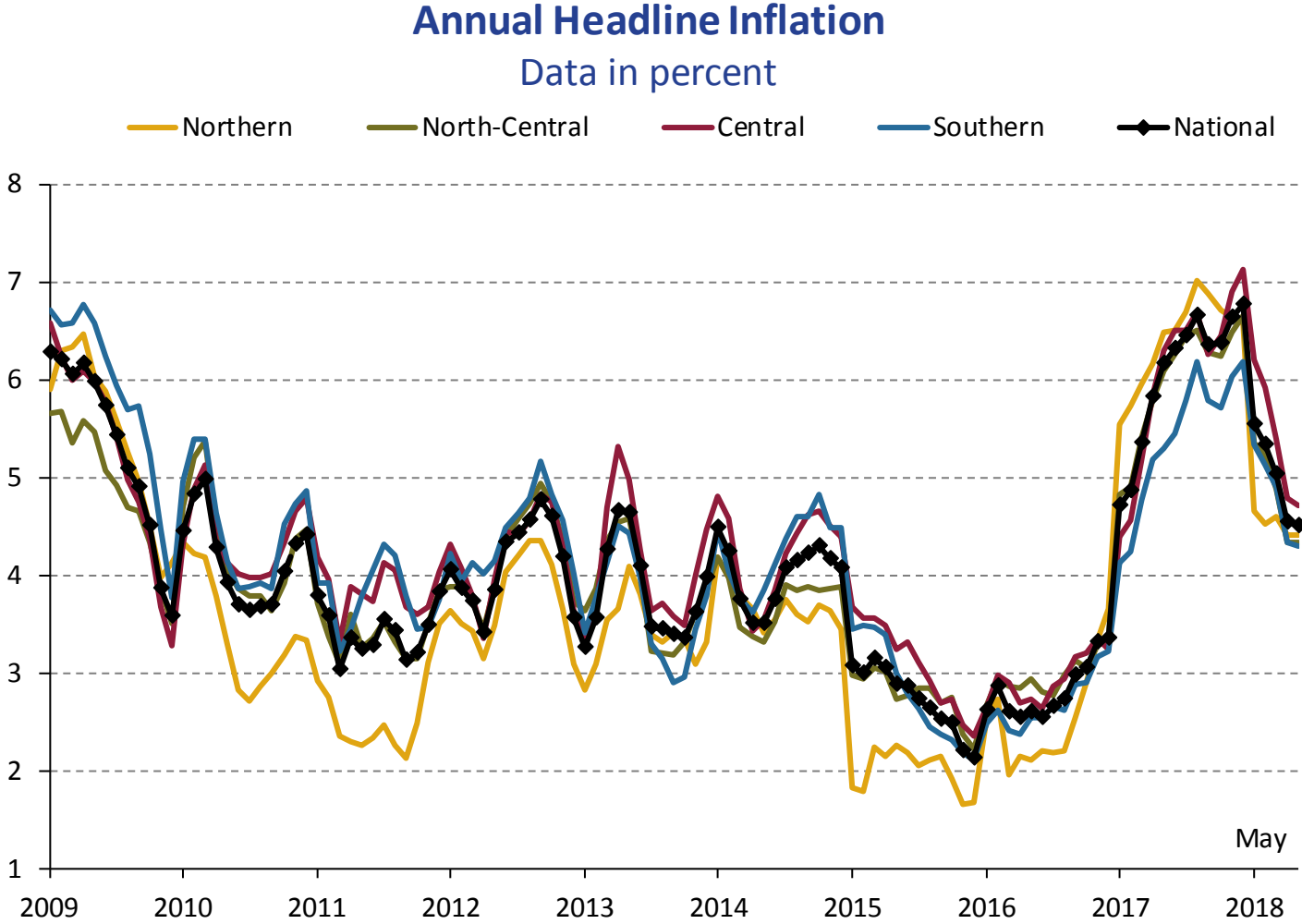


Source: Prepared and seasonally adjusted by Banco de México using data from INEGI and own data.

Outline

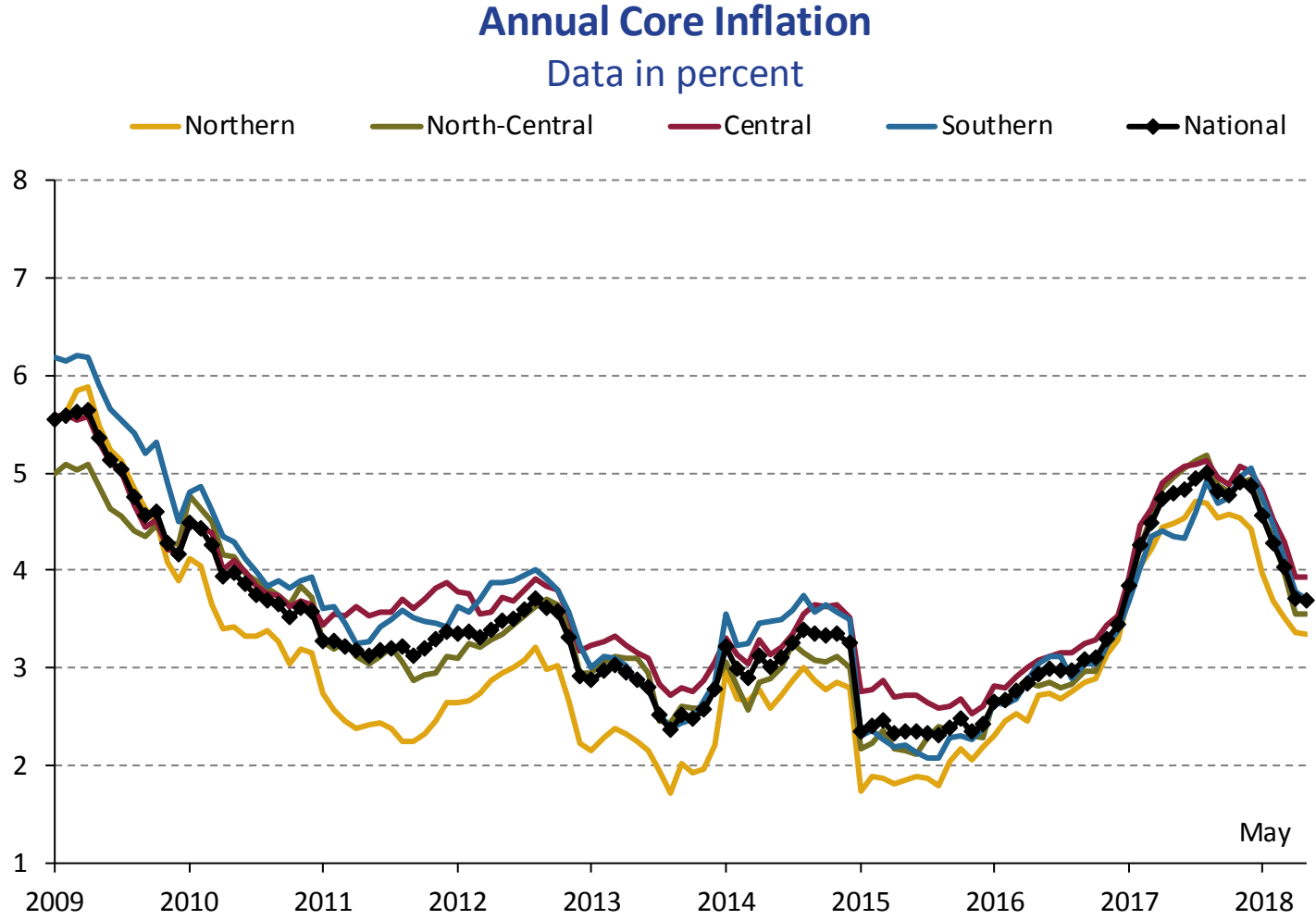
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Starting in early 2018 headline inflation decreased in all regional economies, especially in the Northern one. This is associated to the evolution of gasoline prices in the said region.



