

Regional Economic Report
July – September 2018

BANCO DE MÉXICO

December 14, 2018

Outline

I. Regional Economic Report

II. Results July – September 2018

   A. Economic activity

   B. Inflation

   C. Economic outlook (based on data obtained between July 2 and October 18, 2018)

III. Final remarks

Regional Economic Report

- 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 Governing Board when evaluating the economic situation and the forecast for the Mexican economy.
- The economic performance of the regions in Q3 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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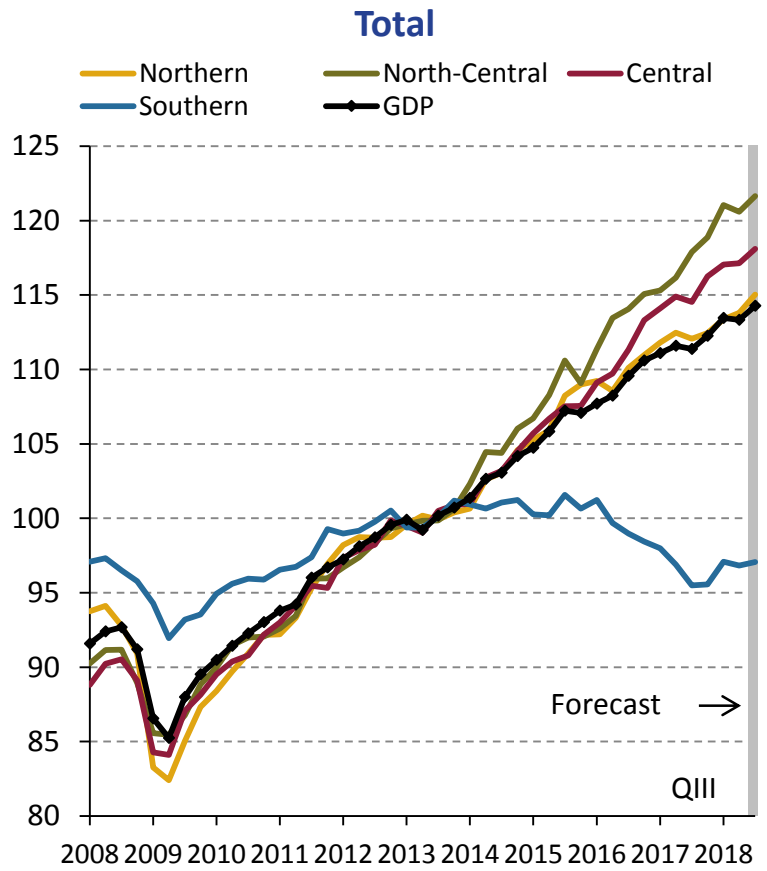
Economic Activity

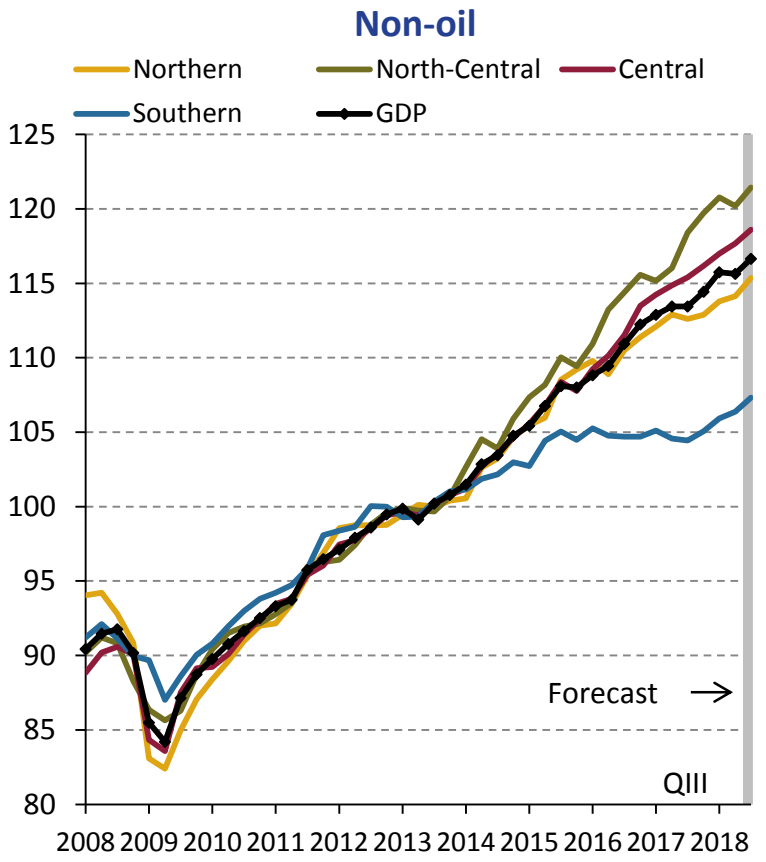
- Economic activity in Mexico expanded, after having contracted in April – June.
  - ✓ The positive trend in the services subsector, along with the recovery of the secondary activities, are notable as compared to the weakness in Q2 2018.
    - Within industrial production, manufacturing maintained an upward trajectory, growing at a rate even higher by the end of the period. In contrast, both construction and mining, quarrying and oil and gas extraction sector continued on a negative trend.
    - Similarly, after having fallen considerably in Q2 2018, the primary activities registered a quarterly growth.
- The North-Central and Southern regions are estimated to have displayed a rebound, after having contracted in Q2 2018, while the Northern and Central regions are estimated to have grown at a slightly faster rate.

Economic activity in the four regions of Mexico is estimated to have expanded as compared to the level registered in Q2 2018. While the North-Central and Southern regions are anticipated to have rebounded after the contraction observed during the previous quarter, the Northern and Central regions are expected to have grown at a slightly faster rate.

Quarterly Indicator of Regional Economic Activity 1/

Index 2013=100

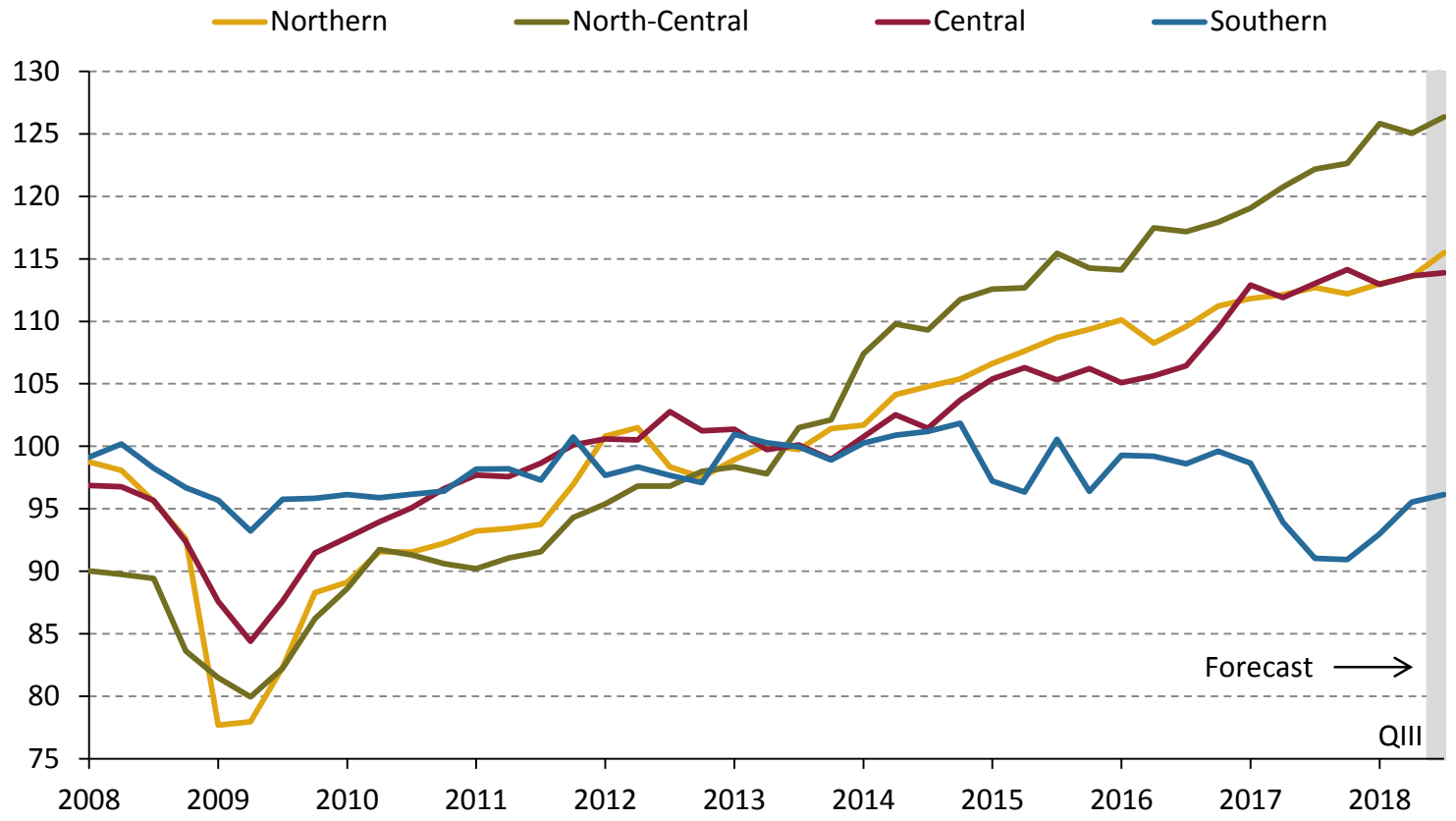




1/ The value of the Gross Domestic Product (GDP) for Q3 2018 corresponds to the observed data.
Source: Estimated by Banco de México with seasonally adjusted data from INEGI.

In Q3 2018, manufacturing continued on an upward trend, growing at a rate even higher by the end of the period. In the Northern and North-Central regions these activities are estimated to display a greater dynamism than in Q2 2018 (the decrease in the North-Central region that took place in the previous period even reversing), while in the Central and Southern regions they are estimated to continue to expand, although at a lower rate as compared to the period April - June 2018.

Regional Manufacturing Indicator
Index 2013=100, quarterly average



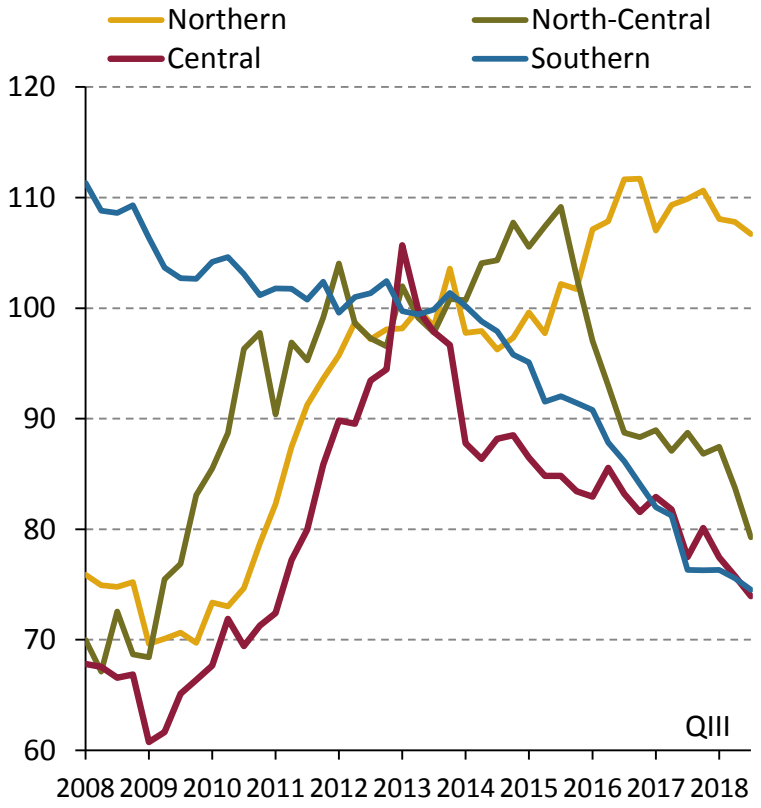
Source: Estimated by Banco de México with seasonally adjusted data from INEGI.

The mining, quarrying, and oil and gas extraction sector remained on a downward trajectory in the period July – September 2018, which largely mirrored the lower levels of oil and gas extraction, while the subsectors of metal ore mining and nonmetallic mineral mining also followed a negative trend. The weakness of the mining activity was perceived across all regional economies.

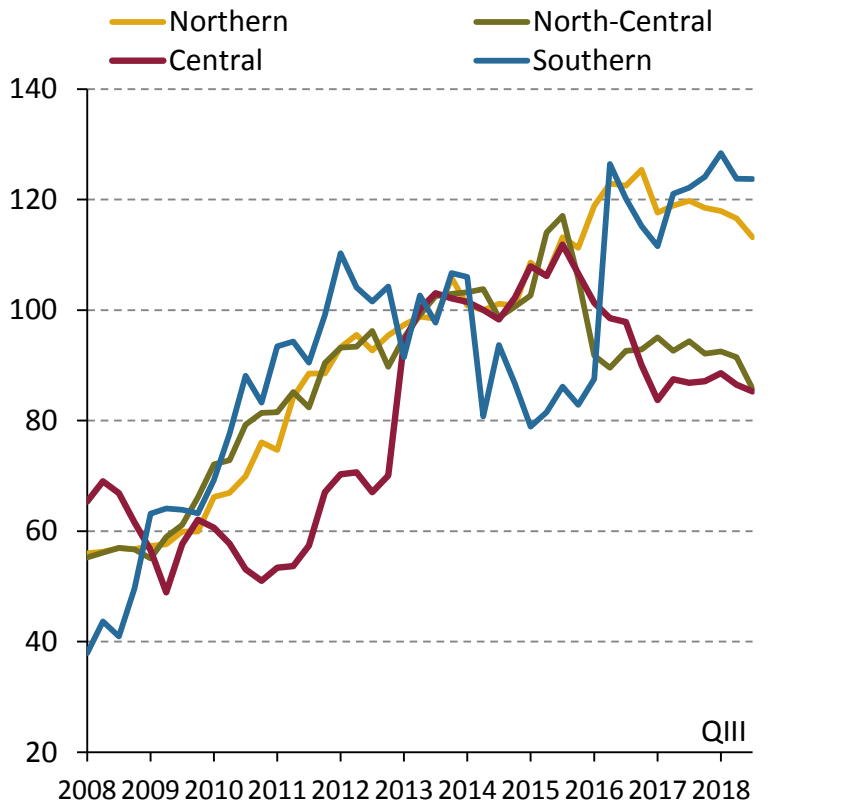
Regional Indicator of Mining, Quarrying, and Oil and Gas Extraction Sector 1/

Index 2013=100, quarterly average

Total



Metal ore mining and nonmetallic mineral mining



1/ Values for Q3 2018 are preliminary.

