

Regional Economic Report

October – December 2018

BANCO DE MÉXICO

March 14, 2019

Outline

I. Regional Economic Report

II. Results October – December 2018

   A. Economic activity

   B. Inflation

   C. Economic outlook (based on data obtained between January 7 and January 31, 2019)

III. Boxes

IV. 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 Mexico's regions.[1]
- The information herein presented 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 Q4 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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I. Regional Economic Report

II. **Results October – December 2018**

   A. **Economic activity**

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Economic Activity

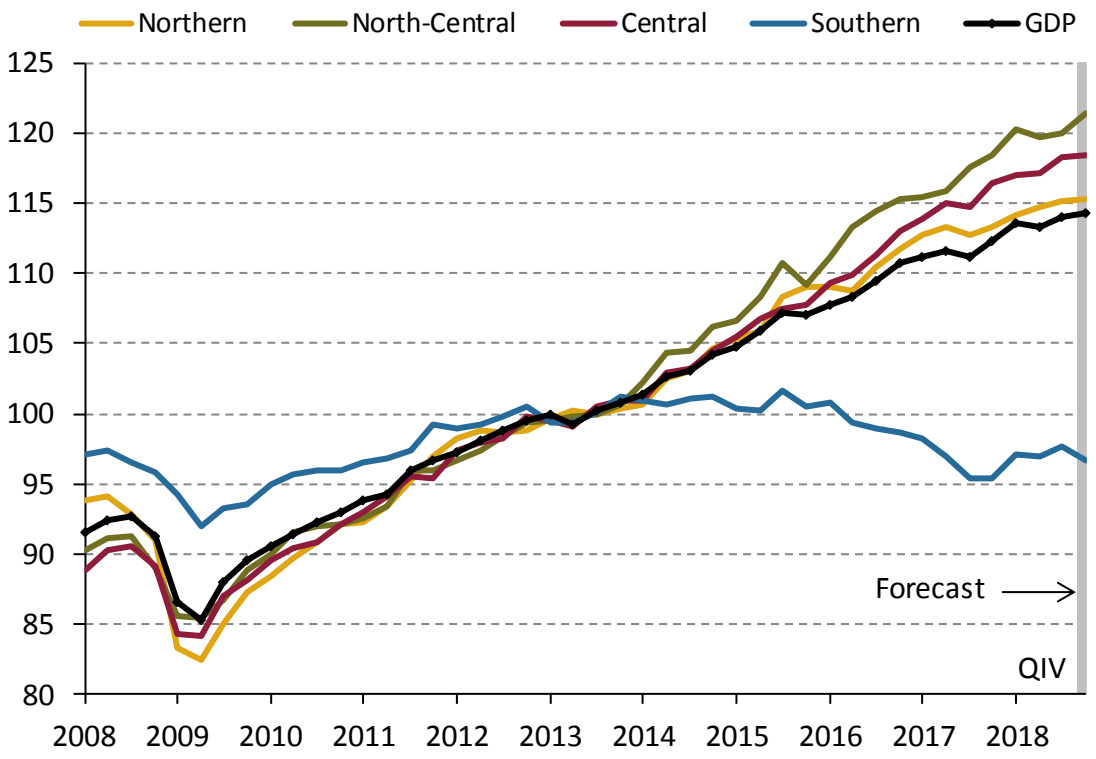
- In Q4 2018, economic activity in Mexico decelerated significantly as compared to Q3, and such deceleration might extend to the early part of 2019.
  - ✓ This reflected both the slowdown of the global economy and the greater weakness of different components of domestic demand, and certain transitory factors.
- The weakness of domestic economic activity in Q4 was perceived across most regions of the country.

In Q4 the Southern region is estimated to have contracted and the Northern and Central regions, to have stagnated. In contrast, in the North-Central region economic activity is expected to have grown at a faster rate.

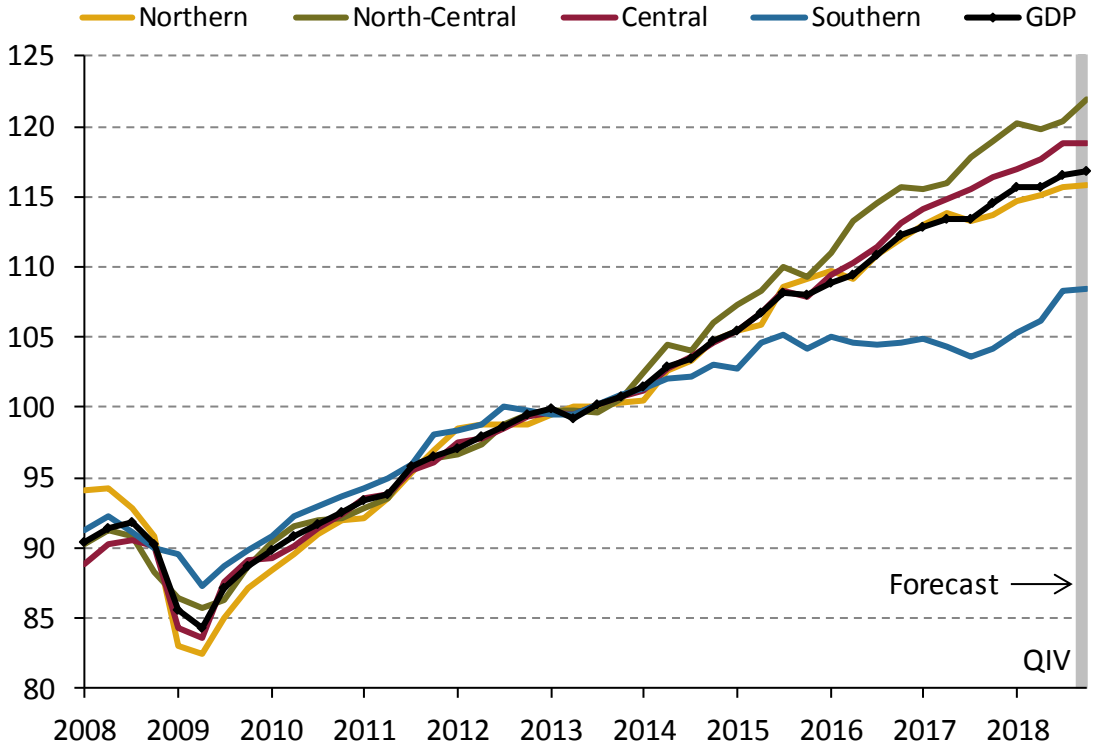
Quarterly Indicator of Regional Economic Activity [1/]