Source: Prepared by Banco de México based on data from INEGI and own data.

Starting from January 2018, a clear downward trend in core inflation has been observed in all regional economies.



Source: Prepared by Banco de México with data from INEGI and own data.

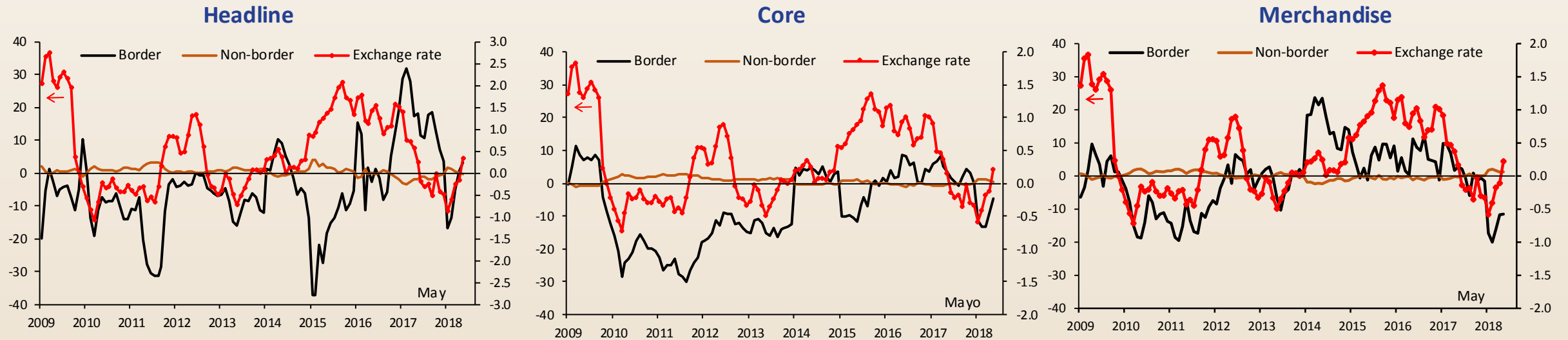
Box:

Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

- The real exchange rate is one of the main adjustment variables in the presence of shocks to an open economy, such as the Mexican one. Thus, as a result of significant external shocks to the Mexican economy in recent years, the real exchange rate depreciated.
- In particular, by implementing the monetary policy actions, this Central Institute has sought to prevent this adjustment from deanchoring medium- and long-term inflation expectations. That is, it prevented the second-round effects from negatively affecting the price formation process of the economy.
- This Box presents an estimate of the exchange rate pass-through on prices for each regional economy in Mexico. In addition, it identifies the possible difference in the link between exchange rate adjustments and price adjustments in border cities and non-border cities in Mexico.

Box: Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

Annual Inflation by Region and Exchange Rate
Deviation from the national indicator in percent and annual change