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

Box:
Impact of the Fall in Oil Production on Economic Activity in the Gulf of Mexico, 2013 - 2018: an Application of Banxico Regional Simulator (SIRE) */

- The fall in the oil production volume had a heterogeneous impact across the Mexican states, given that oil production is highly concentrated in the Gulf of Mexico region, especially in the states of Campeche and Tabasco.
- This Box seeks to estimate both direct and indirect effects of the fall in the oil production volume on economic activity in the Gulf of Mexico region in the period 2013 - 2018.

Contribution of Oil Mining and other Sectors to Annual GDP Growth in the Gulf of Mexico, 2014 – 2018 1,2,3,4/
Percentage points

	National			Gulf		
	Oil GDP	Non-oil GDP	GDP	Oil GDP	Non-oil GDP	GDP
2014	-0.16	2.96	2.80	-0.78	0.39	-0.39
2015	-0.31	3.60	3.29	-2.15	1.08	-1.08
2016	-0.25	3.17	2.92	-1.97	-0.55	-2.52
2017	-0.45	2.52	2.07	-3.90	-0.51	-4.40
2018	-0.24	2.35	2.11	-2.32	0.53	-1.79

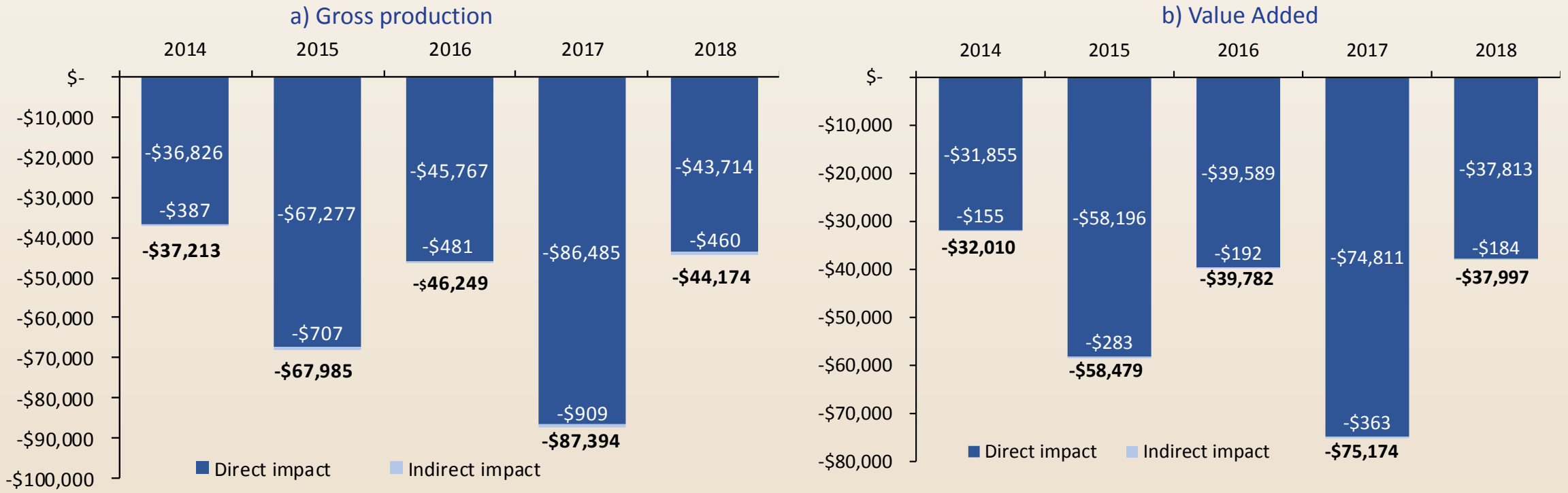
1/ Changes estimated using original data and 2013 prices.
2/ For the national GDP in 2018, the first three quarters of that year are compared to the same period of the pervious year.
3/ For the Gulf region in 2018, the first two quarters of that year are compared to the same period of the previous year.
4/ Oil GDP refers to the GDP of the Subsector of Oil and Gas Extraction published by INEGI.
Note: For the purposes of this Box, the region "the Gulf of Mexico" includes the states of Tamaulipas, Veracruz, Campeche and Tabasco
Source: Prepared by Banco de México with data from INEGI.

*/ D. R. © Banco de México, Avenida 5 de Mayo 2, Colonia Centro, Código Postal 06000, Cuauhtémoc, Ciudad de México, México, 2018.

Box:
Impact of the Fall in Oil Production on Economic Activity in the Gulf of Mexico, 2013 - 2018: an Application of Banxico Regional Simulator (SIRE) */

Total Impact on Gross Production and Value Added Caused by the Fall in Oil Mining in the Gulf of Mexico, 2014 – 2018 1,2/

MXN millions



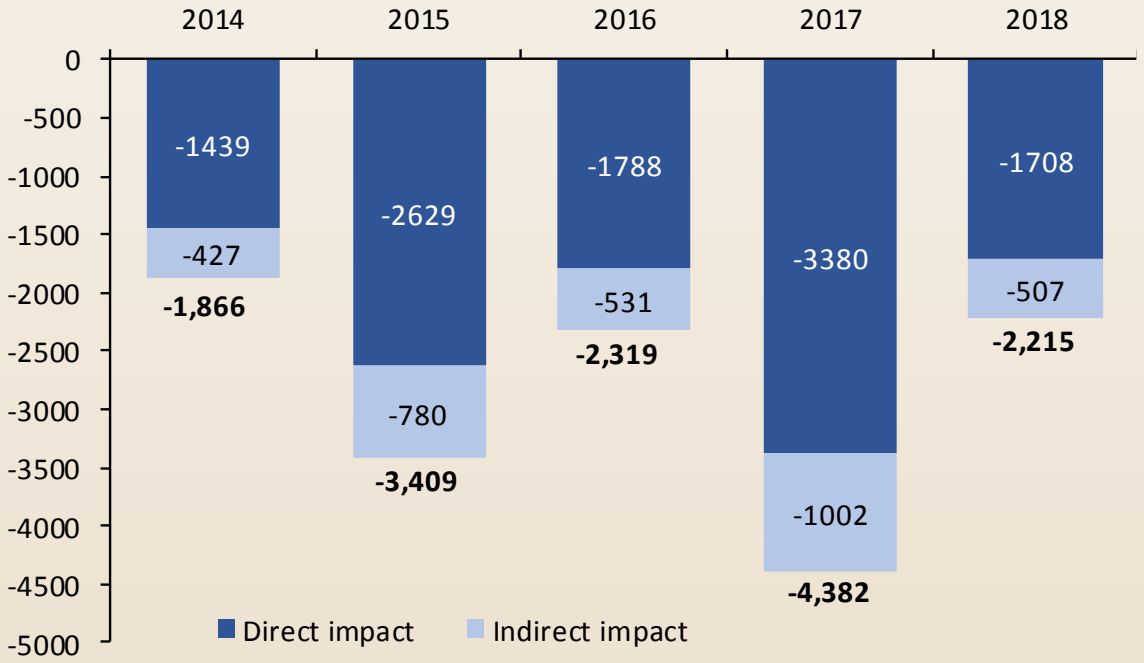
1/ For 2018, the annual growth rate of the observed oil production was used, on average, between January and September of that year with respect to the same period of the previous year.
2/ 2013 constant prices.
Source: Prepared by Banco de México with data from INEGI.

*/ D.R. © Banco de México, Avenida 5 de Mayo 2, Colonia Centro, Código Postal 06000, Cuauhtémoc, Ciudad de México, México, 2018.

Box:
Impact of the Fall in Oil Production on Economic Activity in the Gulf of Mexico, 2013 - 2018: an Application of Banxico Regional Simulator (SIRE) */

Total Impact on Employment as a result of the Fall in Oil Mining in the Gulf of Mexico, 2014 – 2018 1/

Number of jobs



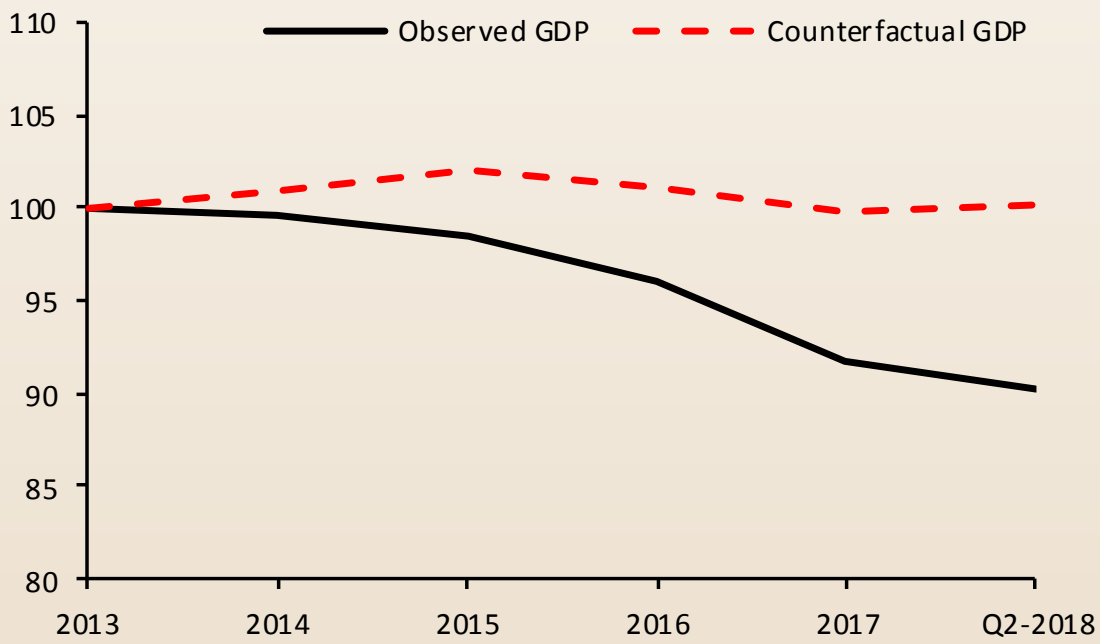
1/ For 2018, the annual growth rate of observed oil production between January and September of that year was used with respect to the same period of the previous year.
Source: Prepared by Banco de México with data from INEGI.

*/ D.R. © Banco de México, Avenida 5 de Mayo 2, Colonia Centro, Código Postal 06000, Cuauhtémoc, Ciudad de México, México, 2018.

Box:
Impact of the Fall in Oil Production on Economic Activity in the Gulf of Mexico, 2013 - 2018: an Application of Banxico Regional Simulator (SIRE) */

- Using the presented results, a counterfactual value for the GDP in the Gulf of Mexico region is estimated considering that the oil production volume had remained at its 2013 level.
- If oil production had not fallen, GDP of the Gulf region is estimated to would have grown 2.06 percentage points (pp) above the average annual growth rate observed in this region during the analyzed period (-2.05%).

Evolution of GDP in the Gulf of Mexico Region
Index 2013=100



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

*/ D.R. © Banco de México, Avenida 5 de Mayo 2, Colonia Centro, Código Postal 06000, Cuauhtémoc, Ciudad de México, México, 2018.

Box:
Impact of the Fall in Oil Production on Economic Activity in the Gulf of Mexico, 2013 - 2018: an Application of Banxico Regional Simulator (SIRE) */

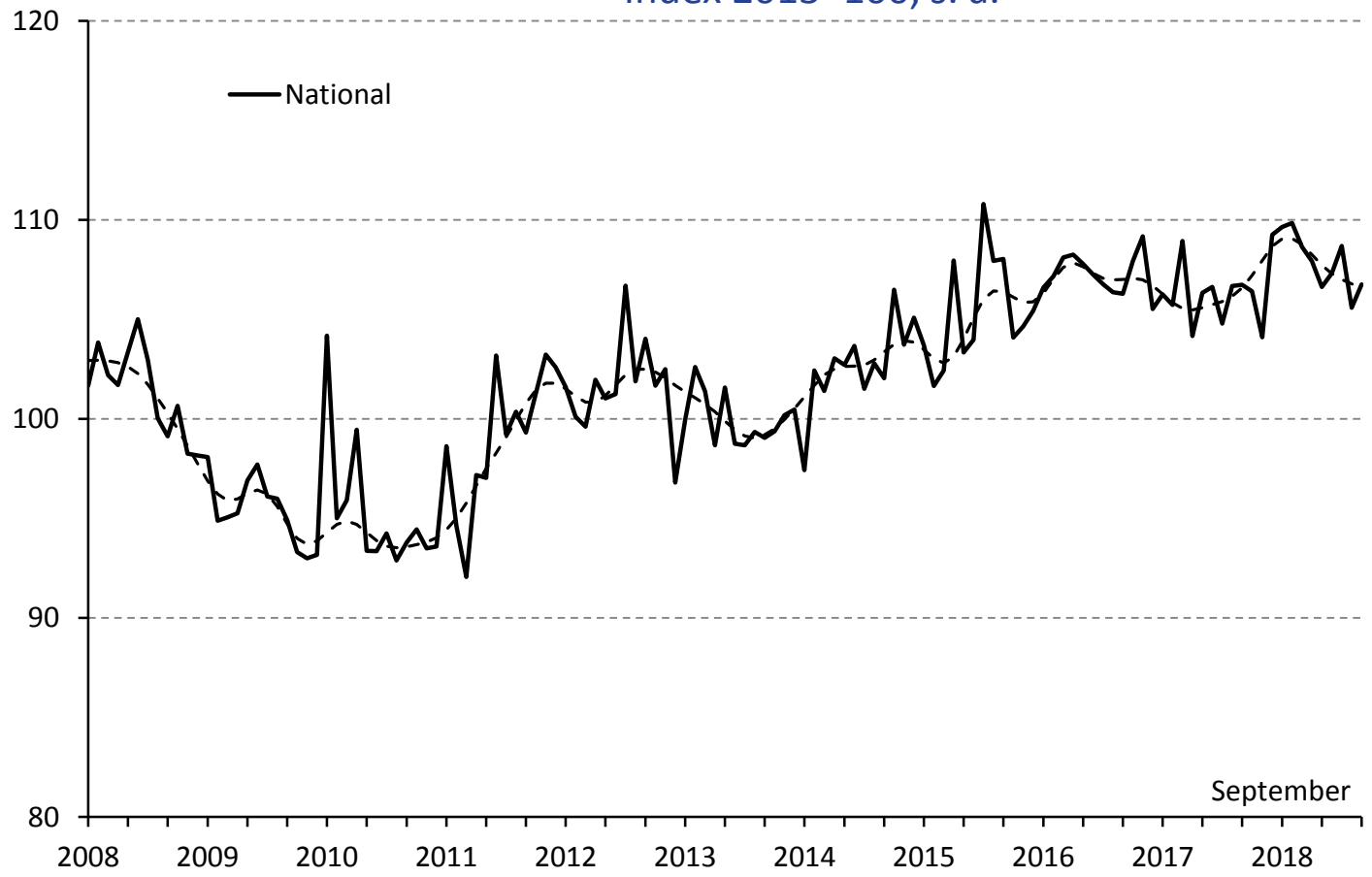
- The fall in oil production volume in Mexico in recent years has mainly affected economic activity in the Gulf of Mexico.
  - ✓ This has been reflected both in a drop in oil mining, and in the indirect effects on other sectors of the Mexican economy, especially the chemical industry, trade and some services.
- Therefore, new oil fields should be developed and economic activity should be diversified to include activities that, on the one hand, generate a greater value added, and, on the other, benefit from regional comparative advantages.
  - ✓ To achieve it, it is key to implement the infrastructure projects that would lower transportation costs, increase human capital endowment, strengthen the institutional framework and improve local regulation.
  - ✓ This would contribute to enhance the relative competitiveness of the Gulf of Mexico, encouraging investment and the development of regional clusters.