Index 2013=100

Total



Non-oil

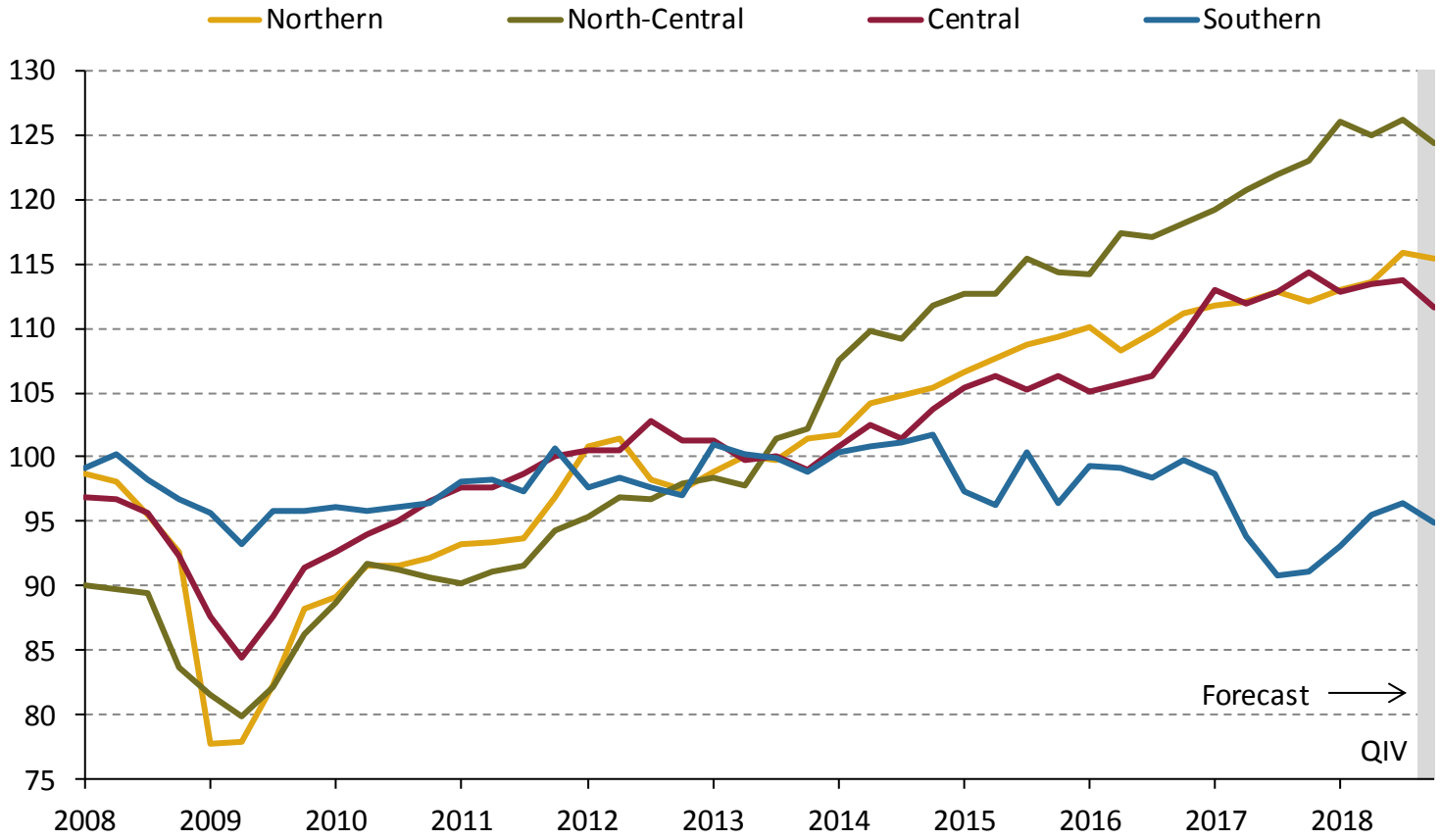


1/ The value of Gross Domestic Product (GDP) for Q4 2018 corresponds to the observed data.
Source: Estimated by Banco de México with seasonally adjusted series of domestic GDP and Quarterly Indicator of Economic Activity by State, INEGI.

During Q4 2018, manufacturing exhibited a weak performance, after the recovery observed in the first half of 2018. This evolution was reflected in a fall in manufacturing activity in all Mexican regions.

Regional Manufacturing Indicator

Index 2013=100, quarterly average

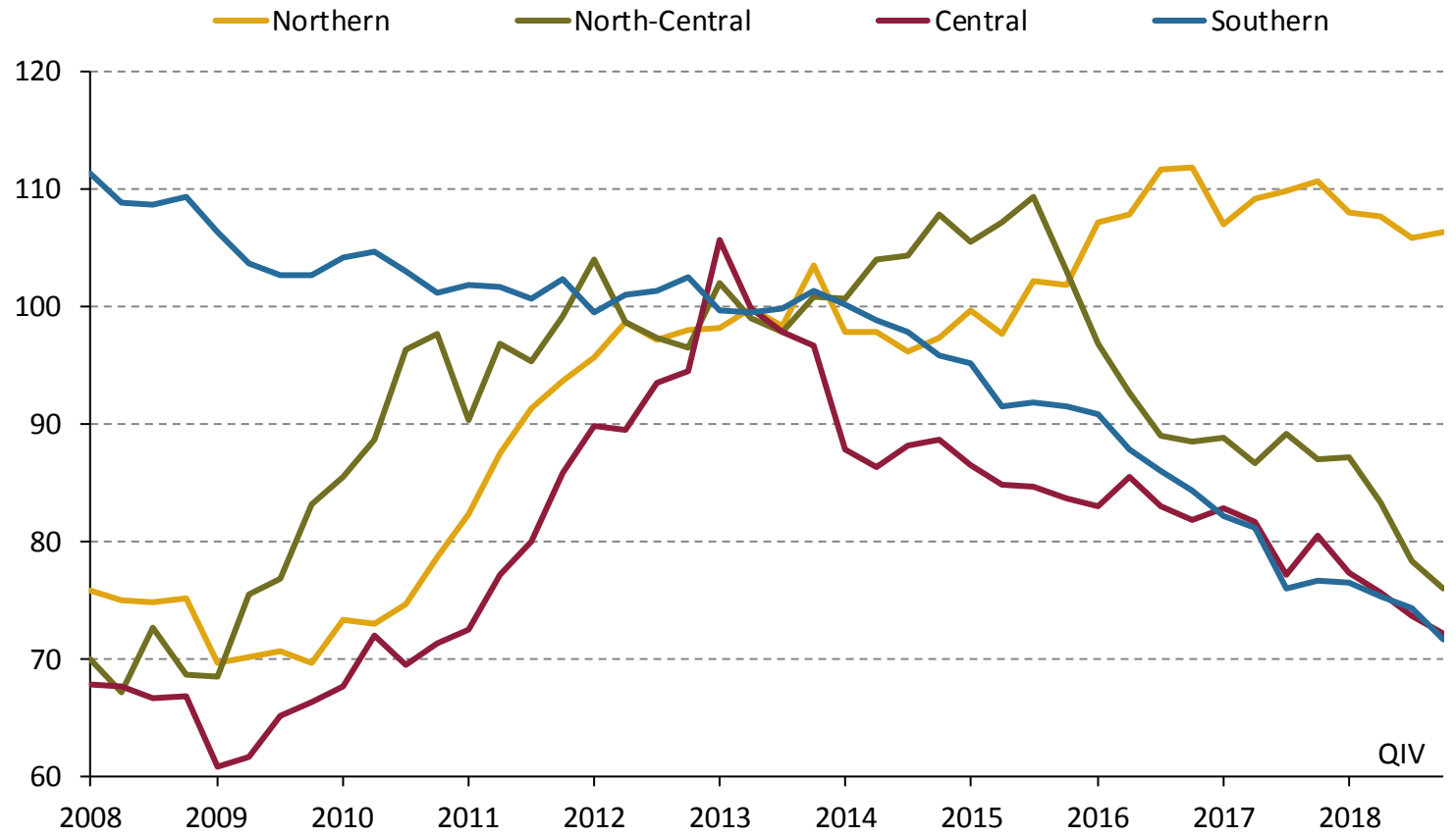


Source: Estimated by Banco de México with seasonally adjusted series of the Monthly Indicator of Manufacturing Activity by State, INEGI.