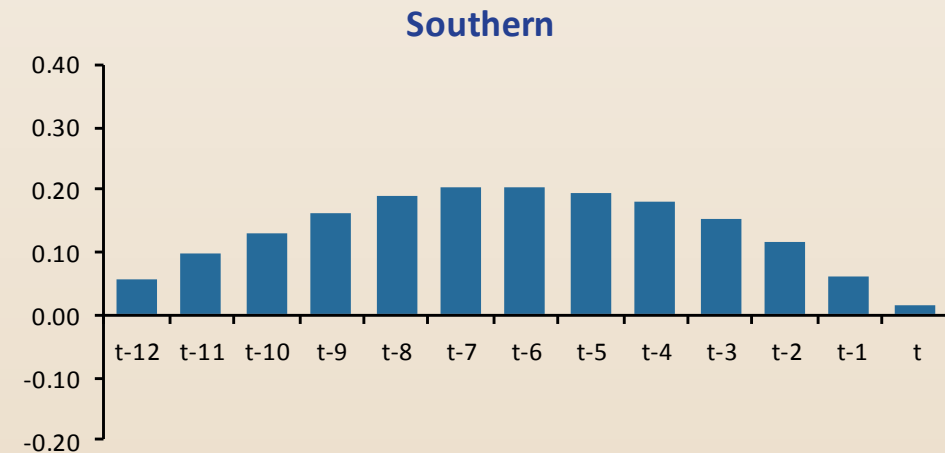
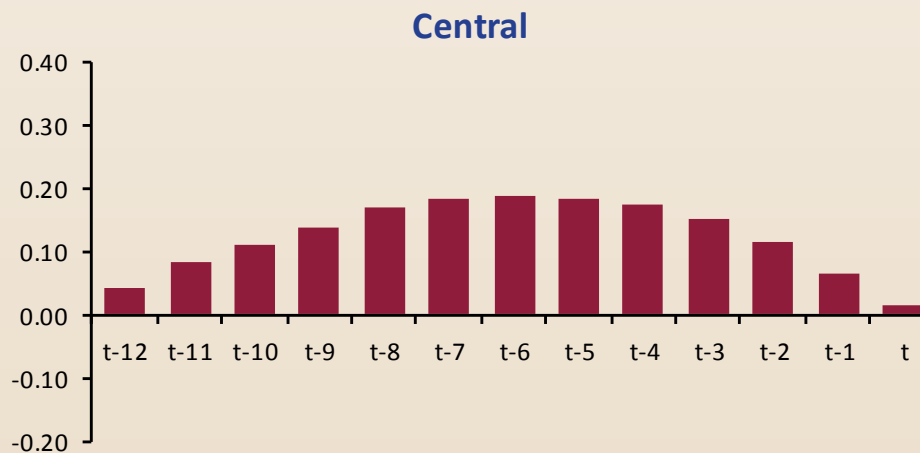
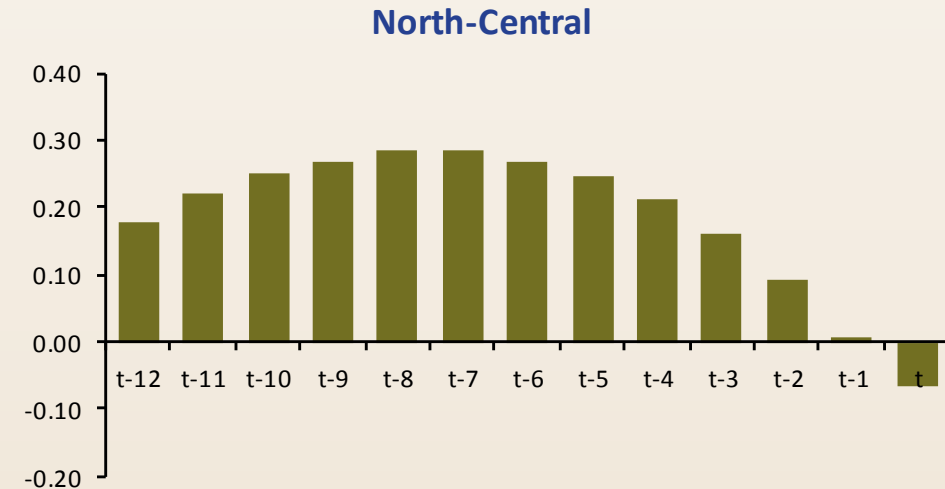
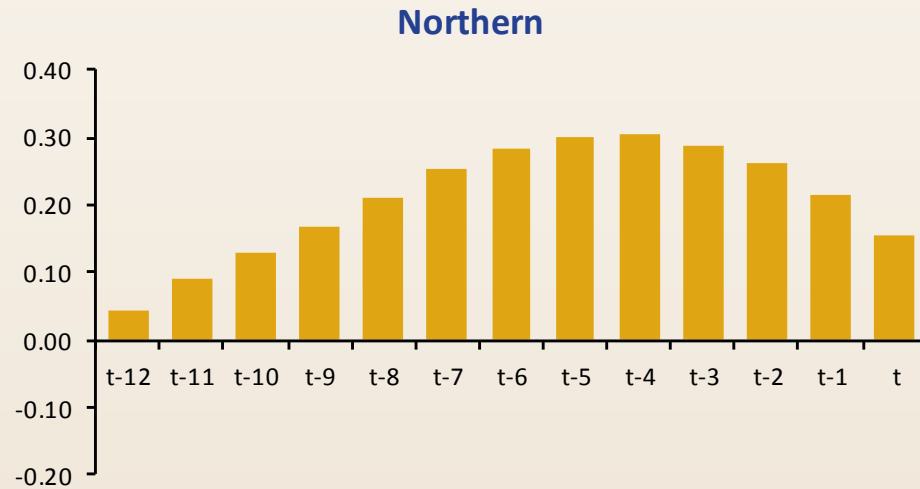


Source: Prepared by Banco de México with data from INEGI and own data.

Box:

Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

Cross Correlations between Annual Merchandise Inflation Rate by Region and Annual Exchange Rate Adjustment

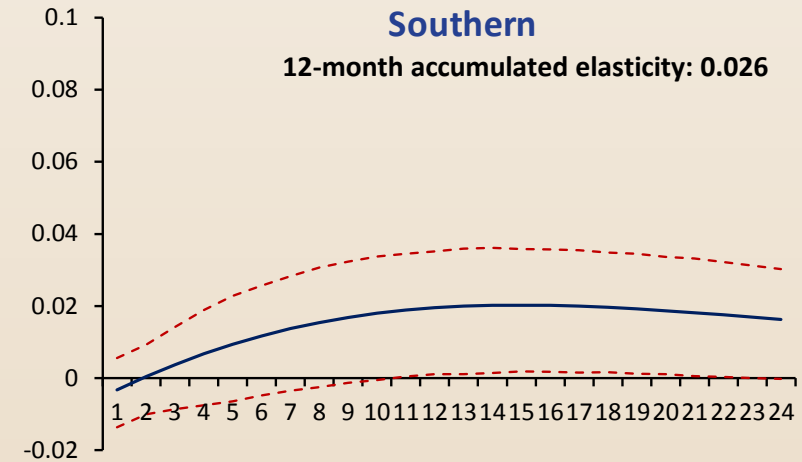
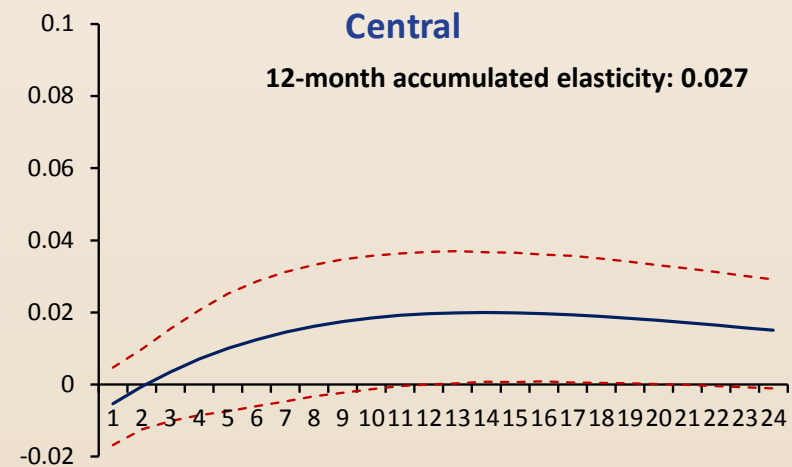
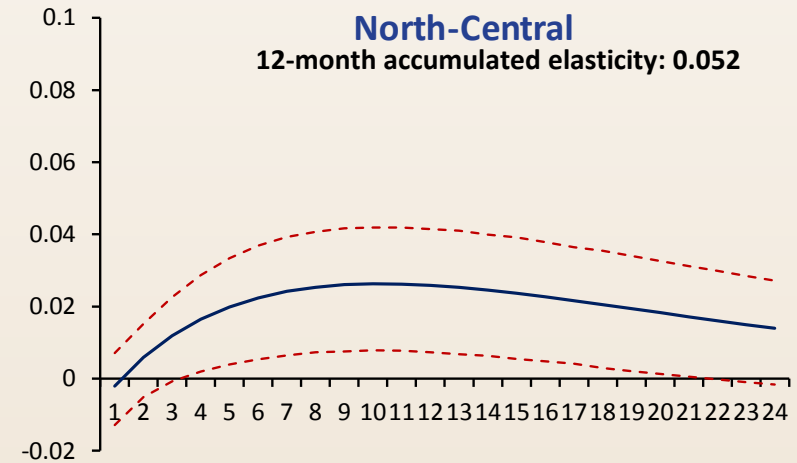
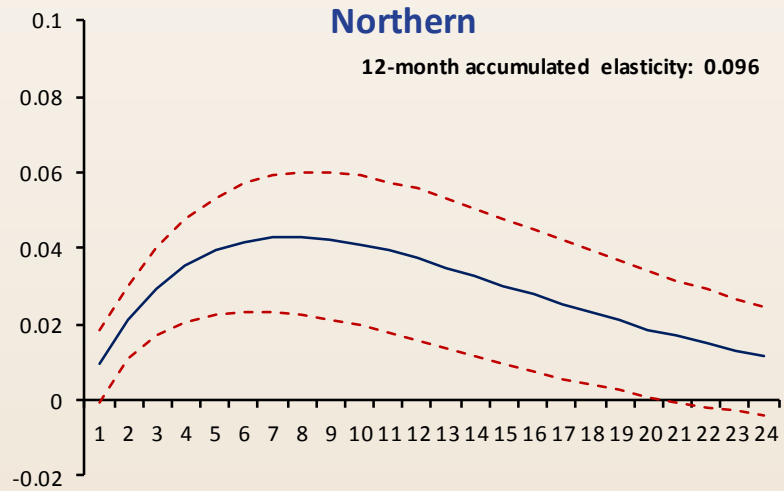