*/ D.R. © Banco de México, Avenida 5 de Mayo 2, Colonia Centro, Código Postal 06000, Cuauhtémoc, Ciudad de México, México, 2018.

The construction industry continued on a negative trend that it had exhibited since March 2018. In particular, the negative evolution in the reference quarter mainly was triggered by a contraction in the subsectors of the construction of buildings and the weakness of heavy and civil engineering works. In contrast, the component of specialized works displayed a upward trajectory.

Index of Real Value of Production in the Construction Industry

Index 2013=100, s. a.

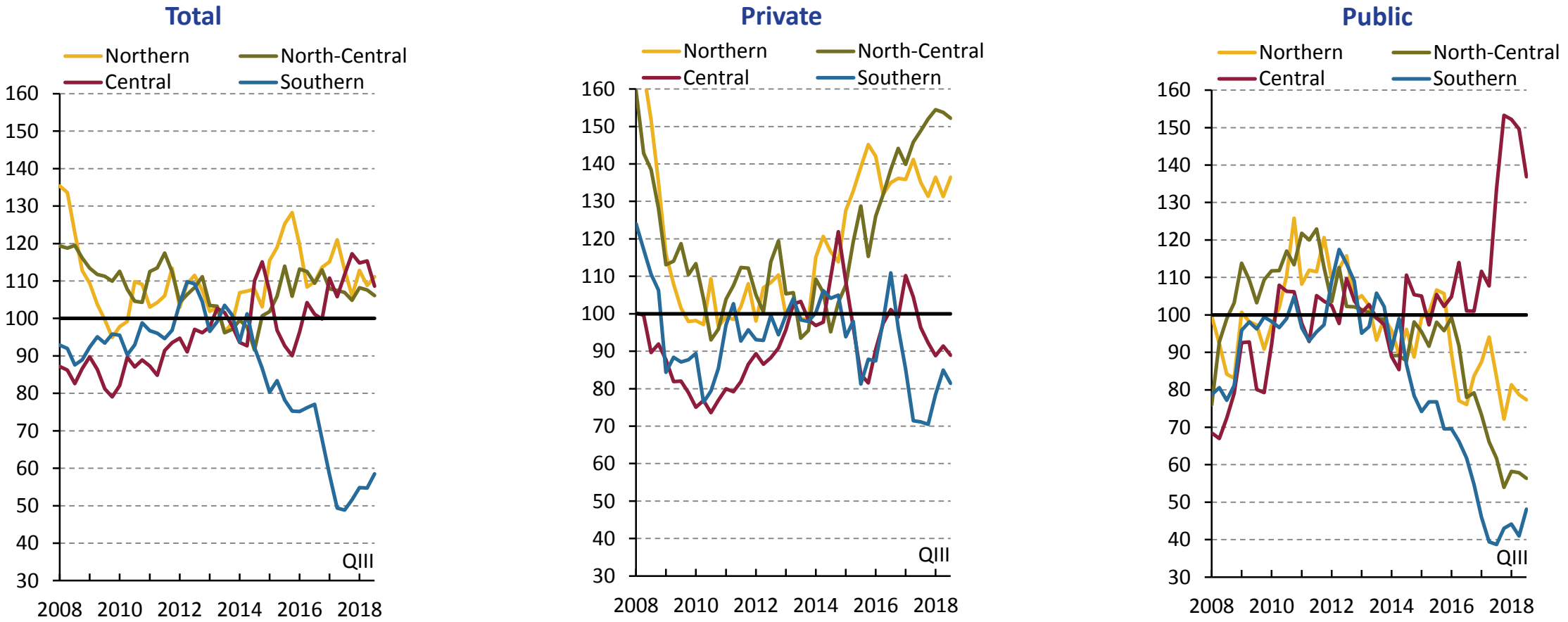


s. a. / Seasonally adjusted and trend series. The former is represented by a solid line, the latter by a dotted line.
Source: Prepared by Banco de México with data from INEGI.

The construction sector contracted in the central regions, driven by the negative evolution of both public and private construction works. In the Northern and Southern regions, the construction industry expanded after having dropped in Q2, as a reflection of the favorable development in private construction in the former region, and in hired works by the public sector in the latter one.

Real Value of Production in the Construction Industry by Region

Index 2013=100, quarterly average

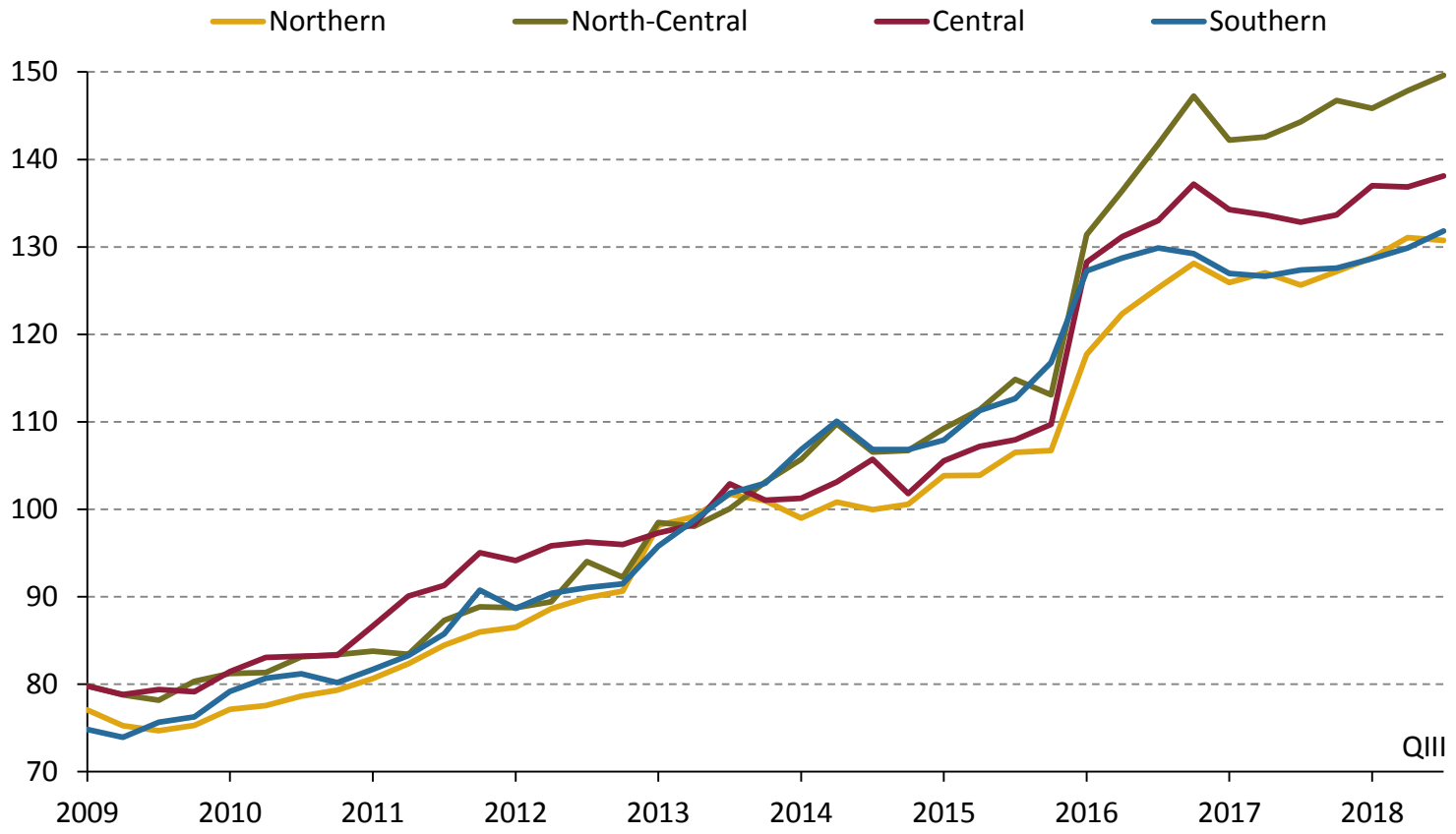


Source: Prepared by Banco de México with seasonally adjusted data from INEGI.

Trade, measured with the index of revenues from the supply of goods and services by retail business, kept displaying a positive trend across all regions of Mexico, with the exception of the Northern one, in which it contracted slightly.

Regional Indicator of Trade

Index 2013=100, quarterly average



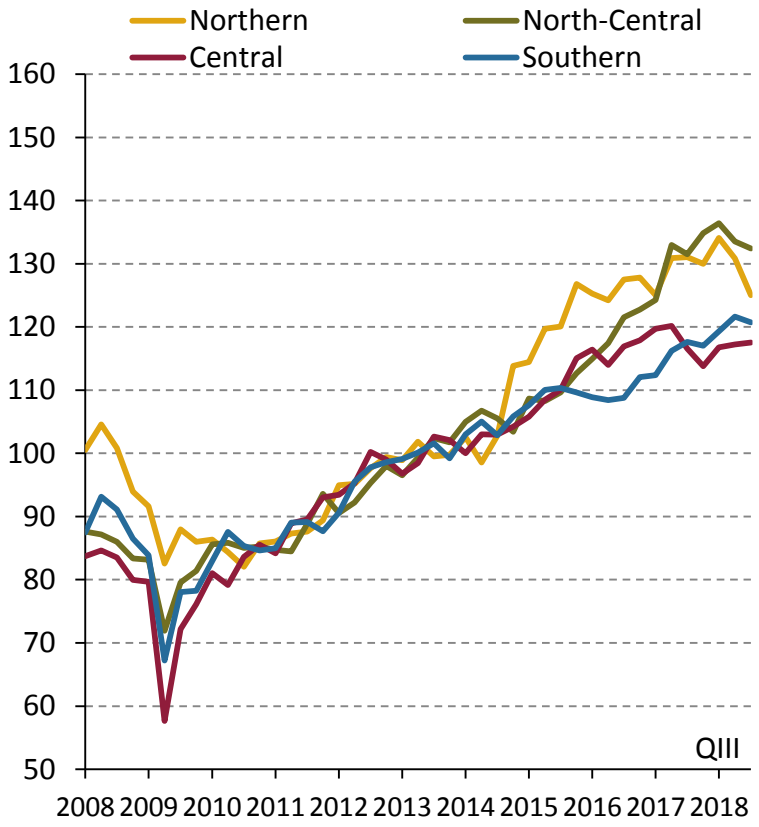
Source: Prepared by Banco de México with seasonally adjusted data from INEGI.

Hotel occupancy contracted in all regional economies, except for the Central one, where it continued to expand at a moderate pace. The inflow of passengers kept following an upward trend in most regions.

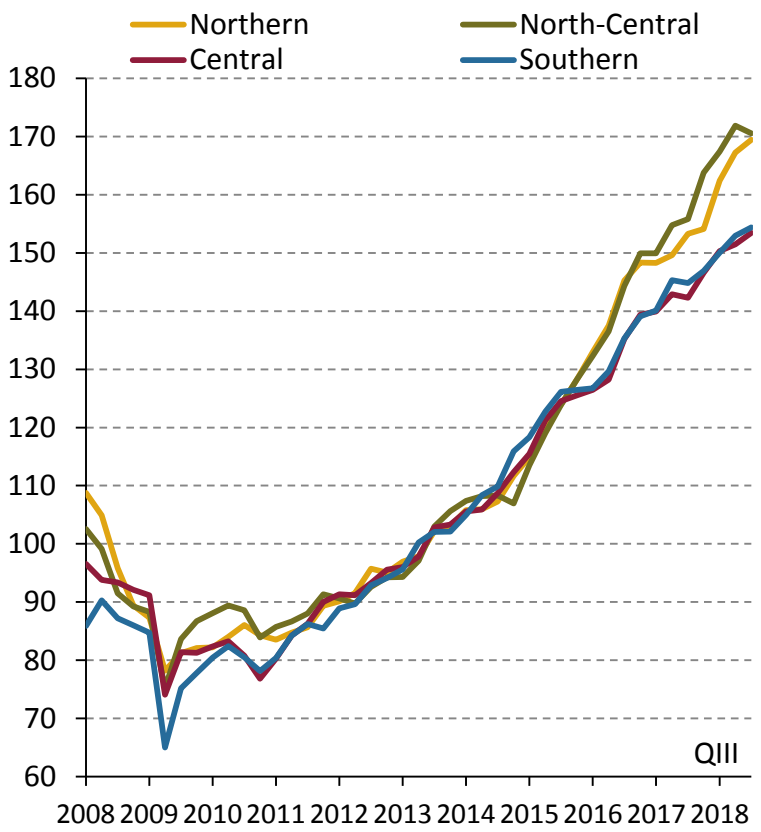
Regional Indicators of Activity in Tourism (Air Transportation and Traveler Accommodation)