The mining, quarrying, and oil and gas extraction sector remained on a downward trajectory in all regions, except for the Northern one. This mirrored the continuous fall of oil and gas extraction and the decline in the item of metal ore mining and nonmetallic mineral mining in the Central, North-Central and Southern regions.

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

Index 2013=100, quarterly average



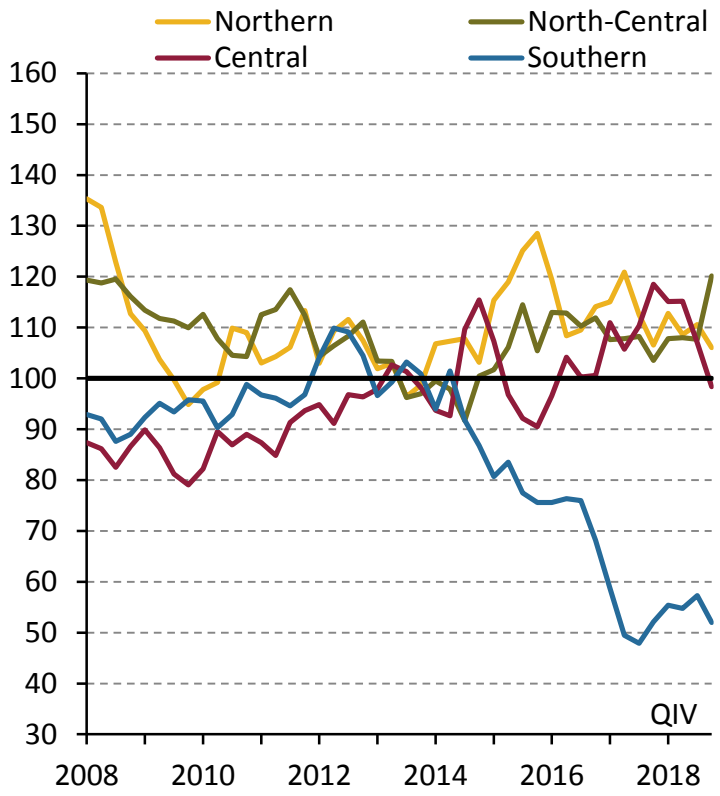
1/ Values for Q4 2018 are preliminary.
Source: Estimated and seasonally adjusted by Banco de México with the series of the Monthly Indicator of Mining Activity by State, INEGI.

The construction sector contracted in the Northern, Central and Southern regions, due to the negative performance of both public and private construction works. In contrast, in the North-Central region, construction expanded, essentially as a reflection of the favorable performance of private construction, which remains at particularly high levels in that region.

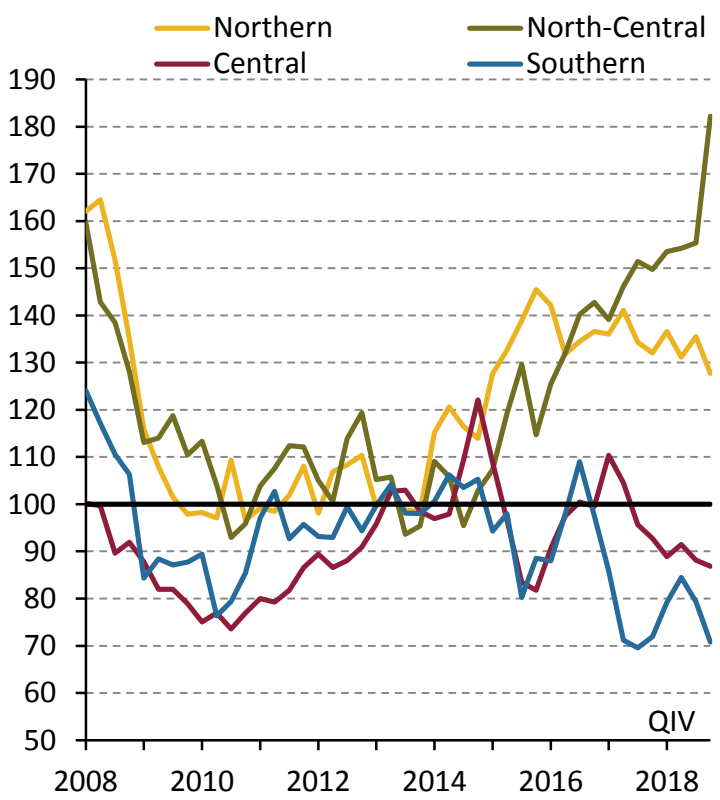
Real Value of Production in the Construction Industry by Region