Source: Prepared by Banco de México with data from INEGI and own data.

Box:

Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

Impact of Exchange Rate Depreciation on Regional Price Indices
Impulse-Response Functions given a 1% Shock on the Exchange Rate



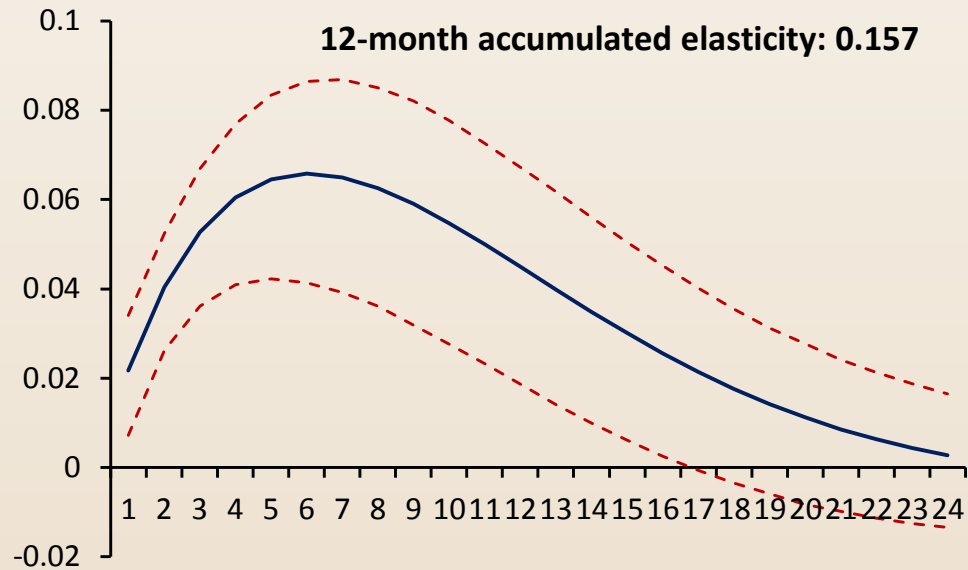
Source: Prepared by Banco de México.

Box:

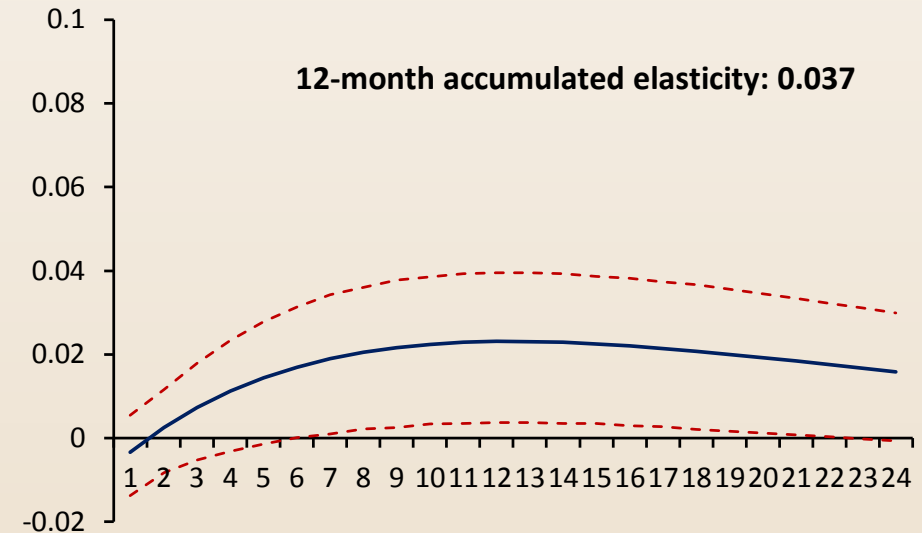
Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

Impact of Exchange Rate Depreciation on Regional Price Indices
Impulse-Response Functions given a 1% Shock on the Exchange Rate