Index 2013=100, quarterly average

Hotel Occupancy



Inflow of Passengers to Airports

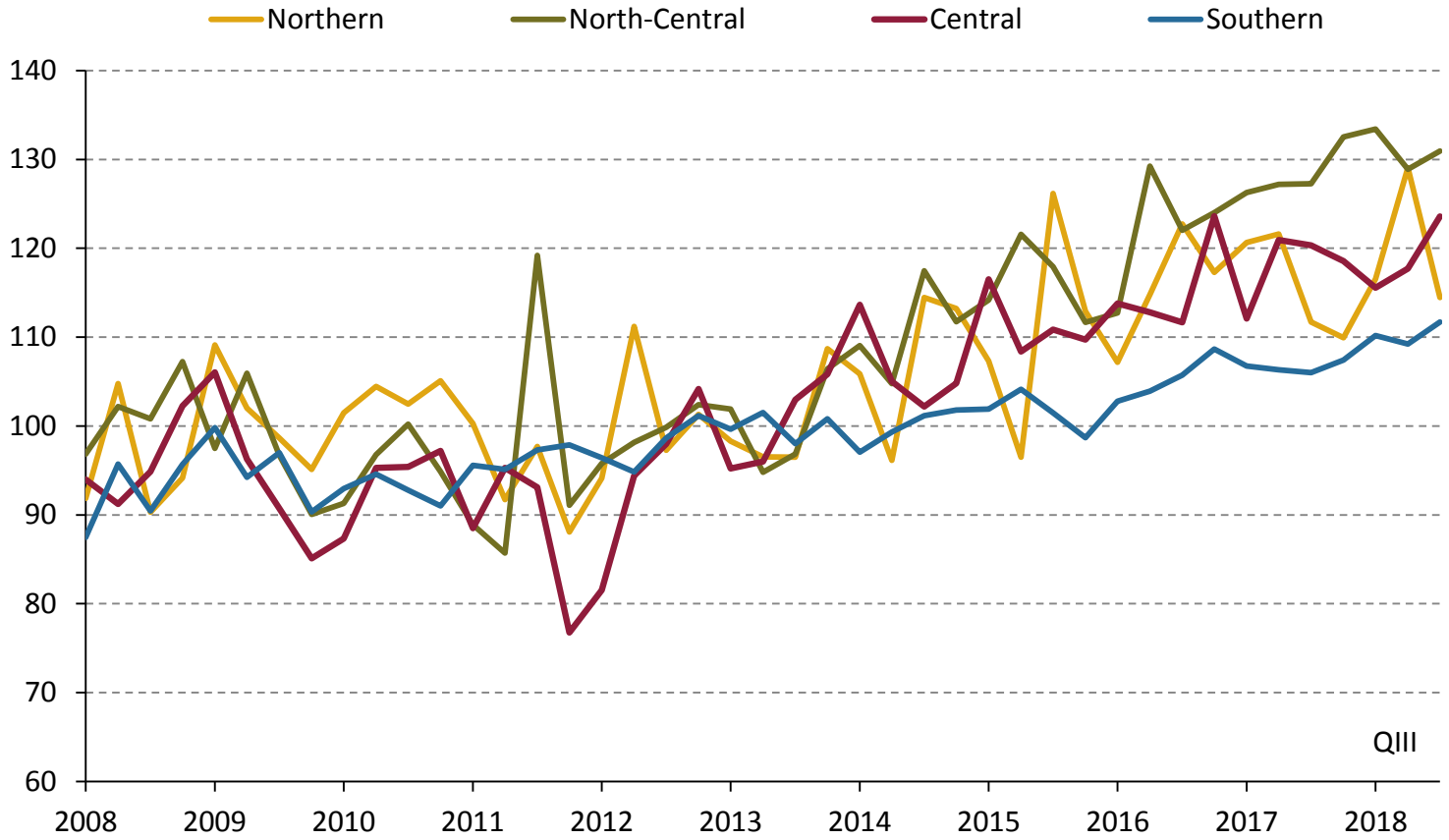


Source: Estimated and seasonally adjusted by Banco de México based on data from the Mexican Secretariat of Tourism and from Airport and Auxiliary Services (ASA, for its acronym in Spanish).

The agricultural industry expanded in all regions of Mexico, except for the Northern one.

Index of Regional Agricultural Production

Index 2013=100, quarterly average

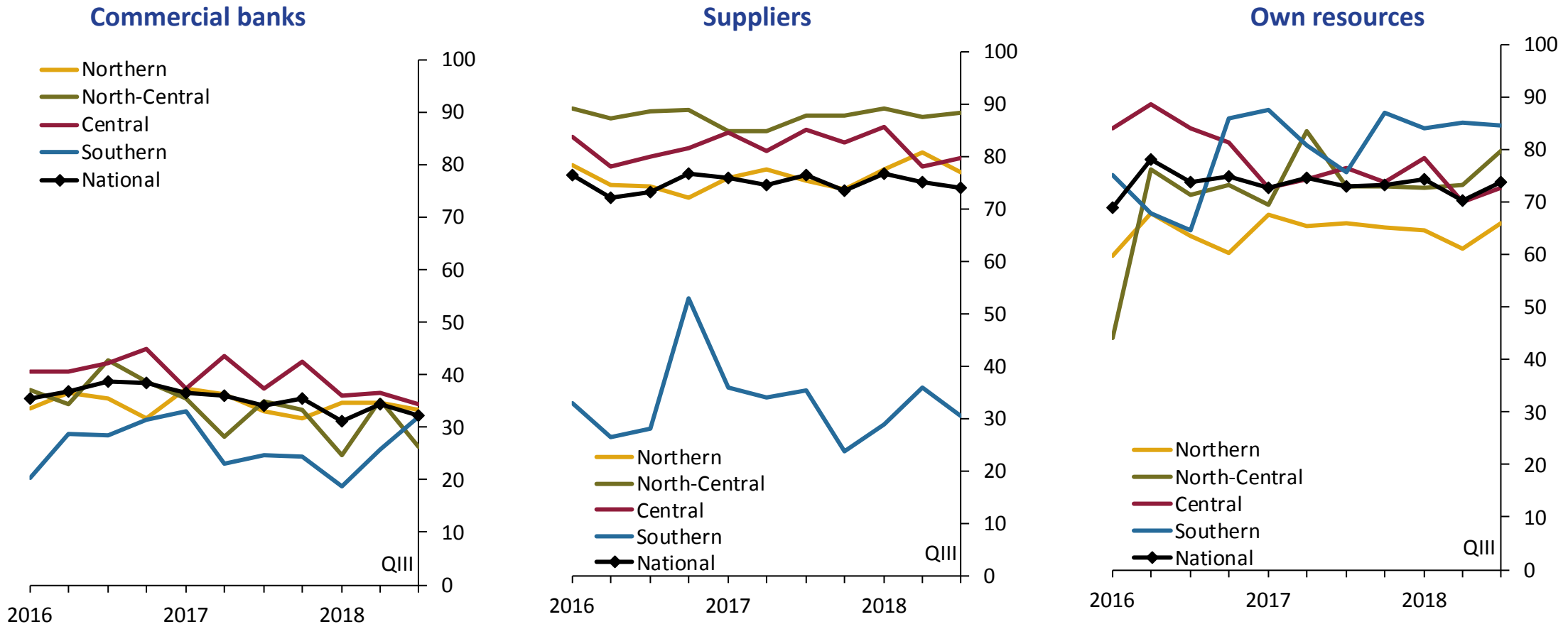


Source: Estimated and seasonally adjusted by Banco de México with data from SAGARPA. It should be noted that, unlike the GDP estimate, this indicator excludes information on the value generated by land cultivation and approximates a measurement of the gross production value, rather than that of added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

The share of firms that used bank credit to fund their activities declined in all regions, except for the Southern one. In contrast, the share of firms that resorted to financing by suppliers increased in the central regions, while in the Northern and Southern ones it contracted. Finally, the share of firms that used their own resources increased across all regional economies, except for the Southern one.

Main Sources of Financing by Firms in Q3

Percent of businesses that used each source of financing

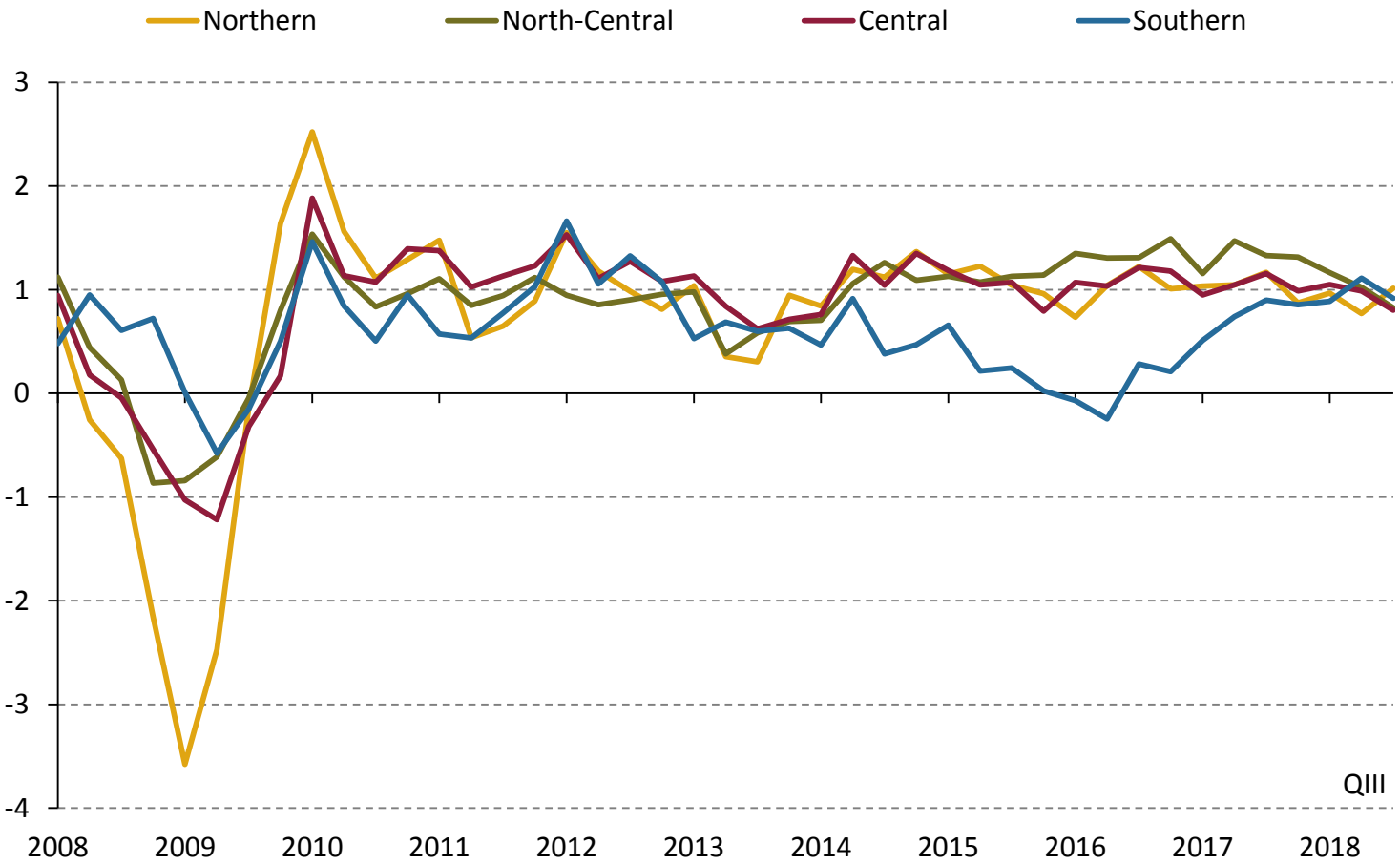


Source: Banco de México.

During Q3 2018, the number of IMSS-insured workers maintained a positive trend in all regions. However, it decelerated slightly in most of them.

Quarterly Seasonally Adjusted Change in the Number of IMSS-insured Workers 1/

Percentage points

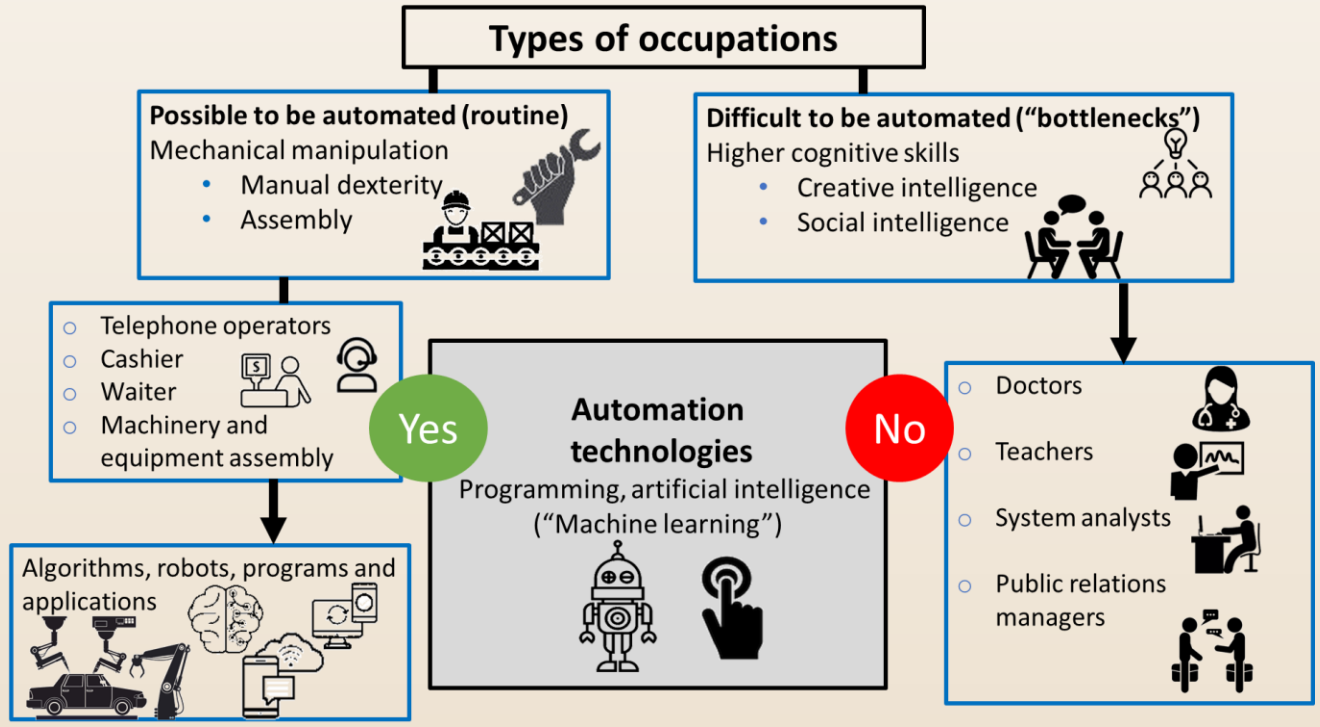


1/ Permanent and temporary jobs in urban areas.
Source: Estimated and seasonally adjusted by Banco de México with data from IMSS.

Box:
Automation in Mexico from a Regional Perspective

- In recent years, the global economy has experienced job automation, defined as the substitution of production processes that are carried out, partially or fully, with human intervention, by the production techniques in which computer-controlled equipment is used (Frey and Osborne, 2017).
- The goal of this Box is to analyze the exposure of different Mexican labor markets to job automation at a regional level.