Index 2013=100, quarterly average

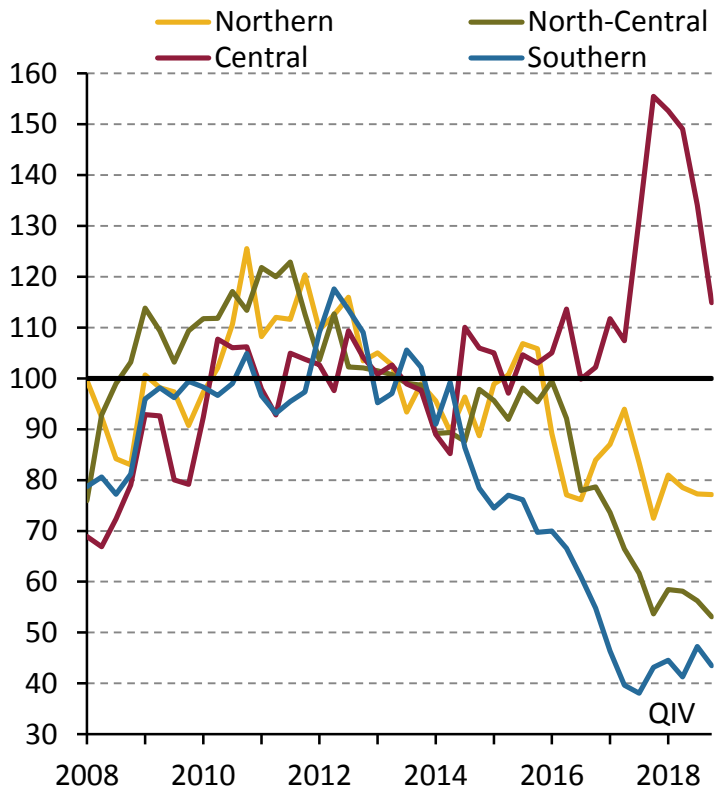
Total



Private



Public

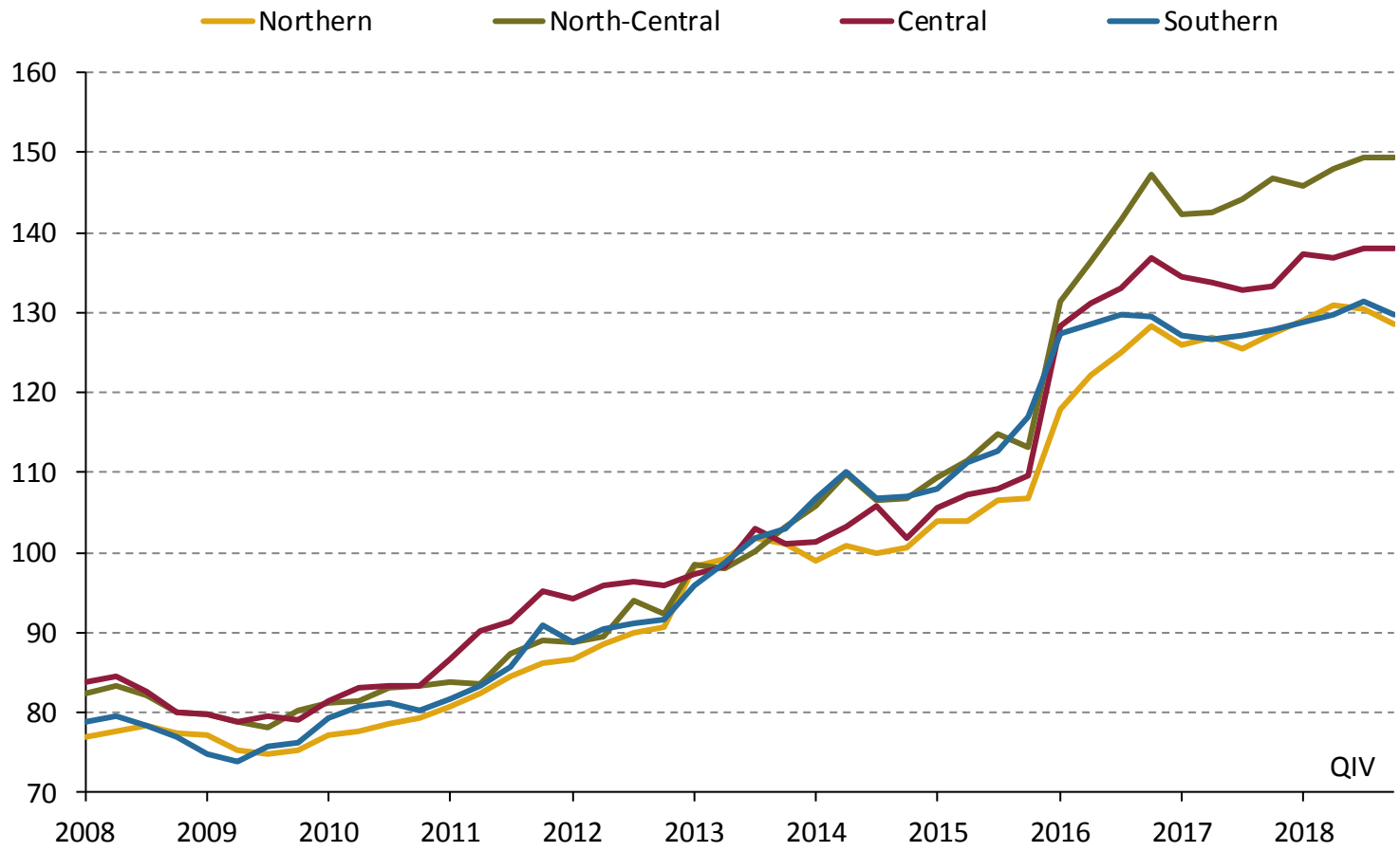


Source: Prepared and seasonally adjusted by Banco de México with data from the National Survey of Construction Companies, INEGI.

Trade, measured with the index of revenues from the supply of goods and services by retail business, contracted in the Northern and Southern regions, while in the central ones it underwent stagnation.

Regional Indicator of Trade

Index 2013=100, quarterly average



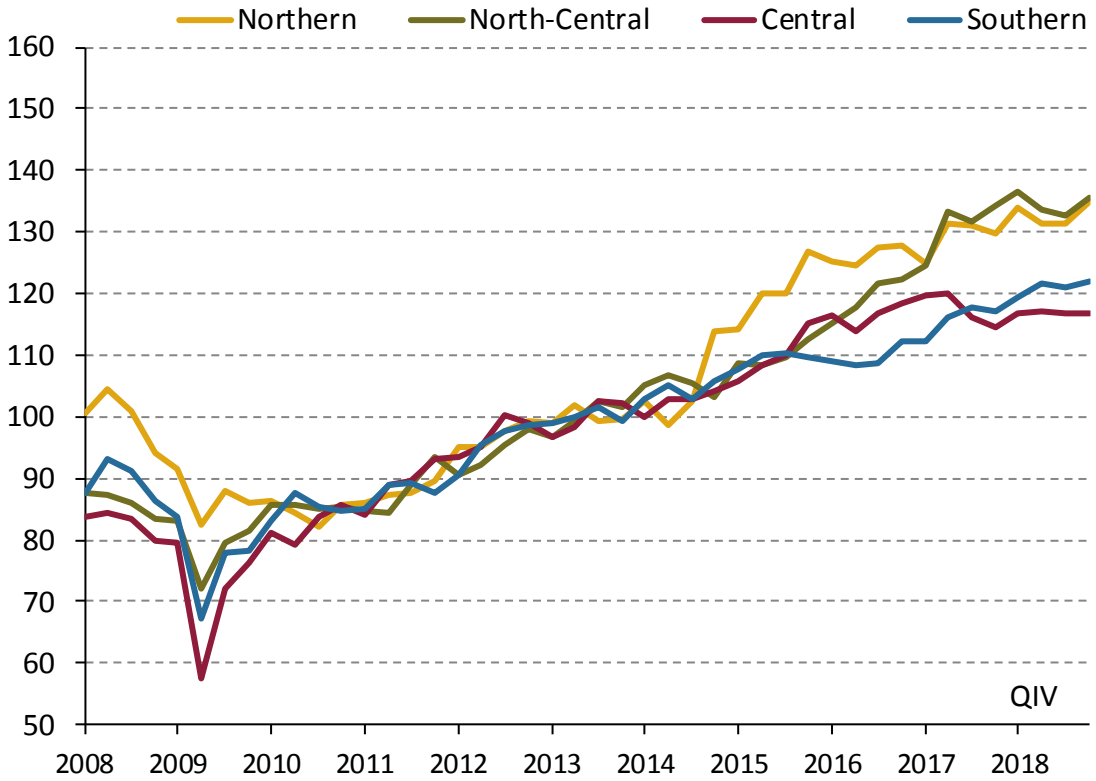
Source: Prepared and seasonally adjusted by Banco de México with the series of Revenues from the Supply of Goods and Services by Retail Business, by State, INEGI.