Border



Non-border



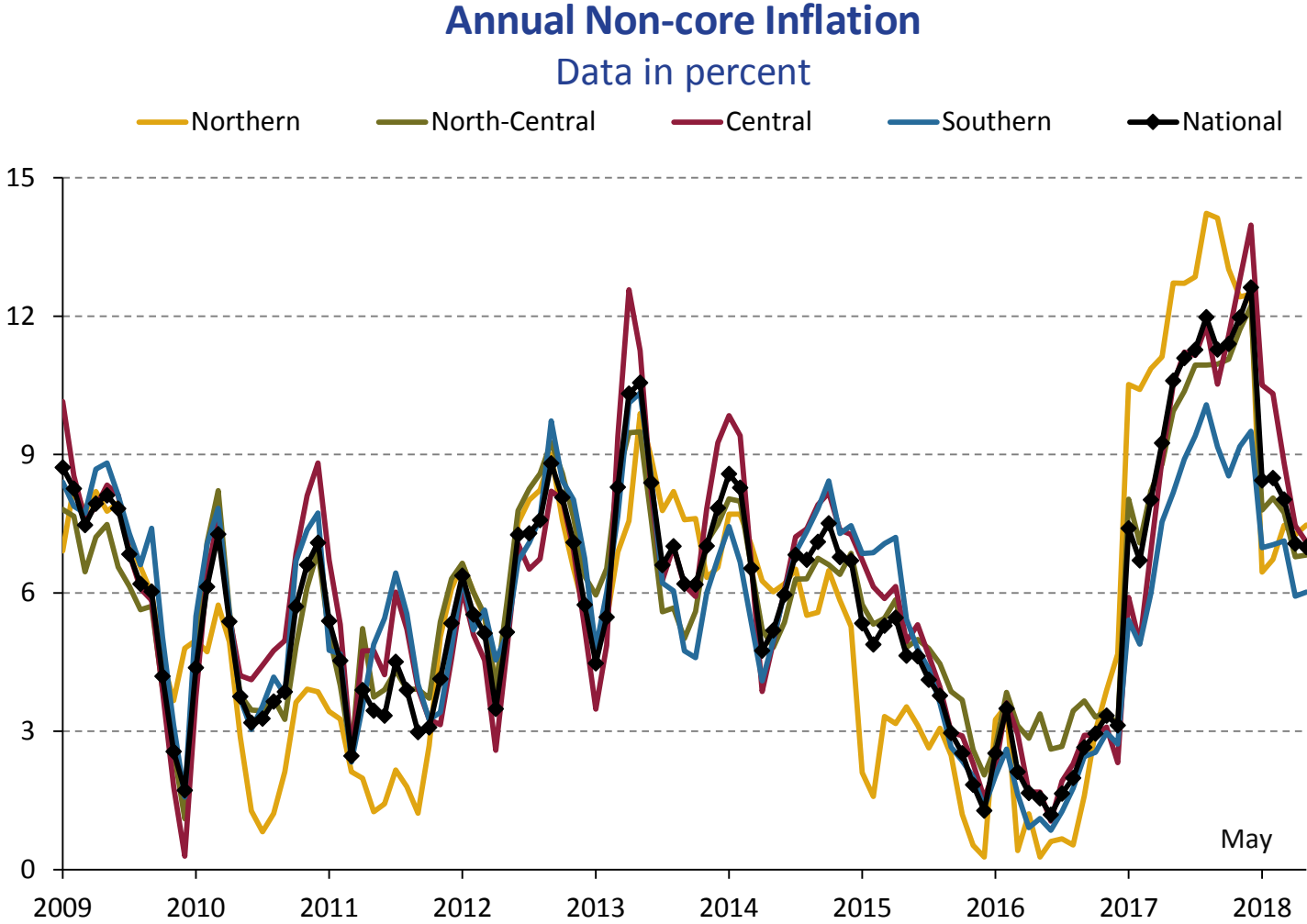
Note: Border cities include Tijuana, Mexicali, Cd. Juárez, Cd. Acuña and Matamoros.
Source: Prepared by Banco de México.

Box:

Exchange Rate Pass-through on Prices in Mexico: A Regional Analysis

- This Box analyzes the effect of exchange rate adjustments on regional prices (Northern, North-Central, Central and Southern regions), as well as the allocation among border and non-border cities included in the CPI.
 - ✓ The results point to a heterogeneity in the response of prices at the regional level, given changes in the dollar/peso parity. The Northern and North-Central regions register a higher level of the said pass-through.
 - ✓ The results also show that the exchange rate pass-through on prices is higher in border cities, which is attributed to a stronger trade link with the U.S., as compared to the rest of cities in Mexico.
- It should be noted that the estimates presented in this Box are congruent with the evidence of a low pass-through at the national level. If the estimated accumulated elasticity is weighted, using the weight of each region in the CPI, it is obtained that a 1% depreciation generates a pass-through close to 0.04 percentage points at the national level, which is consistent with other related works.

Non-core inflation strongly decreased in all regions of Mexico in January 2018. This was principally related to the fading of the effect of gasoline price liberalization that had taken place a year earlier.



Source: Estimated by Banco de México with data from INEGI and own data.