Activities and Occupations, by Automation Probability

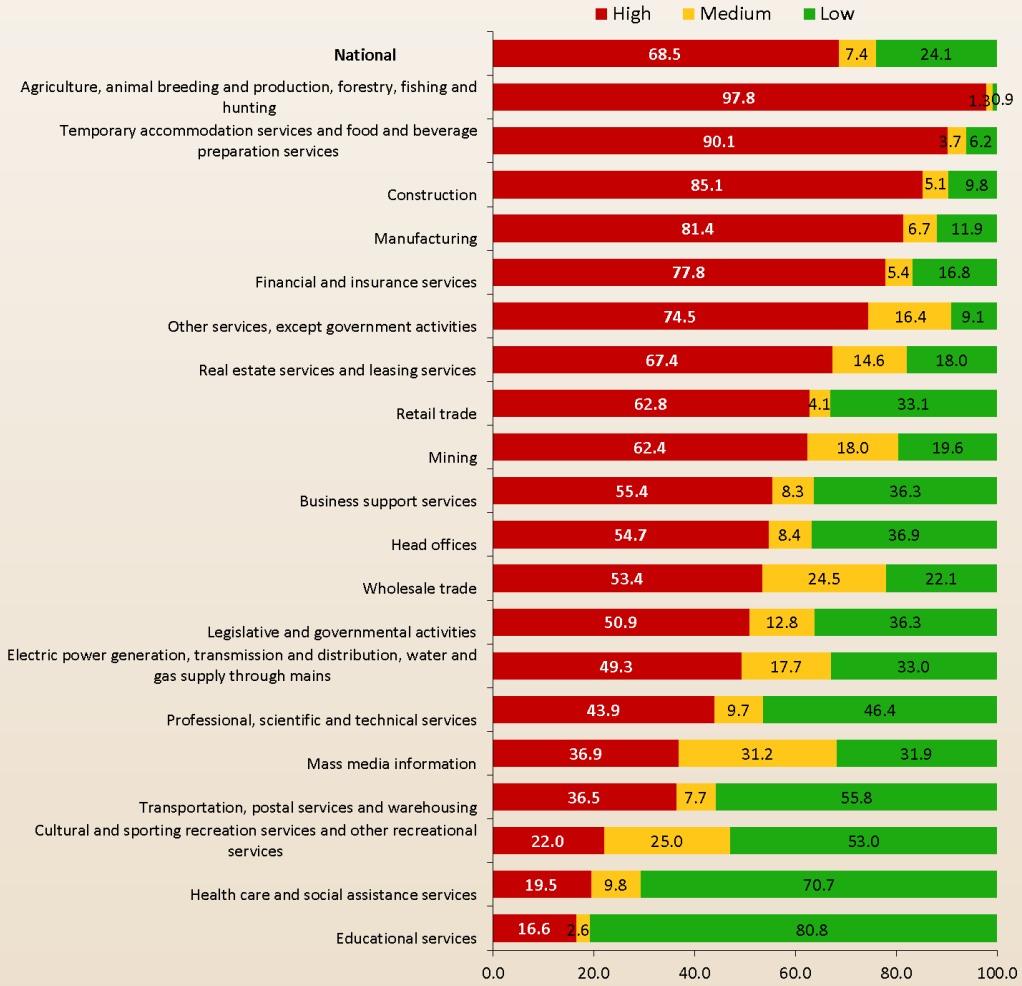


Source: Prepared by Banco de México, based on Frey and Osborne (2017).

Box:
Automation in Mexico from a Regional Perspective

Employed Population, by Range of Likelihood of Automation and by Sector of Economic Activity

Shares

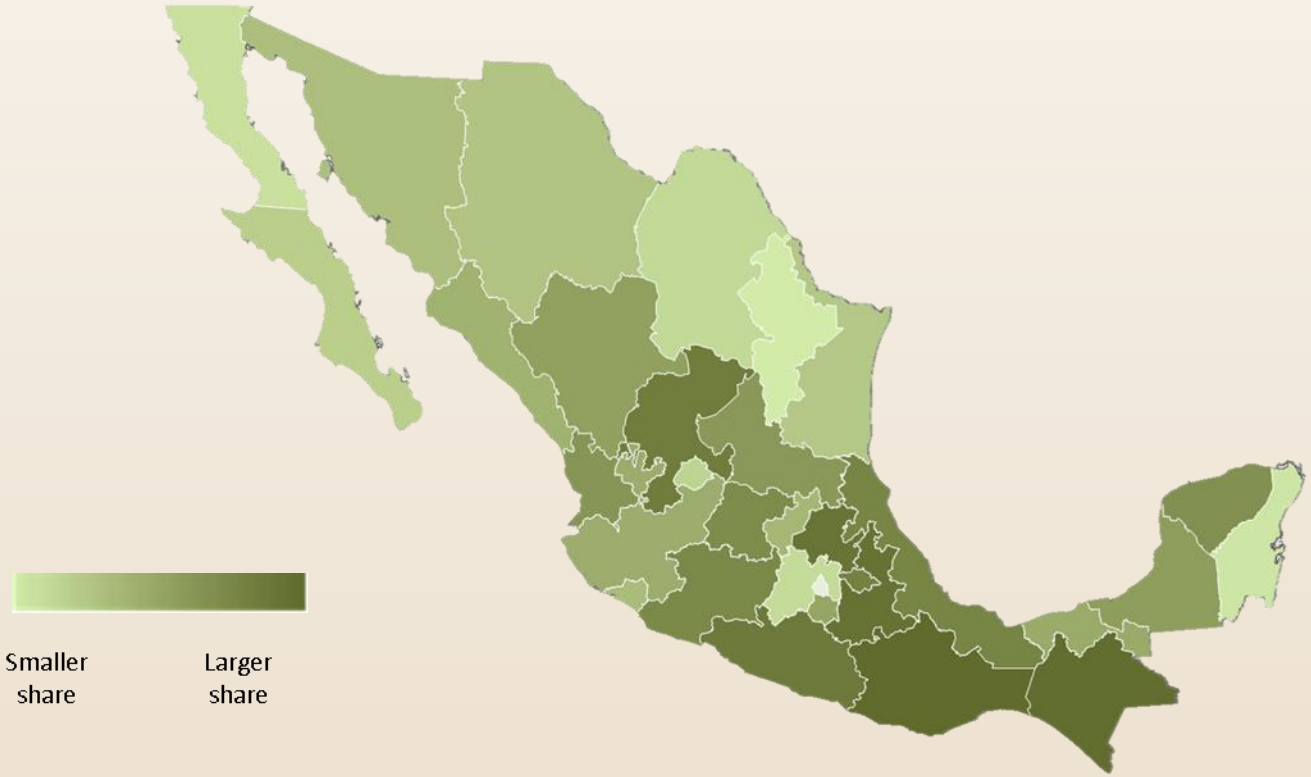


Note: The data correspond to the average of all quarterly ENOE surveys released between 2005 and 2017.
Source: Prepared by Banco de México based on data from ENOE (INEGI) and Frey and Osborne (2017).

Box:
Automation in Mexico from a Regional Perspective

Employed Population, by State, with High Likelihood of Automation

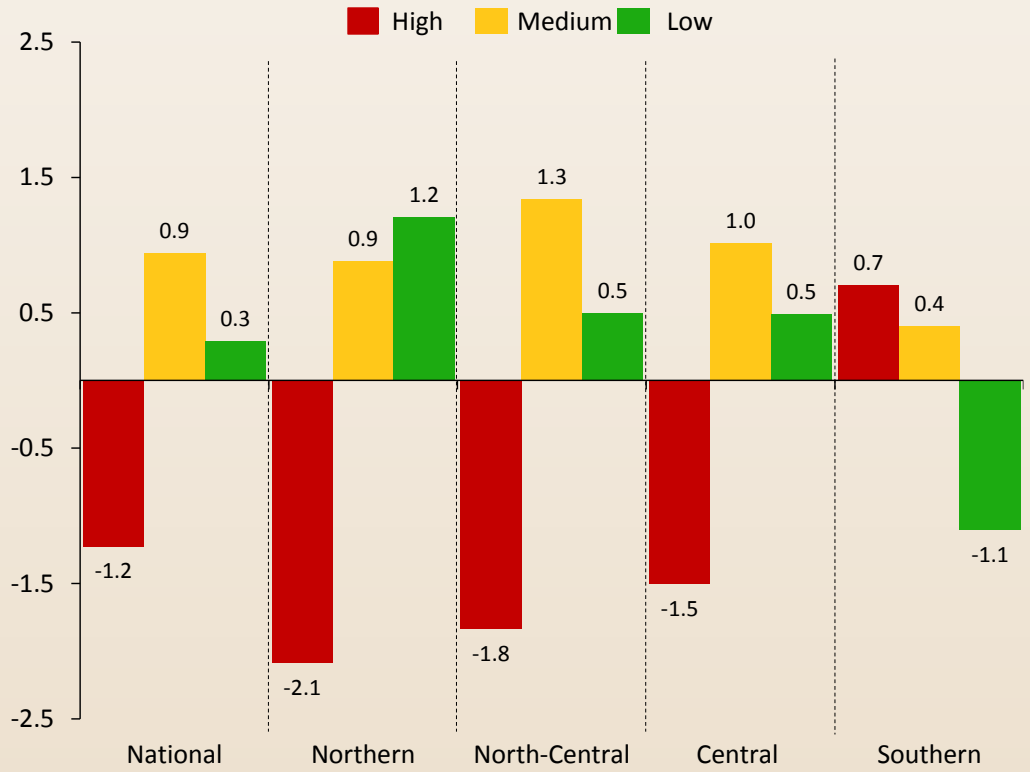
Share



Note: The data correspond to the average of all quarterly ENOE surveys released between 2005 and 2017.
Source: Prepared by Banco de México based on data from ENOE (INEGI) and Frey and Osborne (2017).

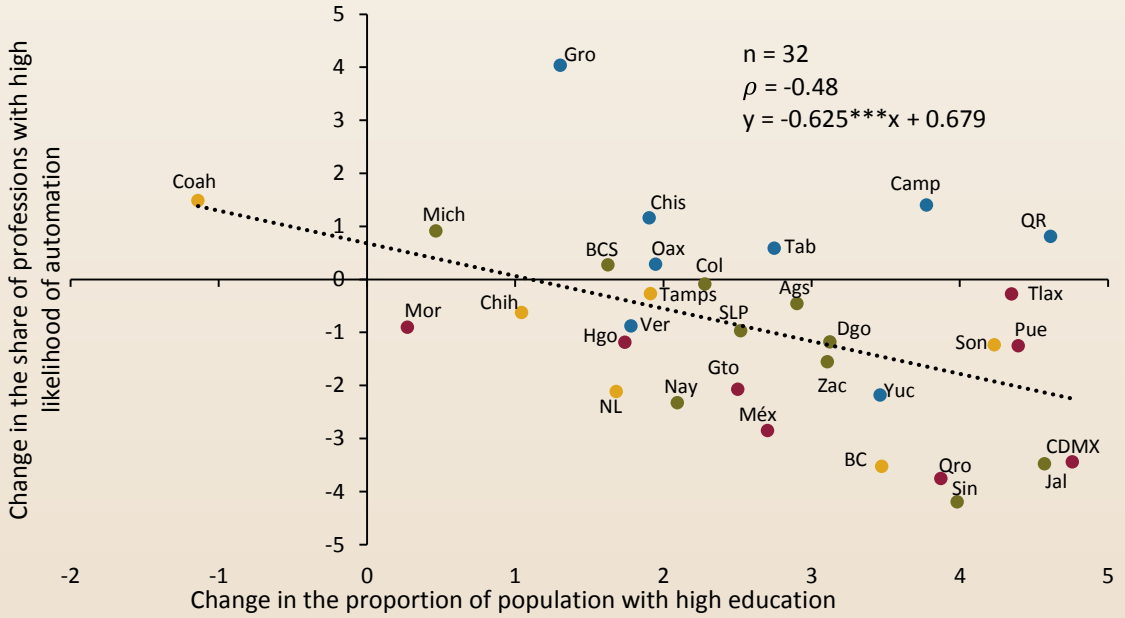
Box:
Automation in Mexico from a Regional Perspective

Change in the Composition of Occupations, by Range of Likelihood of Automation, 2005 – 2017
Percentage points



Note: The information presented corresponds to the change between 2005 and 2017 of the annual average of the participation of each group of the employed population.
Source: Prepared by Banco de México with data from ENOE (INEGI) and Frey and Osborne (2017).

Change in the Participation of Employed Population with High Education and High Risk of Automation, 2005 – 2017
Percentage points



Note: Symbols *** denote statistical significance at 1%.
Source: Prepared by Banco de México with data from ENOE (INEGI) and Frey and Osborne (2017).

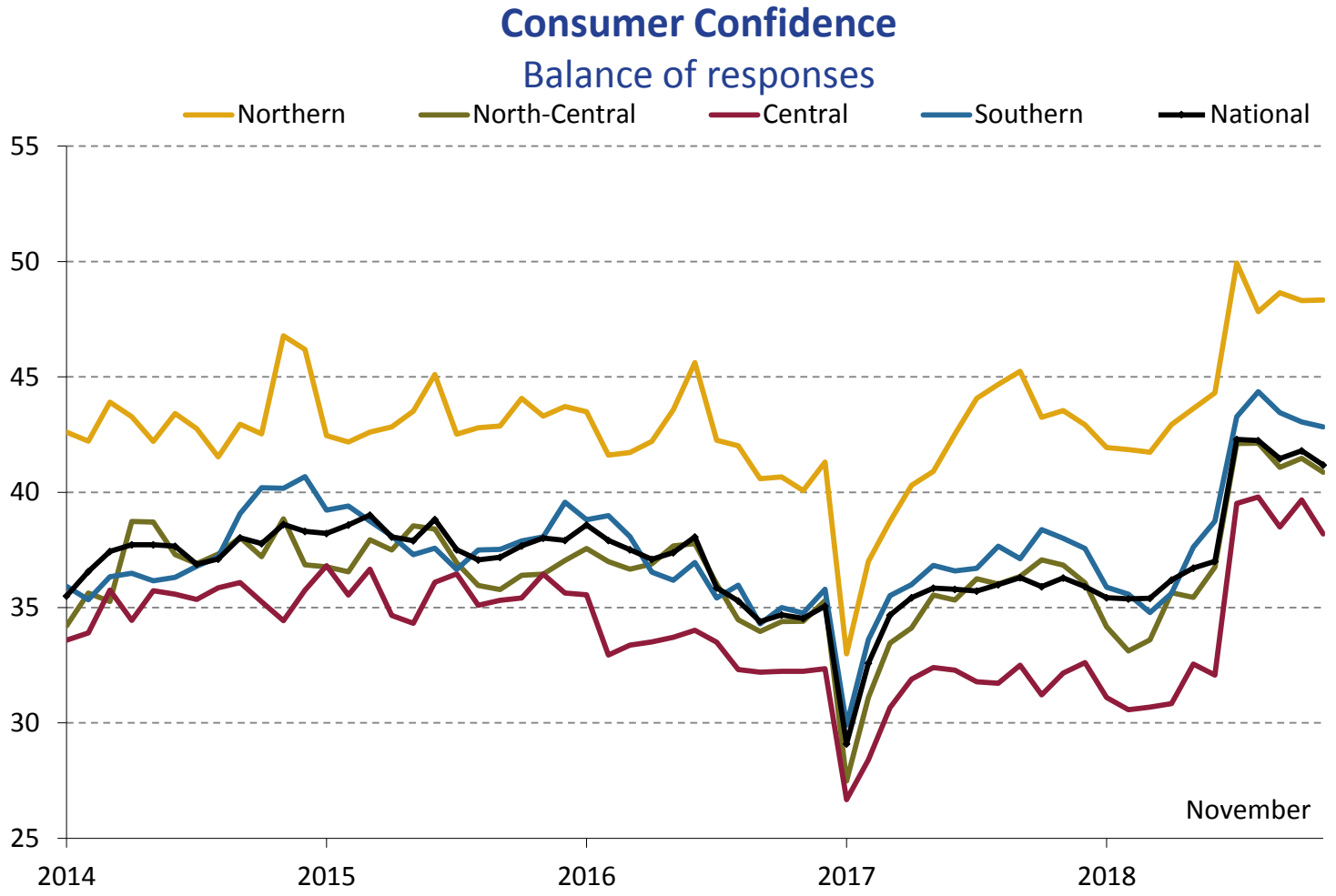
Box:
Automation in Mexico from a Regional Perspective

- A share of the Mexican population is employed in jobs with a high likelihood of automation, which is similar to other developing countries. This share tends to be lower in the states of the Northern and central regions, as compared to the states in the south of Mexico.