In Q4 the evolution of tourism, measured by hotel occupancy and inflow of passengers to airports, was positive, in general terms, after the weakness exhibited in Q3.

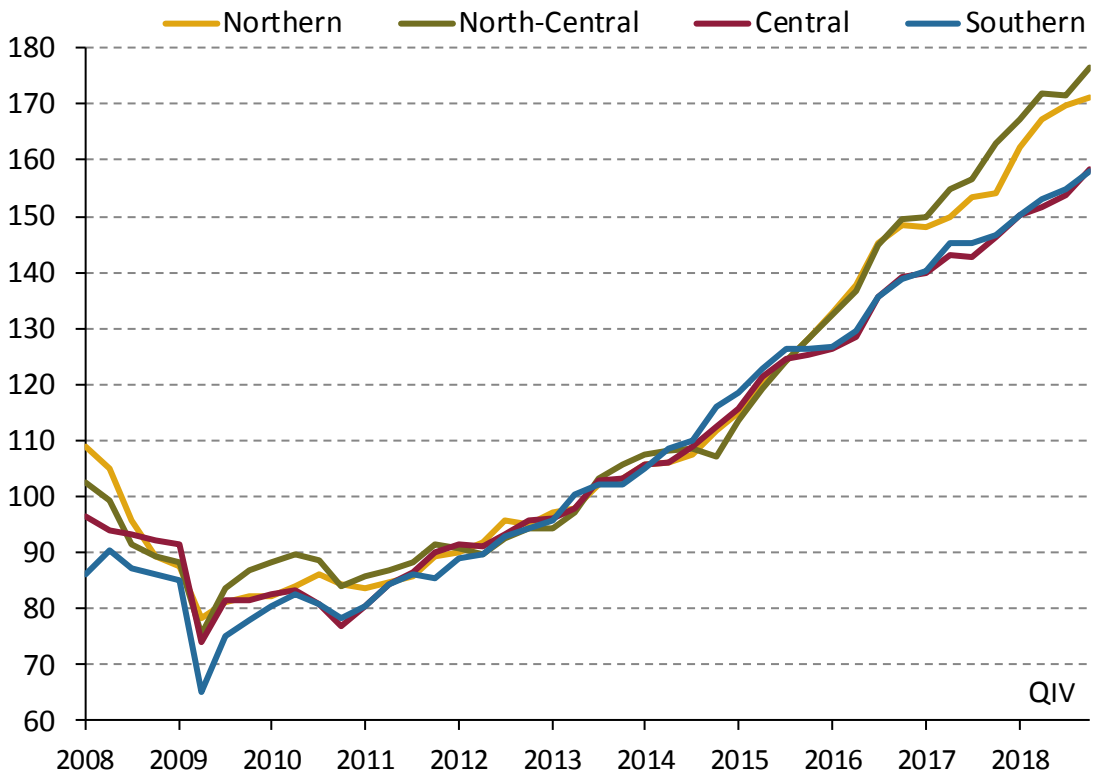
Regional Indicators of Activity in Tourism (Air Transportation and Traveler Accommodation)

Index 2013=100, quarterly average

Hotel Occupancy



Inflow of Passengers to Airports

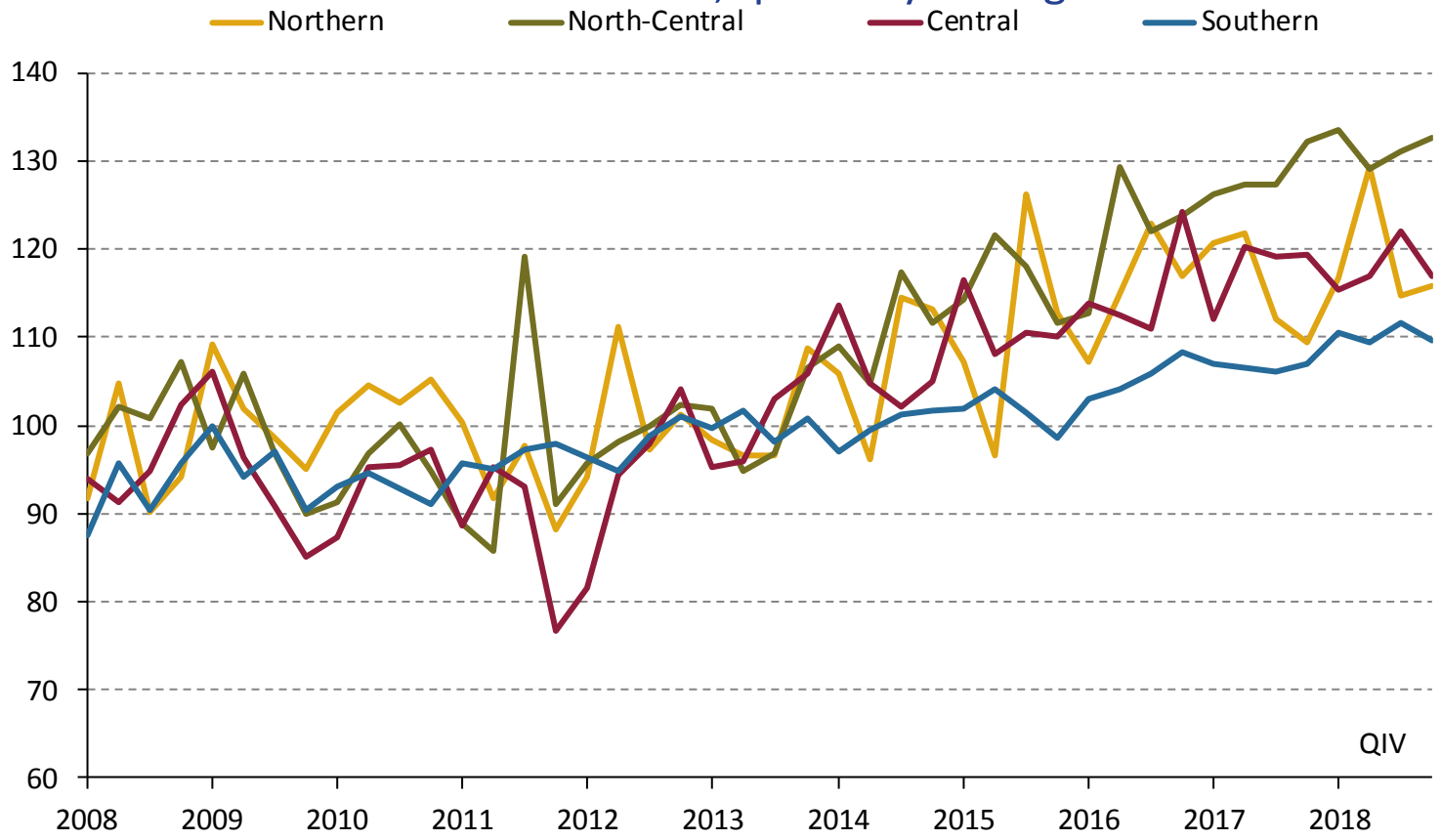


Source: Prepared and seasonally adjusted by Banco de México based on data from the Mexican Secretariat of Tourism and Auxiliary Services (ASA, for its acronym in Spanish).