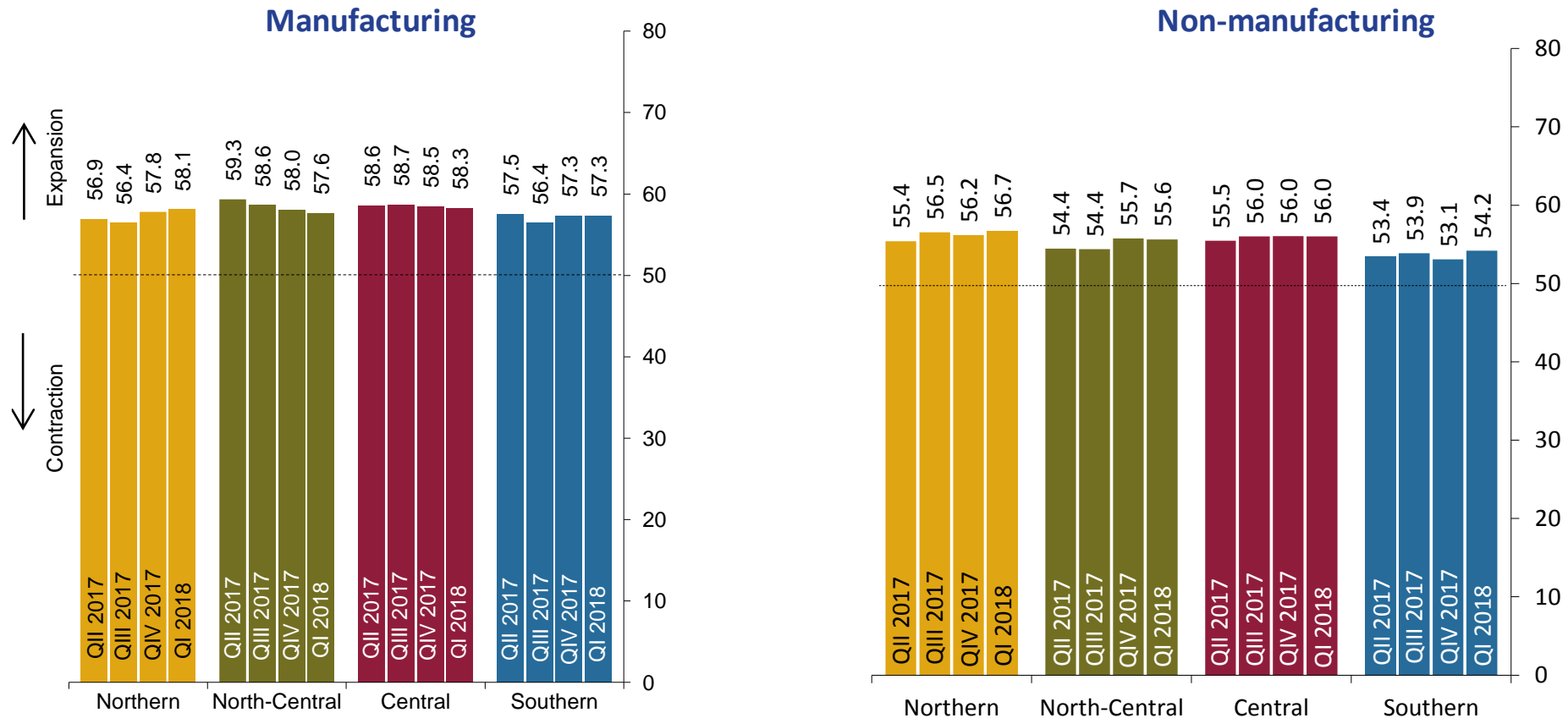
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Regional indices of manufacturing and non-manufacturing orders suggest that both manufacturing and non-manufacturing activity will continue expanding over the next 3 months in all regions of Mexico.

Regional Index of Manufacturing and Non-manufacturing Orders: Activity Outlook, Next 3 Months ^{1/}

Diffusion indices

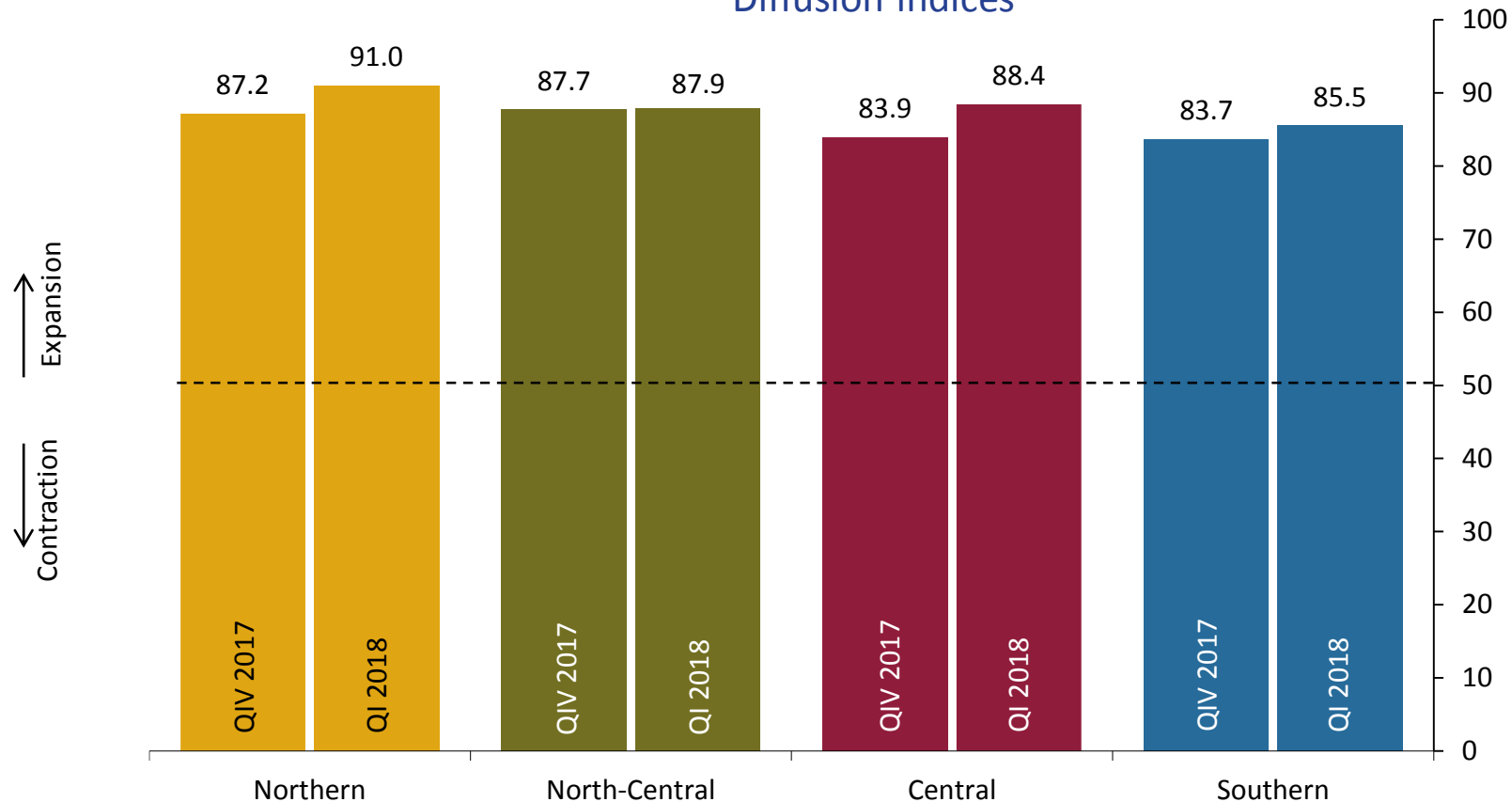


^{1/} Seasonally adjusted data.
Source: Banco de México.

For the next 12 months, business agents in all Mexican regions expect a higher demand for own goods and services. In particular, this signal has strengthened in the Northern, Central and Southern regions.