- The results of this Box point to a positive transition of the labor force towards jobs with a lower risk of automation, especially in the states in the Northern and central regions, which have had a better economic performance and a stronger integration in global value chains.

- In this context, it is necessary to continue encouraging public policies that allow to meet labor market requirements for the following years in a context of automation. In particular, it is key for the educational policy to foster the development of cognitive skills (social and creative) to enable the successful integration of workers into businesses, above all in the country's most lagging-behind regions in terms of human capital.

The consumer confidence index remained at relatively high levels in October – November 2018 in all regions of Mexico, after a strong expansion observed in July.



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

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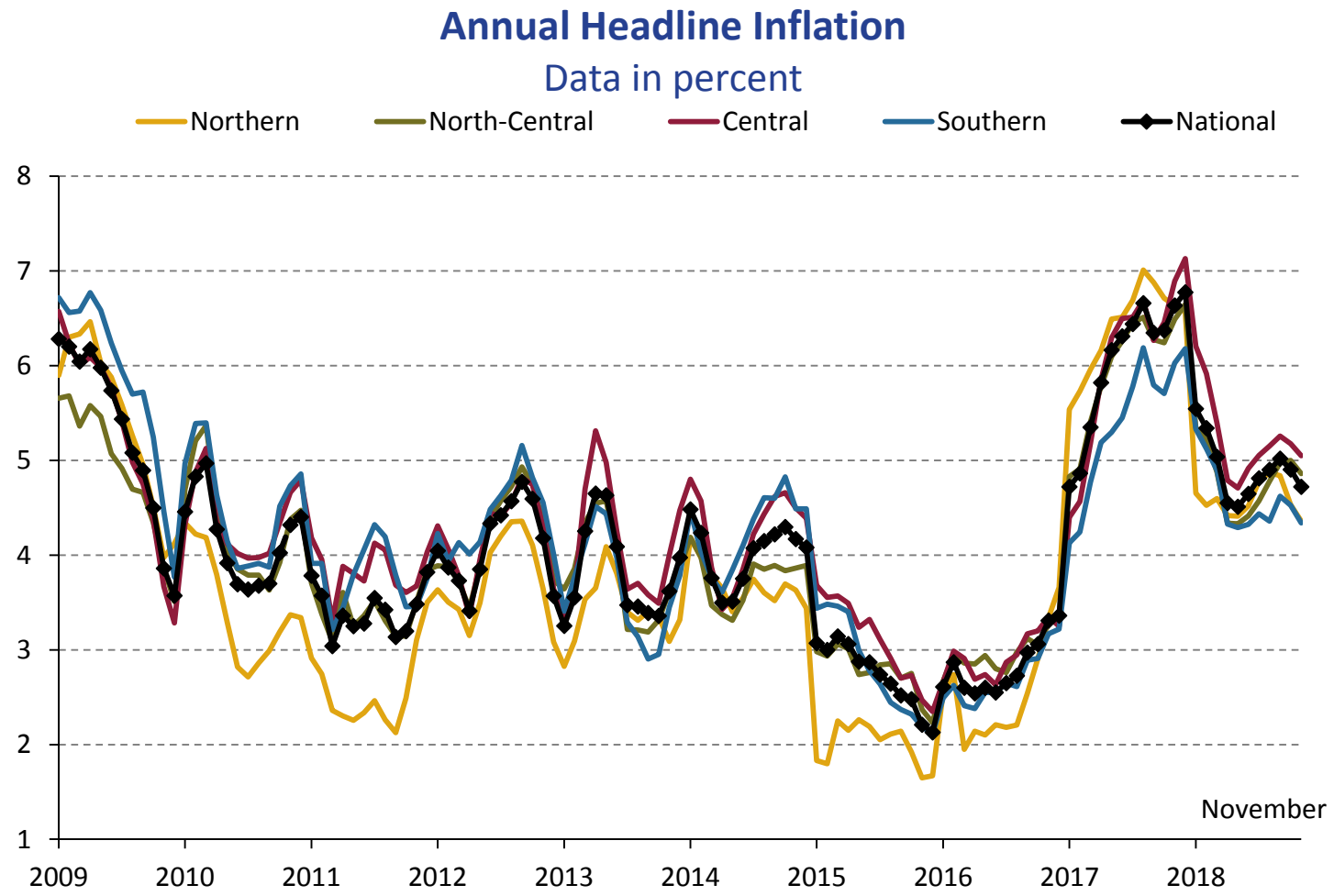
A. Economic activity

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III. Final remarks

During Q3 2018, inflation levels increased in all regional economies of Mexico.

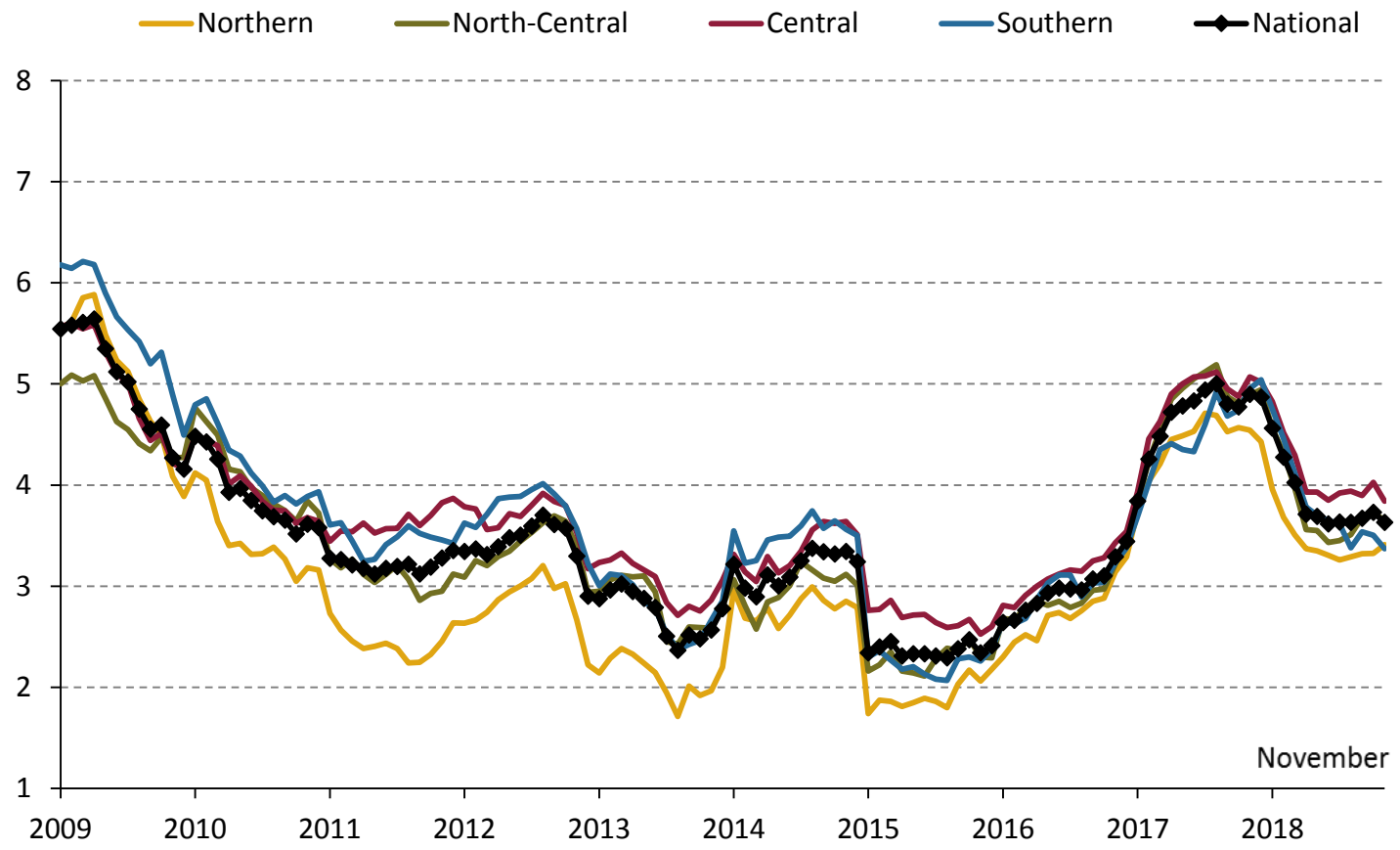


Source: Prepared by Banco de México with data from INEGI and own data.

In all regions, core inflation remained persistently high.

Annual Core Inflation

Data in percent

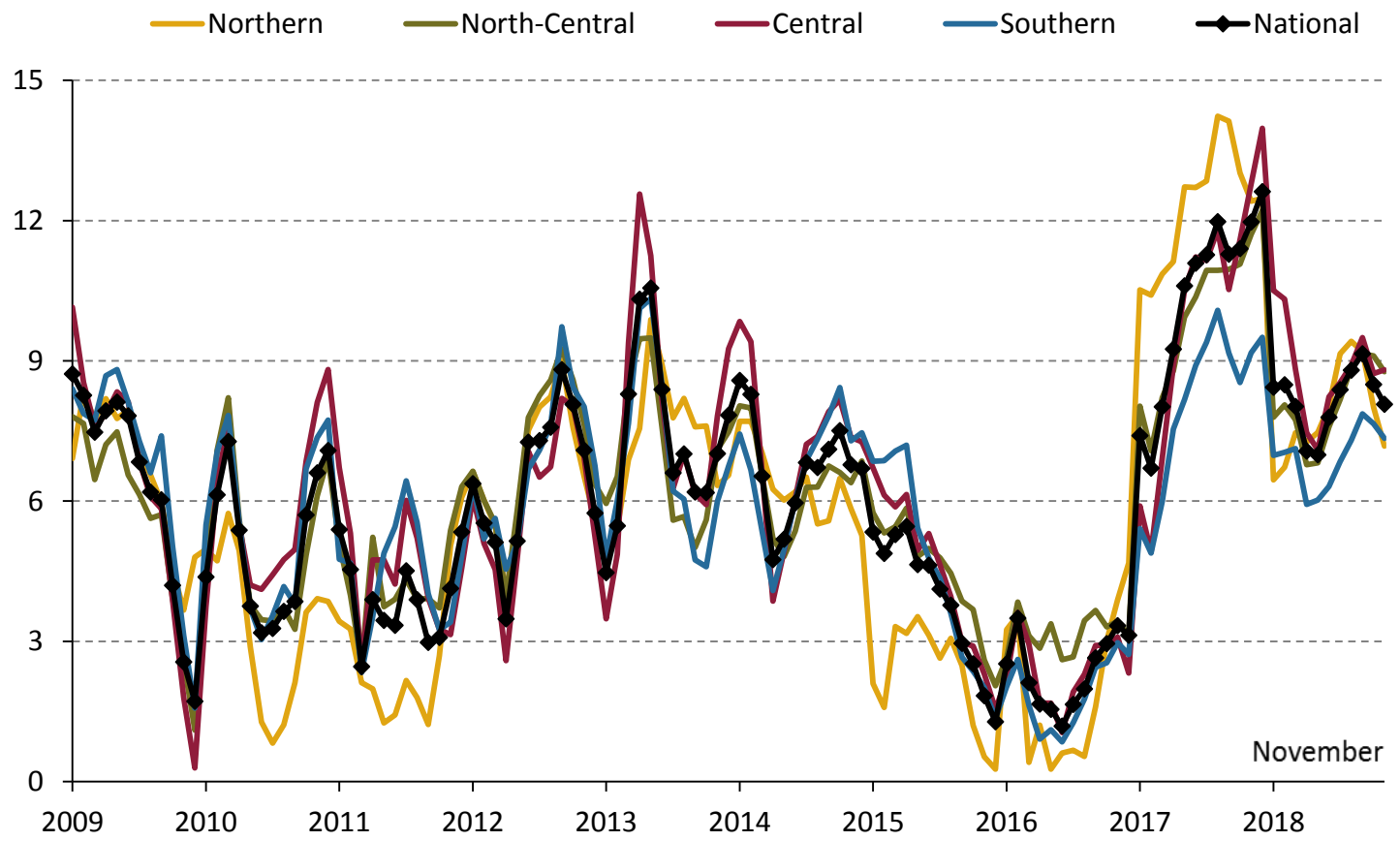


Source: Prepared by Banco de México with data from INEGI and own data.

During Q3 2018, non-core inflation increased across all regional economies.

Annual Non-core Inflation

Data in percent



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

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Within regions, interviews are distributed depending on the share of economic sectors and states in regional GDP.