In Q4, the agricultural industry had a heterogeneous performance across regions. In the North-Central region production continued to expand, while in the Northern one it increased slightly, after having contracted in Q3. In contrast, in the Central and Southern regions production fell, after having increased in Q3.

Index of Regional Agricultural Production

Index 2013=100, quarterly average



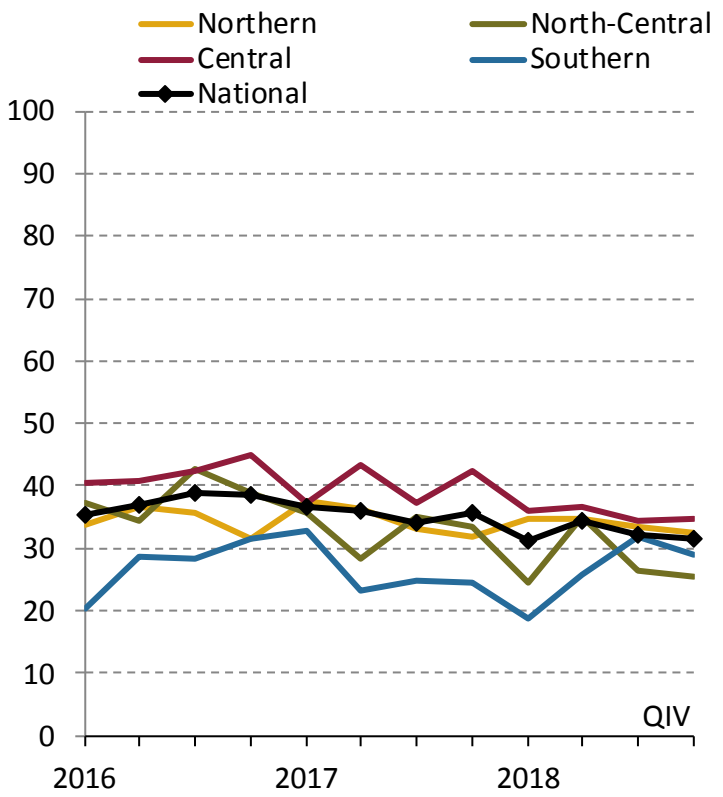
Source: Estimated and seasonally adjusted by Banco de México based on data from the Agricultural and Fisheries Information Service (SIAP). It should be noted that, unlike the GDP estimate, this indicator excludes information on the value generated by land cultivation and approximates a measurement of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

Regarding the sources of financing, while the share of firms that resorted to financing by suppliers grew in all regions, the share of firms that used bank credit and own resources declined in a practically generalized manner.

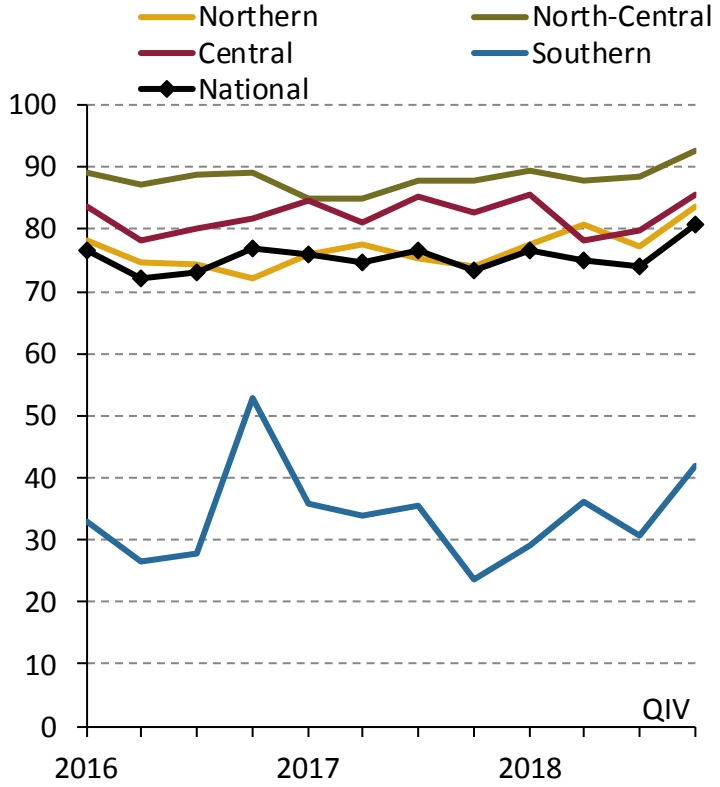
Main Sources of Financing by Firms in Q4