Business Agents' Expectations: Demand over the Next 12 Months ^{1/}

Diffusion indices

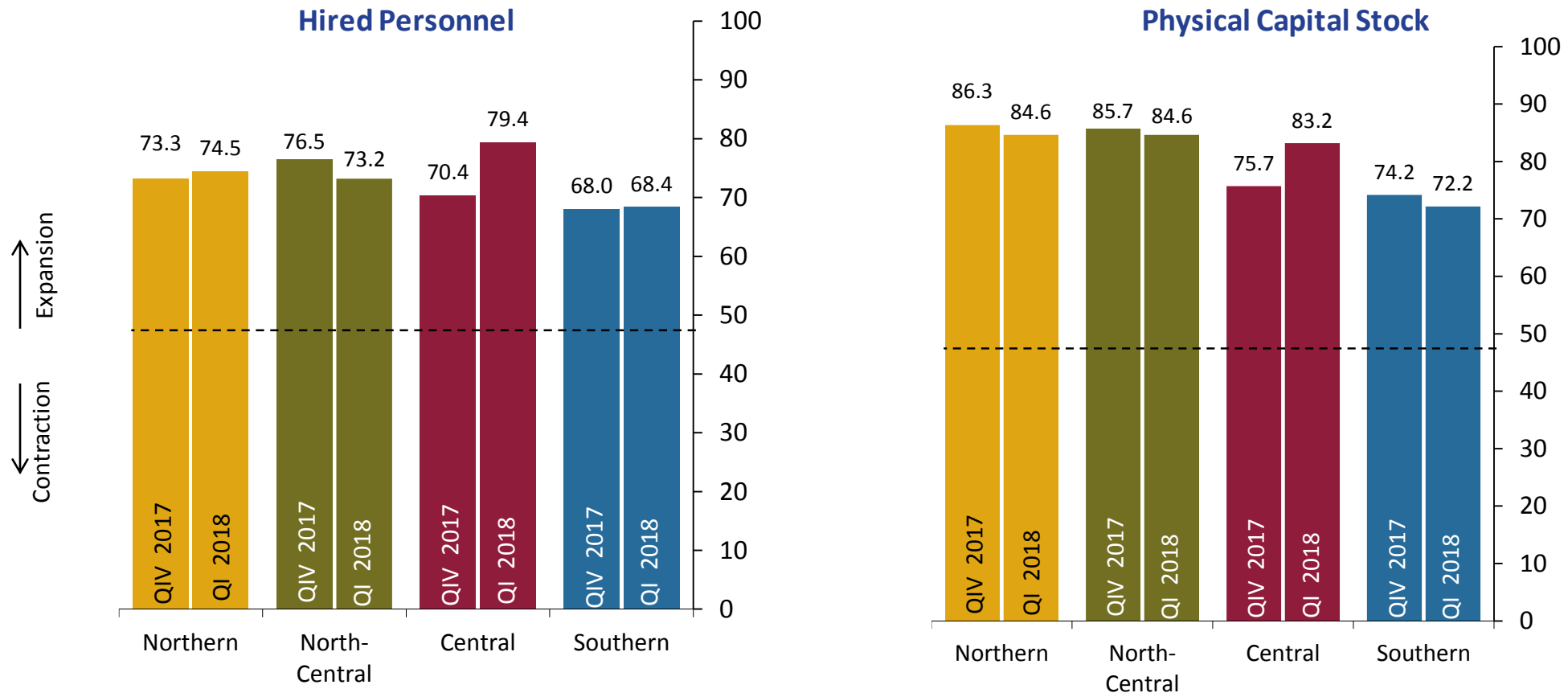


^{1/} Results obtained from responses to the question: "With respect to the volume of sales of own goods and services over the previous 12 months, how do you expect the volume of sales to modify in the next 12 months?", from interviews conducted by Banco de México.

Consistent with the expected growth in demand for own goods and services, business agents anticipate an expansion of hired personnel and the physical capital stock across different regions.

Business Agents' Expectations: Hired Personnel and Physical Capital Stock, Next 12 Months ^{1/}

Diffusion indices



^{1/} Results obtained from responses to the questions: "With respect to the previous 12 months, how do you expect the total number of workers in your firm to modify for the next 12 months?", and "With respect to your firm's investment in fixed assets during the previous 12 months, how do you expect the investment level to change for the following 12 months?", from interviews conducted by Banco de México.

Business Agents' Opinion on Risks to Regional Economic Activity

Upward risks



✓ A favorable outcome for Mexico in the NAFTA renegotiations.

✓ A higher-than-expected increase in investment levels. In particular, business agents interviewed in the Northern region mentioned the continuous investment flows in the energy sector, while in the Central regions they pointed out a higher dynamism in the construction sector, especially in transport infrastructure. In the Southern region they expect growth in investment levels that is higher than anticipated, given the operational start-up of Special Economic Zones (SEZs).

Downward risks

✓ A deterioration in public safety.

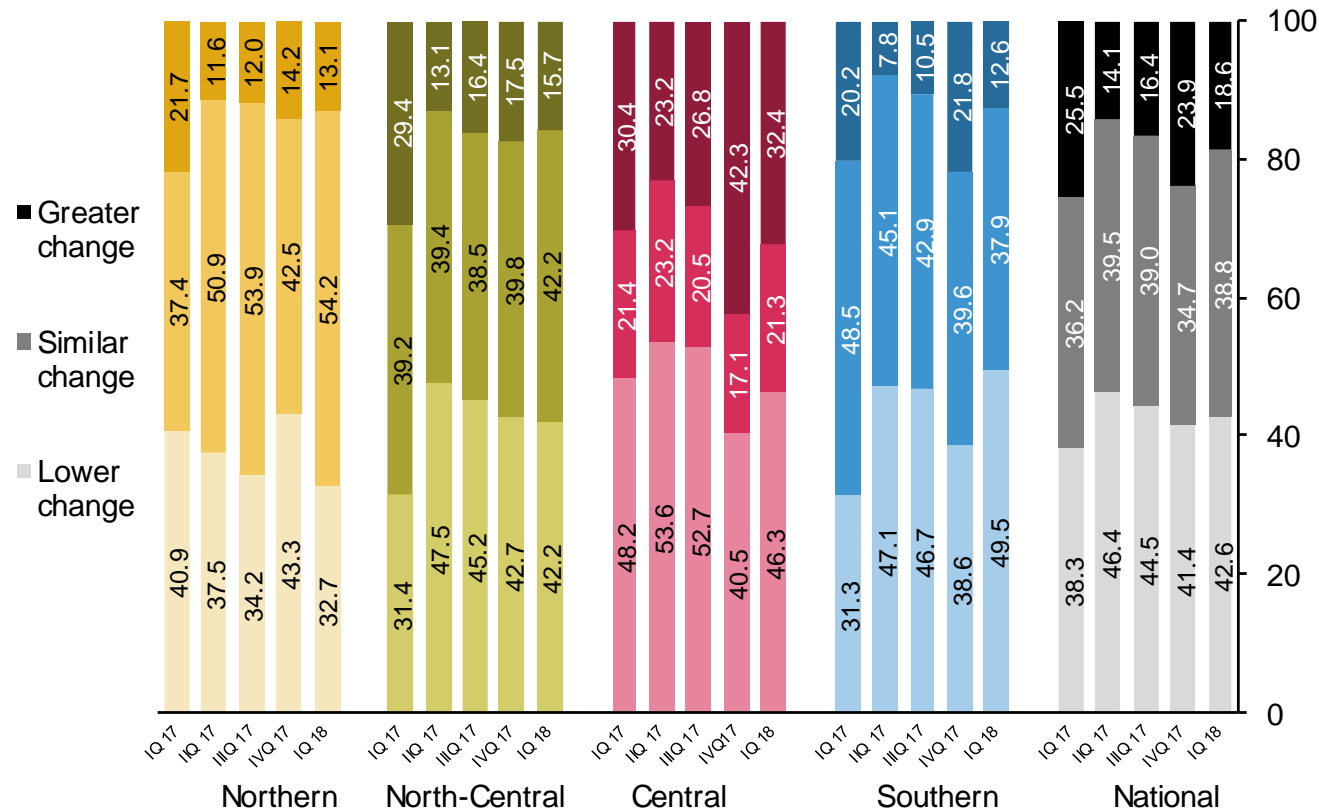
✓ That the uncertainty related to the 2018 electoral process negatively affects businesses' investment levels.