Number of interviews by region and by sector

From September 24 to October 18, 2018

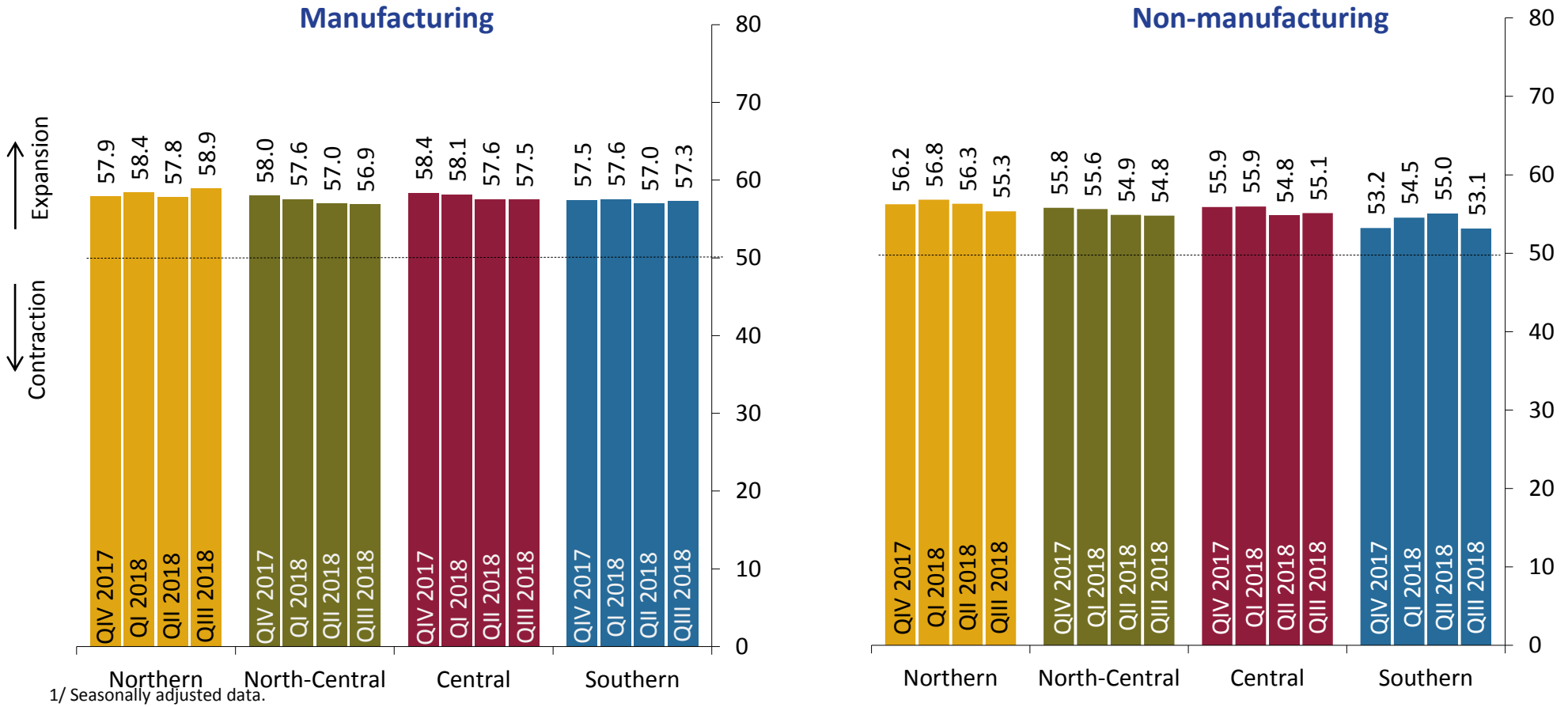
Sector	Northern	North-Central	Central	Southern	Total
Agriculture-food industry	11	13	14	14	52
Mining, electricity, gas and water supply	8	7	7	11	33
Manufacturing	24	13	16	9	62
Construction of buildings	18	15	16	19	68
Trade	18	18	16	19	71
Transportation and communications	9	9	13	10	41
Other services	17	10	15	17	59
Financial and insurance services	3	7	8	5	23
Tourism	6	14	7	8	35
Other sources	10	10	9	11	40
Total	124	116	121	123	484

Source: Prepared by Banco de México.

Regional indices of manufacturing and non-manufacturing orders suggest that both manufacturing and non-manufacturing activity will continue to expand over the next three months in all regional economies. In the manufacturing sector, the signal of expansion strengthened at the margin in the Northern and Southern regions. In the non-manufacturing sector this signal weakened in all regions of Mexico with respect to Q2, except for the Central one.

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

Diffusion indices



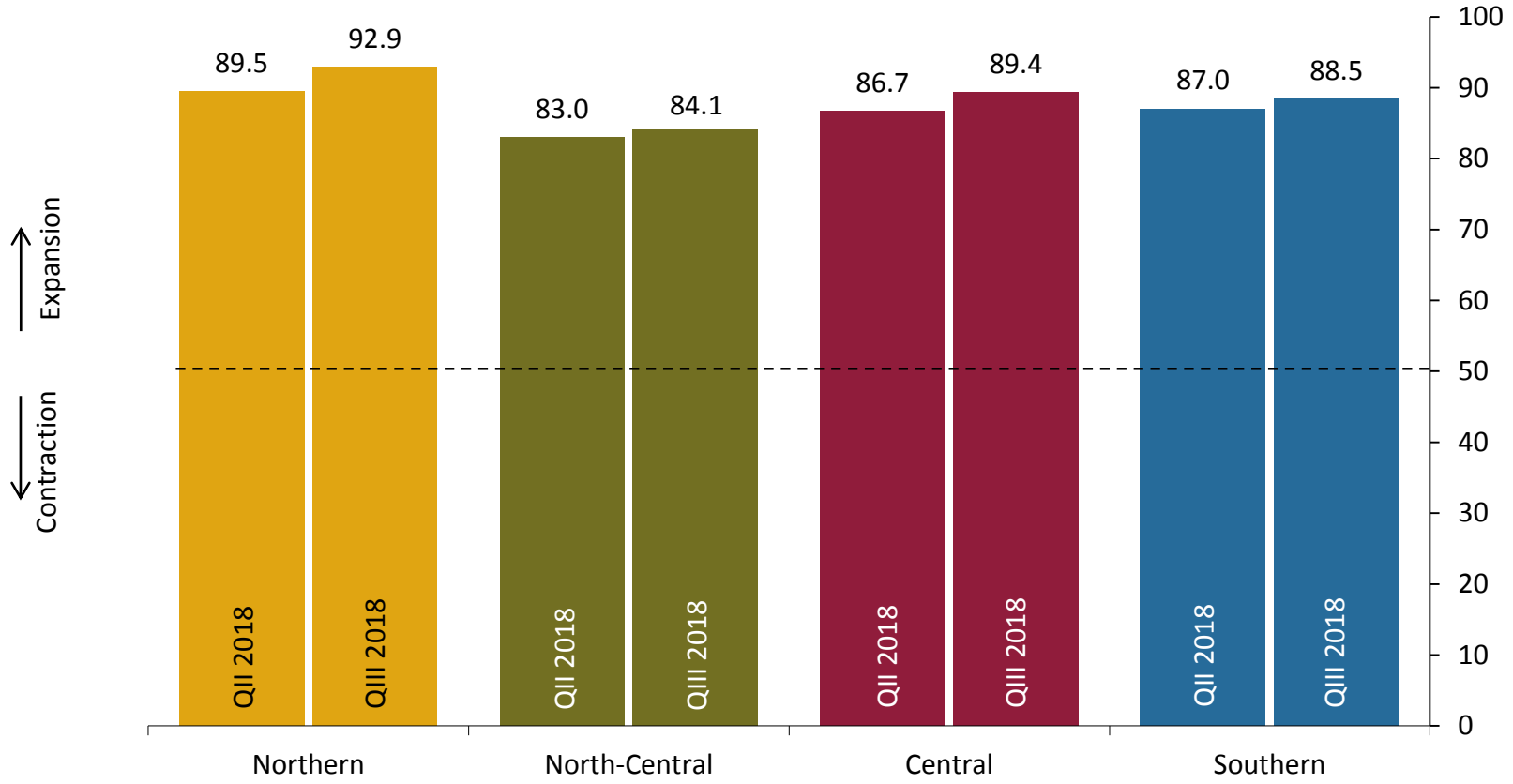
1/ Seasonally adjusted data.

Source: Banco de México.

During the following twelve months, business agents consulted in the four regions anticipate an increase in demand for their goods and services. This signal was even more intense than that in Q2.

Business Agents' Expectations: Demand over Next 12 Months [1/]

Diffusion indices

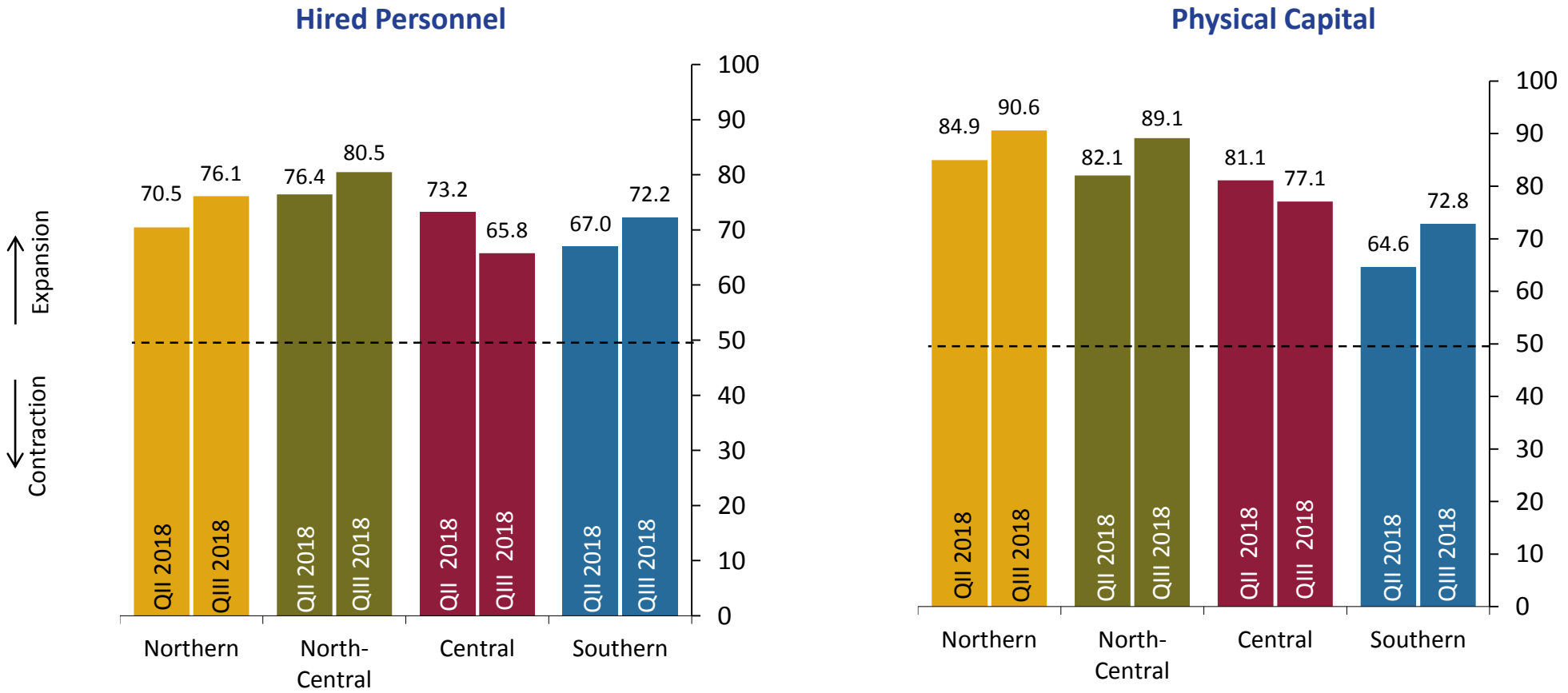


1/ Results obtained from responses to the question: "With respect to the volume of sales of your goods and services over the previous 12 months, how do you expect your sales' volume to change in the next 12 months?", from interviews conducted by Banco de México.

Consistent with the expected growth in demand for their own goods and services, business agents anticipate an expansion of hired personnel and physical capital in different regions of Mexico. It should be noted that both indicators had a more intense signal with respect to Q2, except for the Central region.

Business Agents' Expectations: Hired Personnel and Physical Capital, 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 change 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 investment levels to change in the following 12 months?", from interviews conducted by Banco de México.

Business Agents' Opinion on Risks to Regional Economic Activity (based on data collected between September 24 and October 18, 2018)

Upward risks

- That the new trade agreement with the U.S. and Canada leads to a notable recovery in investment.
- That greater-than-expected levels of investment are observed, specifically in public infrastructure.

Downward risks

- That public safety conditions deteriorate.
- That uncertainty over the public policies to be implemented by the new administration persists.
- That the referred policies lead to the deterioration of public finances, which would propitiate an environment of higher uncertainty, which would, in turn, lead to lower investments.

Box:
Regional Infrastructure and Economic Development: 2000 - 2015

- There is broad consensus on the importance of infrastructure for regional productivity and economic growth.
  - ✓ Indeed, a greater availability of infrastructure contributes to increase total factor productivity (Munnel, 1992, Fernald, 1999), which, among other reasons, allows businesses to be better connected and integrated into state, regional and global markets (Deichmann et al., 2002), enabling them to produce more efficiently.
- The goal of this Box is to build a Multidimensional Infrastructure Index (MII) for period 2000 - 2015.
  - ✓ Different infrastructure facilities are grouped into 6 categories: i) transportation; ii) urban; iii) financial; iv) telecom; v) human capital; and vi) energy.

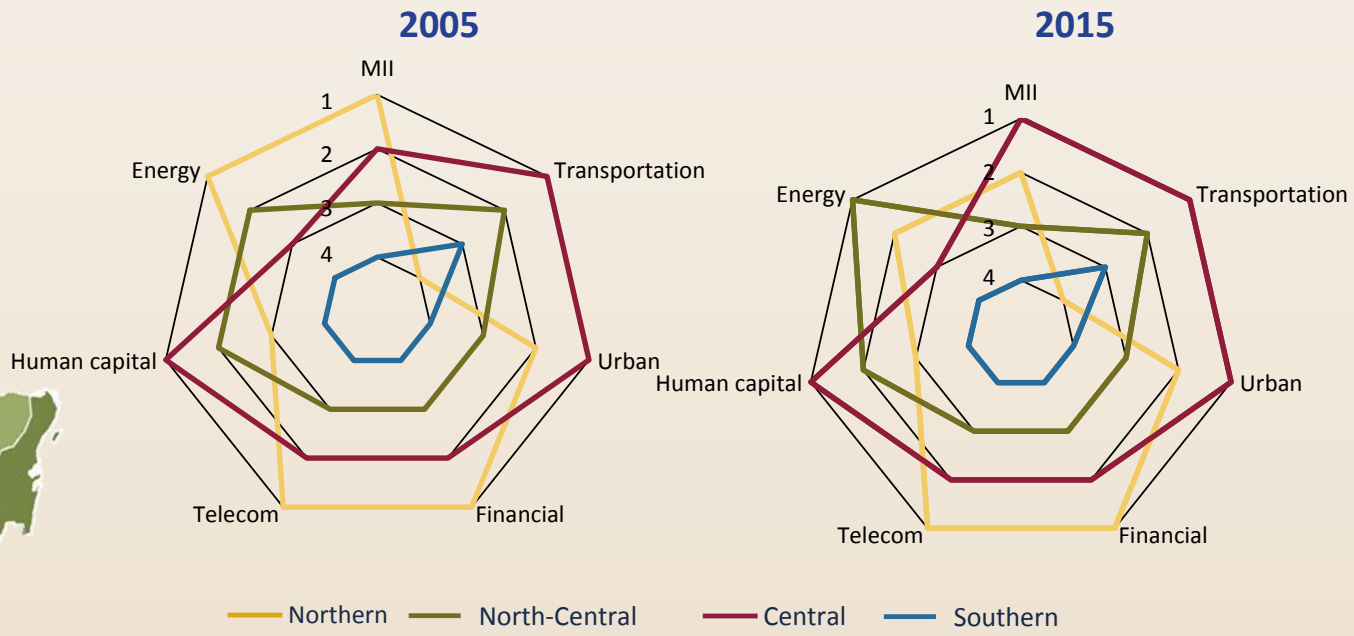
Box:
Regional Infrastructure and Economic Development: 2000 - 2015

MII, by State, 2015



Estimated by Banco de México with data from INEGI, SCT, CNBV, SS-DGIS, SIE and SENER.