Percent of businesses that used each source of financing

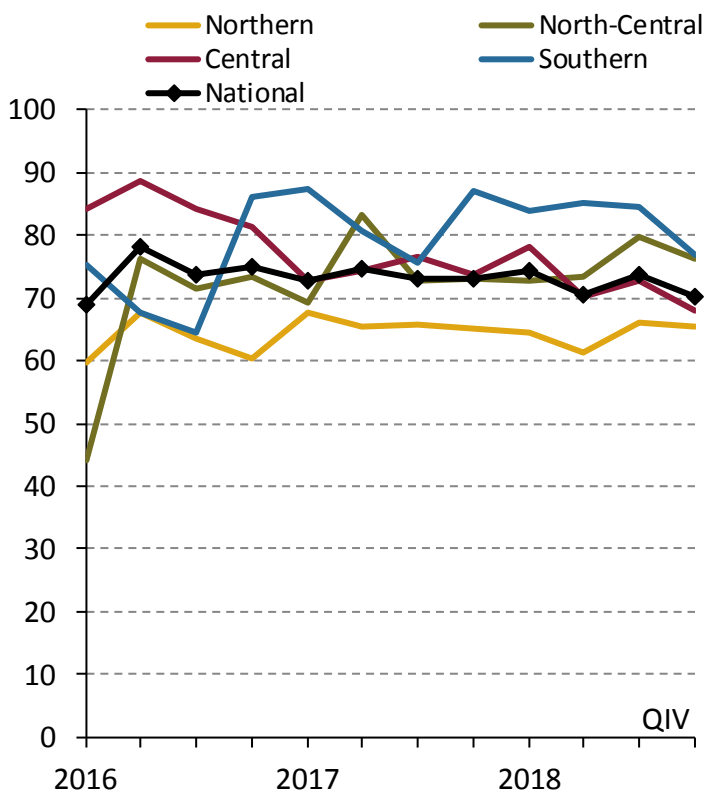
Commercial banks



Suppliers



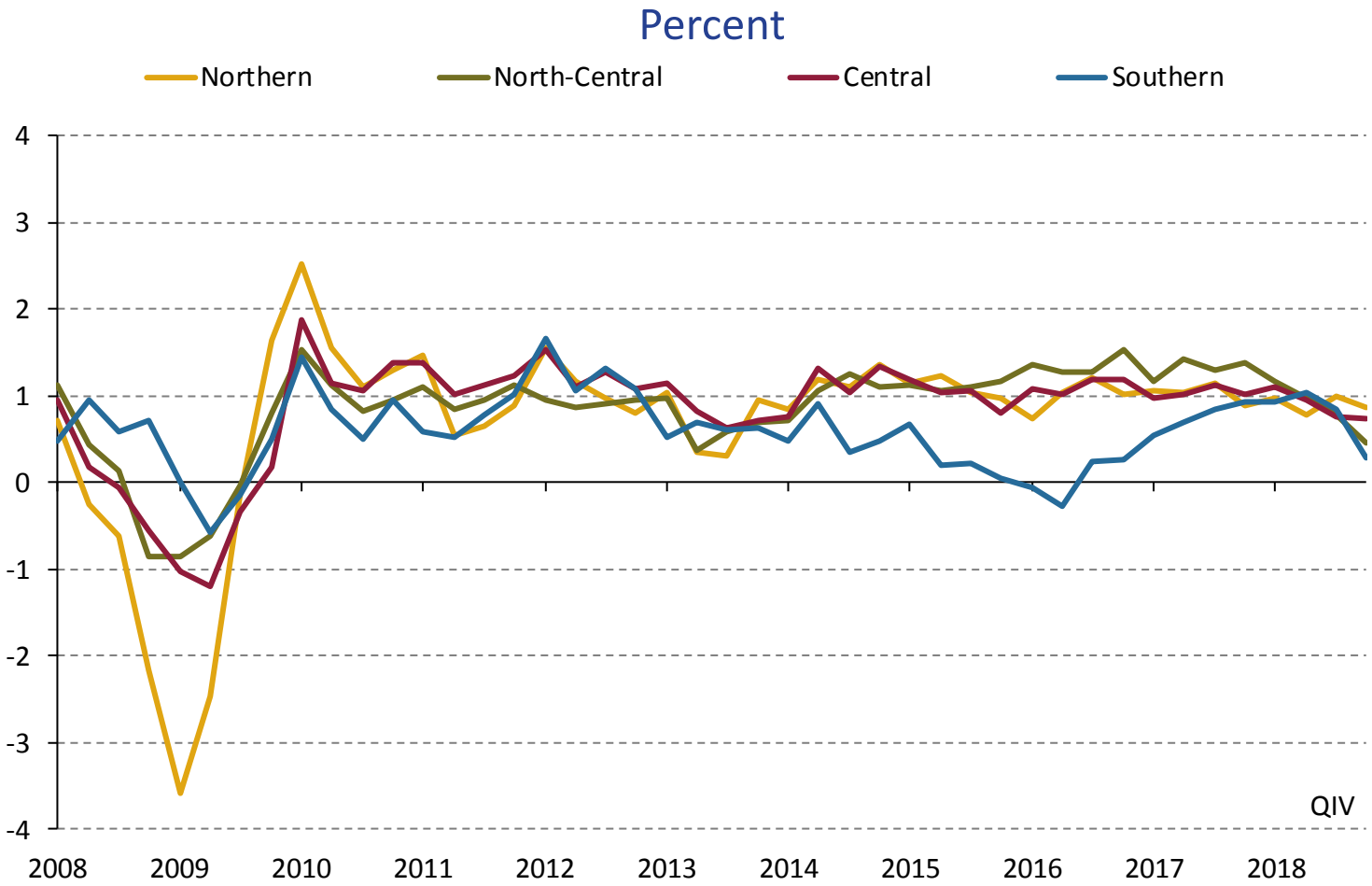
Own resources



Source: Banco de México.

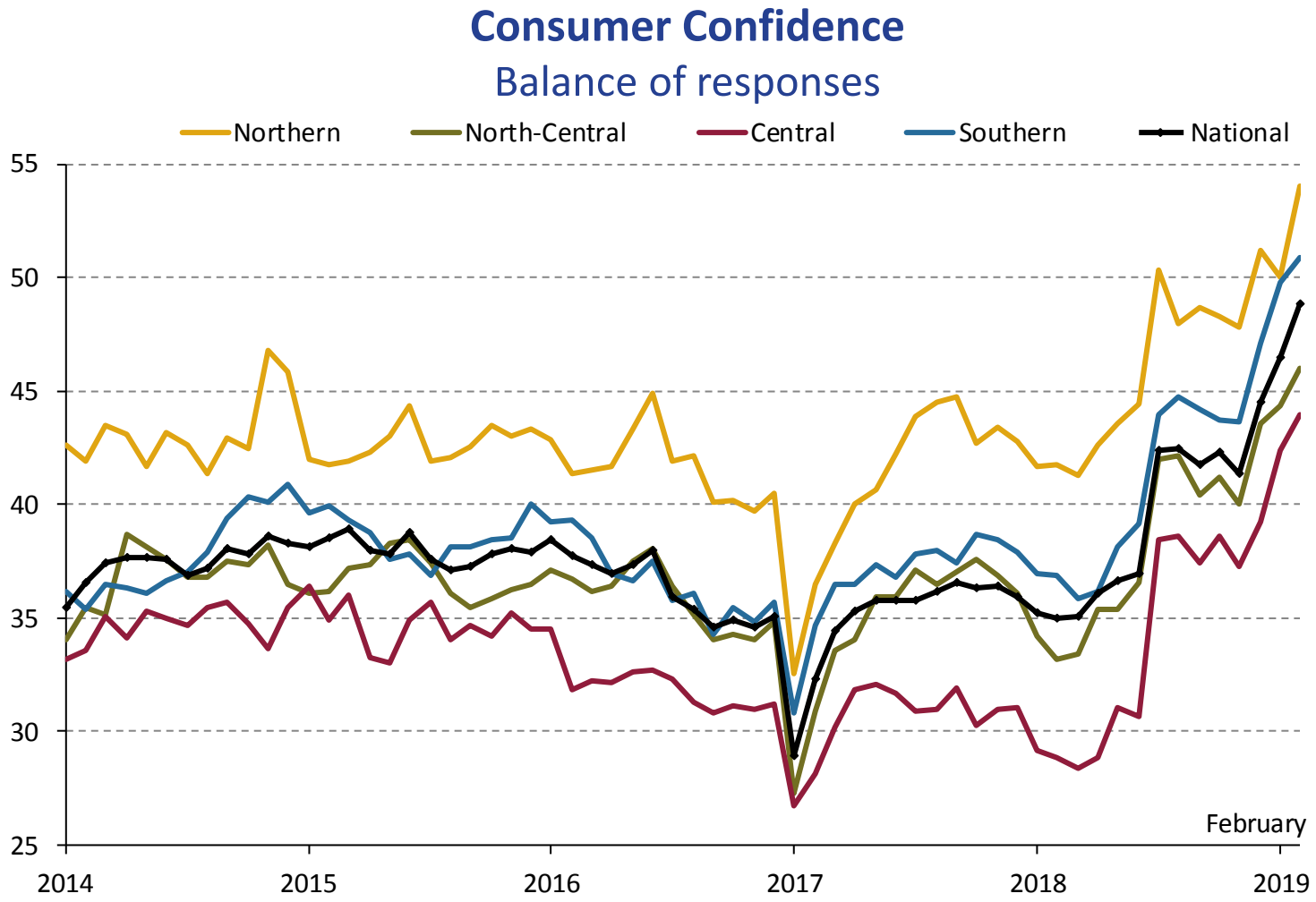
During Q4 2018, the increase in the number of IMSS-insured workers slowed down in most Mexican regions.