✓ An unfavorable outcome of the NAFTA renegotiations to the Mexican productive sector.

Regarding the sales' prices of own goods and services, most business agents interviewed in different Mexican regions continue expecting similar or lower annual changes, as compared to those observed over the previous 12 months.

Business Agents' Expectations: Annual Change of Sales' Prices, Next 12 Months ^{1/}

Percentage of responses

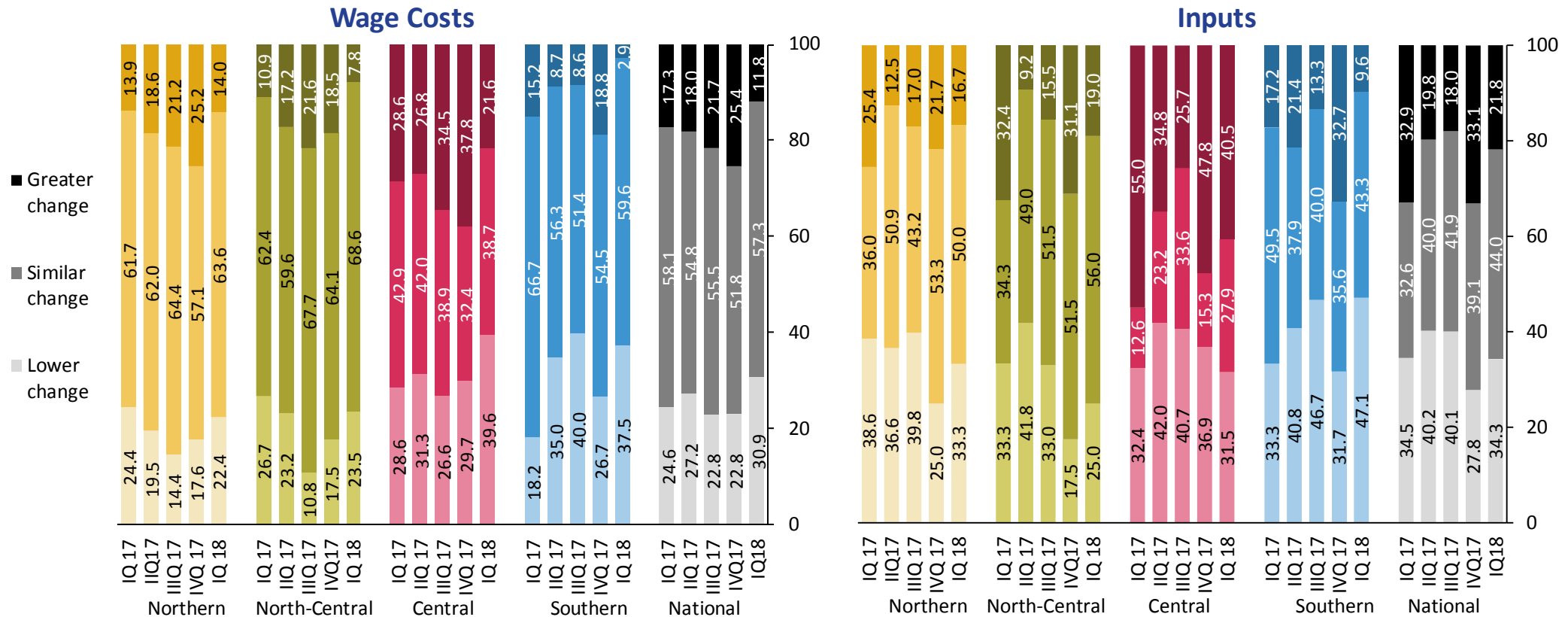


1/ Results obtained from responses to the question: "With respect to the previous 12 months, how do you anticipate the sales' prices in your sector to change over the next 12 months?", from interviews conducted by Banco de México.

Most business contacts interviewed in four Mexican Regions expect the annual growth rate of wage costs and input prices to be lower or equal to those observed over the previous 12 months.

Business Agents' Expectations: Annual Change of Wage Costs and Input Prices, Next 12 Months ^{1/}

Response rate



^{1/} Results obtained from responses to the question: "With respect to the previous 12 months, how do you expect the wages of your sector's workers to change in the next 12 months?", and "With respect to the previous 12 months, how do you anticipate input prices (goods and services) used in your sector to change over the following 12 months?", from interviews conducted by Banco de México.

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Consideraciones Finales

- To take on the challenges that may arise and to enhance the regional economies' ability to tackle negative shocks, actions should be taken to improve the competitiveness and to foment higher productivity.
- In particular, it is fundamental to increase the infrastructure development, to foment human capital and to generate the necessary conditions to increase the investment flows.
- Better public safety conditions are required, along with the legal certainty and the economic competition in all regional economies. This would create an institutional framework that fosters both efficient microeconomic functioning of the markets and a more balanced regional growth, both in a context of a persistent strengthening of the macroeconomic framework.



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