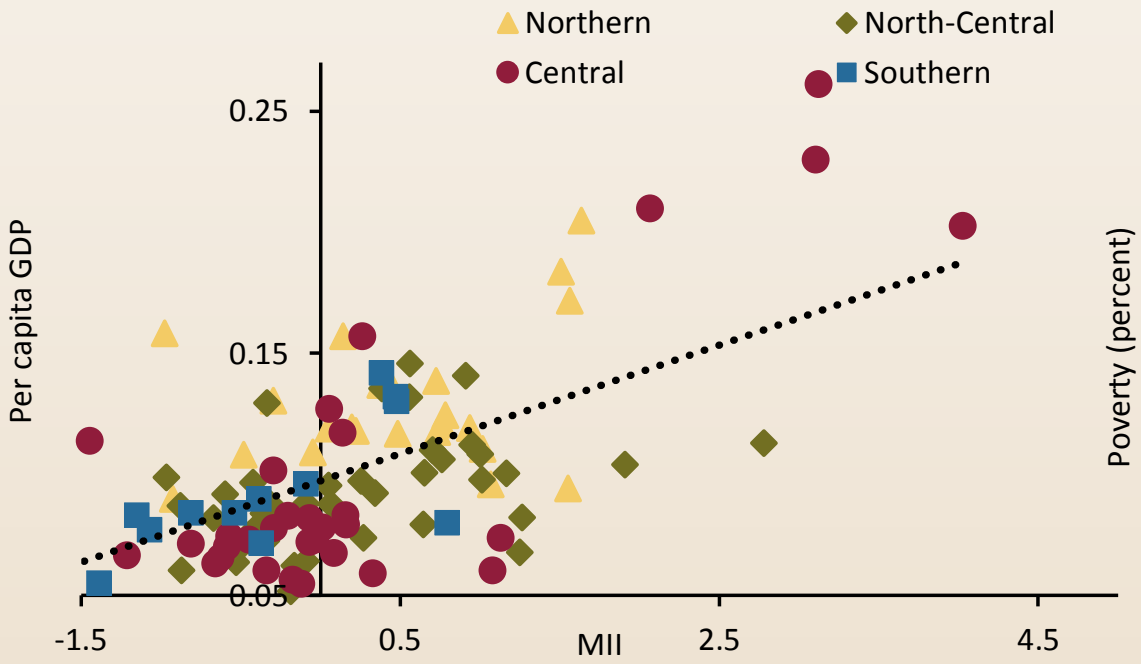
Regional Ranking, by Subindices



Banco de México's estimate.

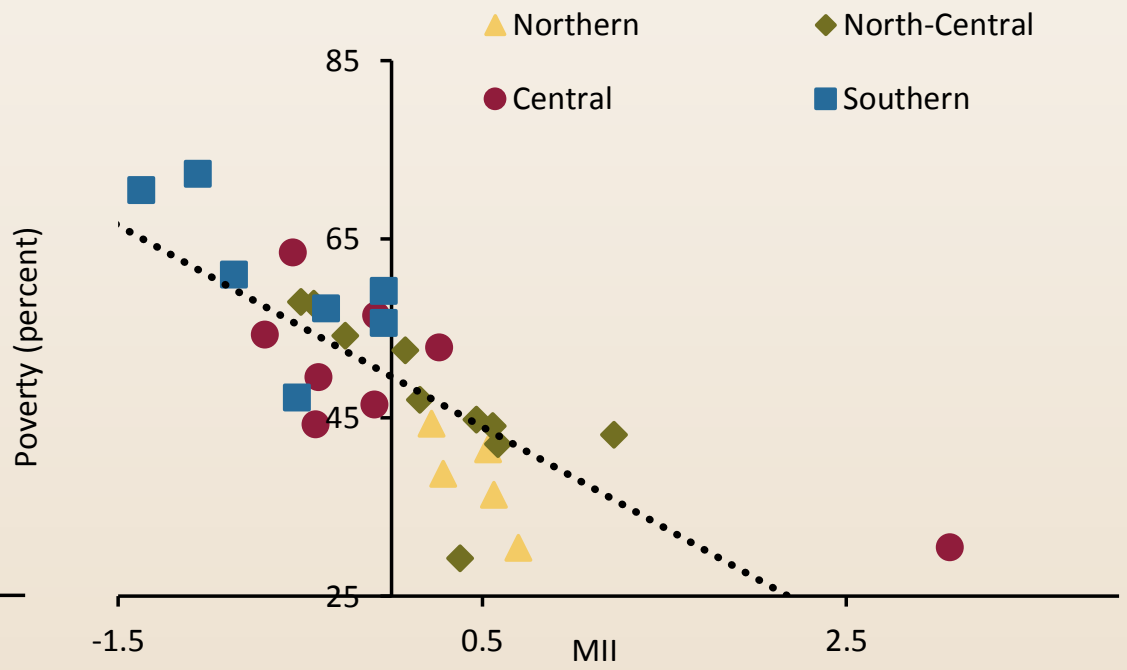
Box:
Regional Infrastructure and Economic Development: 2000 - 2015

MII and Per capita GDP, 2000 - 2015



Source: Estimated by Banco de México with data from INEGI, SCT, CNBV, SS-DGIS, SIE and SENER.

MII and Poverty, 2000 - 2010



Source: Estimated by Banco de México with data from INEGI, SCT, CNBV, SS-DGIS, SIE, SENER and CONEVAL.

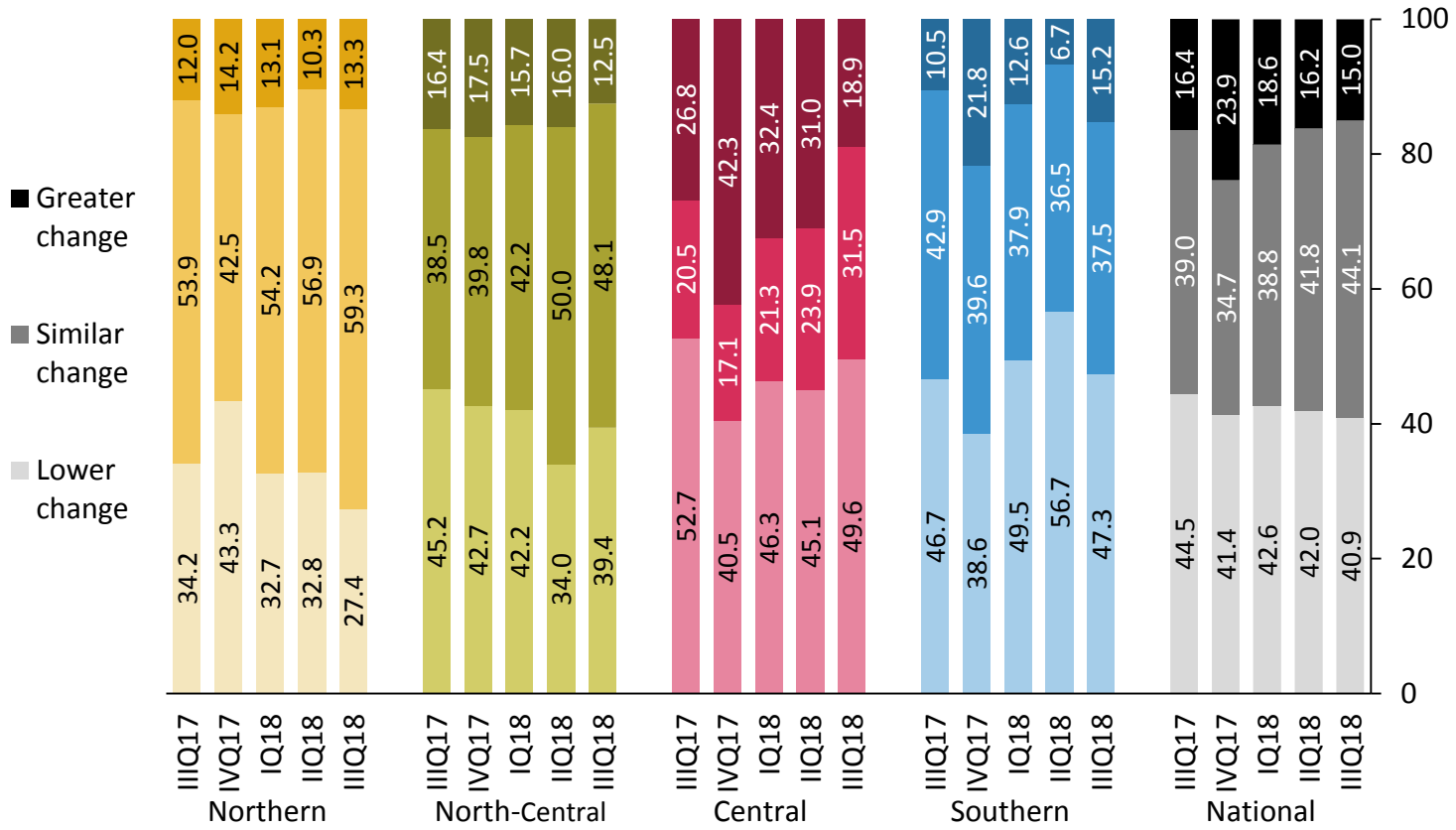
Box:
Regional Infrastructure and Economic Development: 2000 - 2015

- During the period 2000 – 2015, Mexican regions maintained their relative position in terms of infrastructure provision.
  - ✓ In particular, the Northern and Central regions showed a better infrastructure level as compared to the Southern region in practically all infrastructure categories.
  - ✓ Given the existing literature and based on the empirical evidence, the positive correlation between infrastructure endowment and indicators of social development and economic growth may suggest the need to raise infrastructure levels, especially in the country's most lagged-behind regions.
- In the future, it is necessary to continue promoting public policies aimed at improving infrastructure provision, in a broad sense, in all regional economies, which would allow them to successfully integrate into the global and national economy and to benefit more from the advantages of trade.
  - ✓ In turn, this could contribute to raise the population's welfare and reduce inequality and poverty indices in the most lagged-behind states.

Regarding the sales' prices of their own goods and services, most business contacts interviewed between September 24 and October 18, 2018 in different Mexican regions continue expecting similar or lower annual changes, as compared to those observed over the previous 12 months. However, there is a greater share of contacted business agents who anticipate a greater change in their sales' prices in the Northern and Southern regions.

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

Percentage of responses

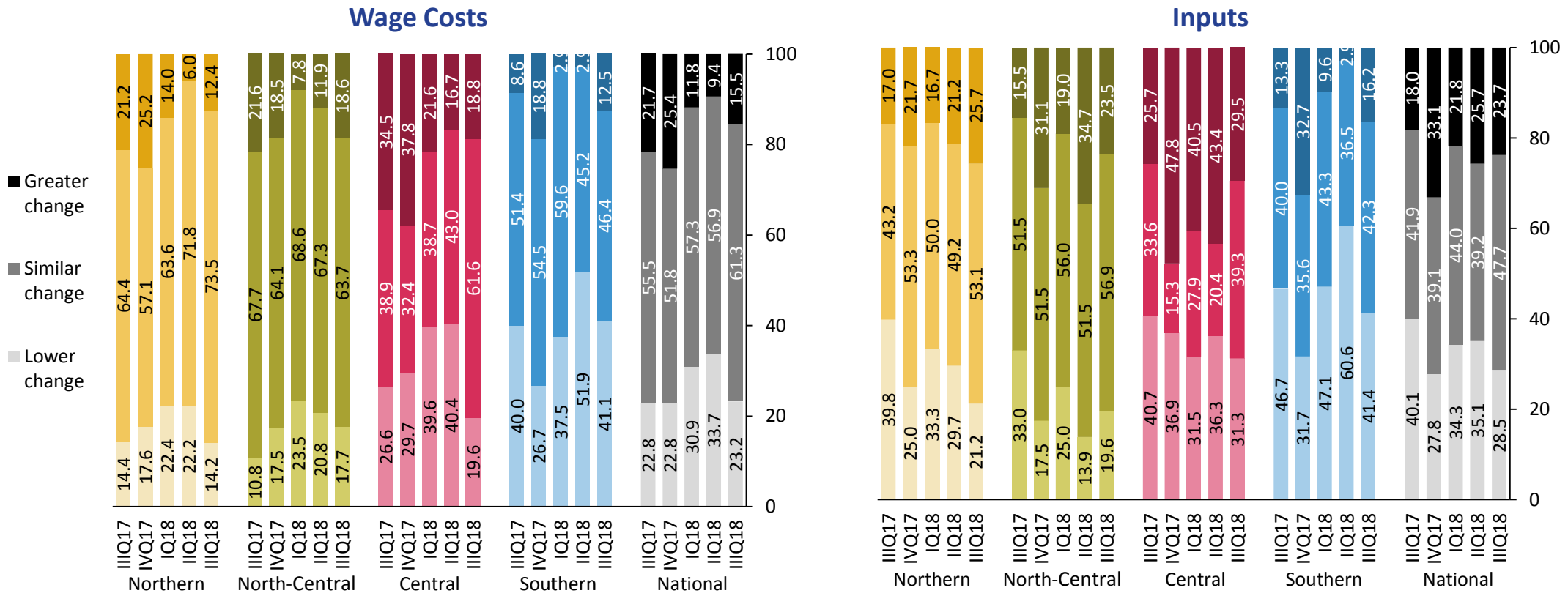


1/ Results obtained from responses to the question: "With respect to the previous 12 months, how do you expect sales' prices in your sector to change over the next 12 months?", from interviews conducted by Banco de México.

Most business agents interviewed between September 24 and October 18, 2018 in all regions estimate that both wage costs and input prices will grow at a rate similar or lower than that registered over the previous twelve months.

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

Share of responses



1/ Results obtained from responses to the question: "With respect to the previous 12 months, how do you expect 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.

Outline

I. Regional Economic Report

II. Results July - September 2018

   A. Economic activity

   B. Inflation

   C. Economic outlook (based on data collected between July 2 and October 18, 2018)

III. Final remarks

Final remarks

- Although the recent announcements of the new trade agreement in North America have lowered the uncertainty levels perceived by economic agents, there are still obstacles to its ratification.
- In addition to continue strengthening the macroeconomic framework, in order to boost greater investment levels it is key to address the structural and institutional issues that discourage investment and hinder productivity growth.
- Specifically, actions should be taken to enhance greater competition and to contribute to increase investment in infrastructure, which would strengthen the domestic market and regional export vocation. In addition, public policies should be implemented to combat public insecurity issues, to guarantee respect for private property, and to generate an environment of certainty for investment, and for the rule of law to prevail. This will lead to greater growth and better welfare in all Mexican regions.



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December2018

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