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



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 registered particularly high levels from October 2018 to February 2019 in the four regions of Mexico.



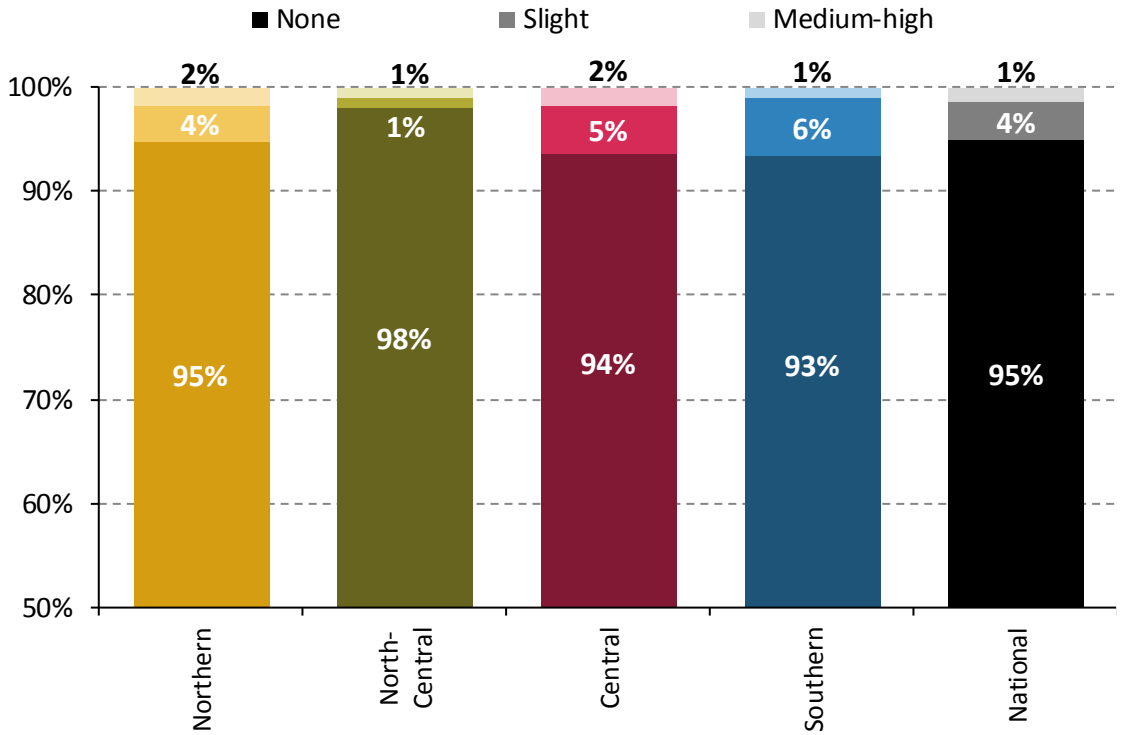
Source: Prepared and seasonally adjusted by Banco de México with data from the series of the Consumer Confidence Index (INEGI) and Banco de México.

According to most of the business agents interviewed, sales' prices were not affected by the problems of fuel distribution in early 2019. However, a significant share of business contacts reported certain impact on economic activity, especially in the states of the Northern and Central regions.

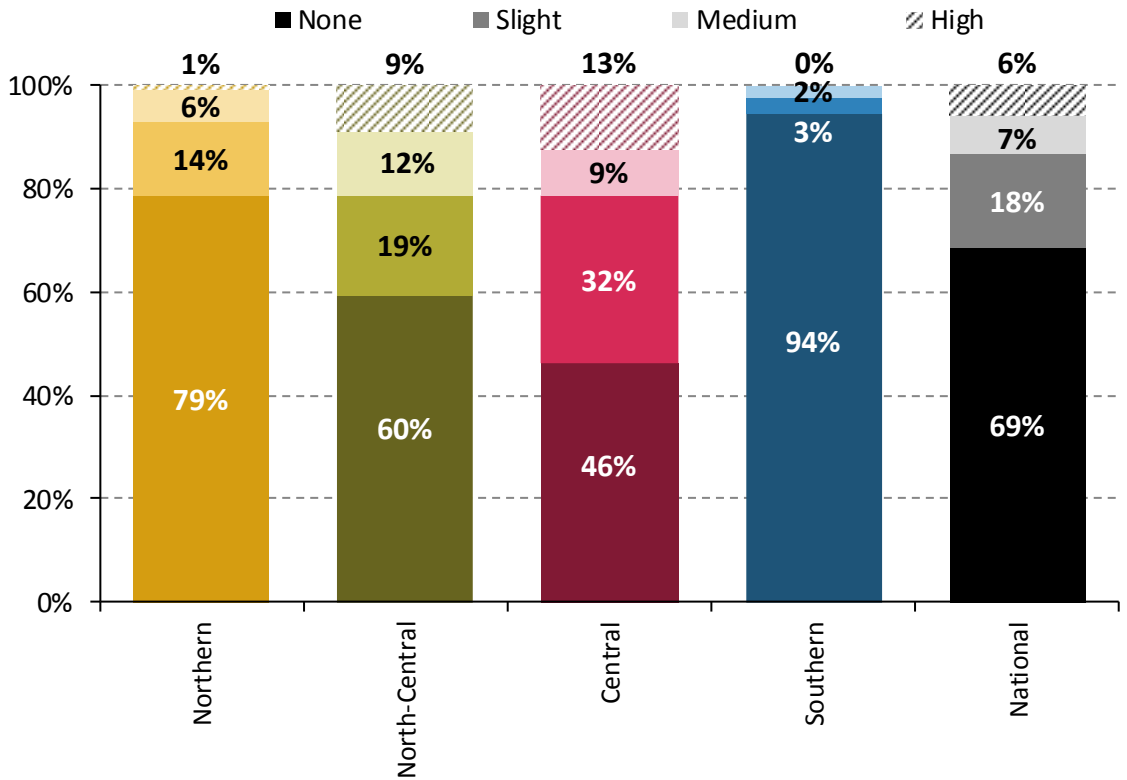
Impact Level Reported by Firms as a result of Fuel Distribution Problems [1/]

Share of responses

Sales' prices



Activity



1/ Results obtained from responses to the question: "As a consequence of the recent situation regarding the fuel distribution in some states of Mexico, what is your assessment of the degree of impact in your firm on sale prices and production costs", from interviews conducted by Banco de México between January 7 and January 31, 2019.
Source: Banco de México.

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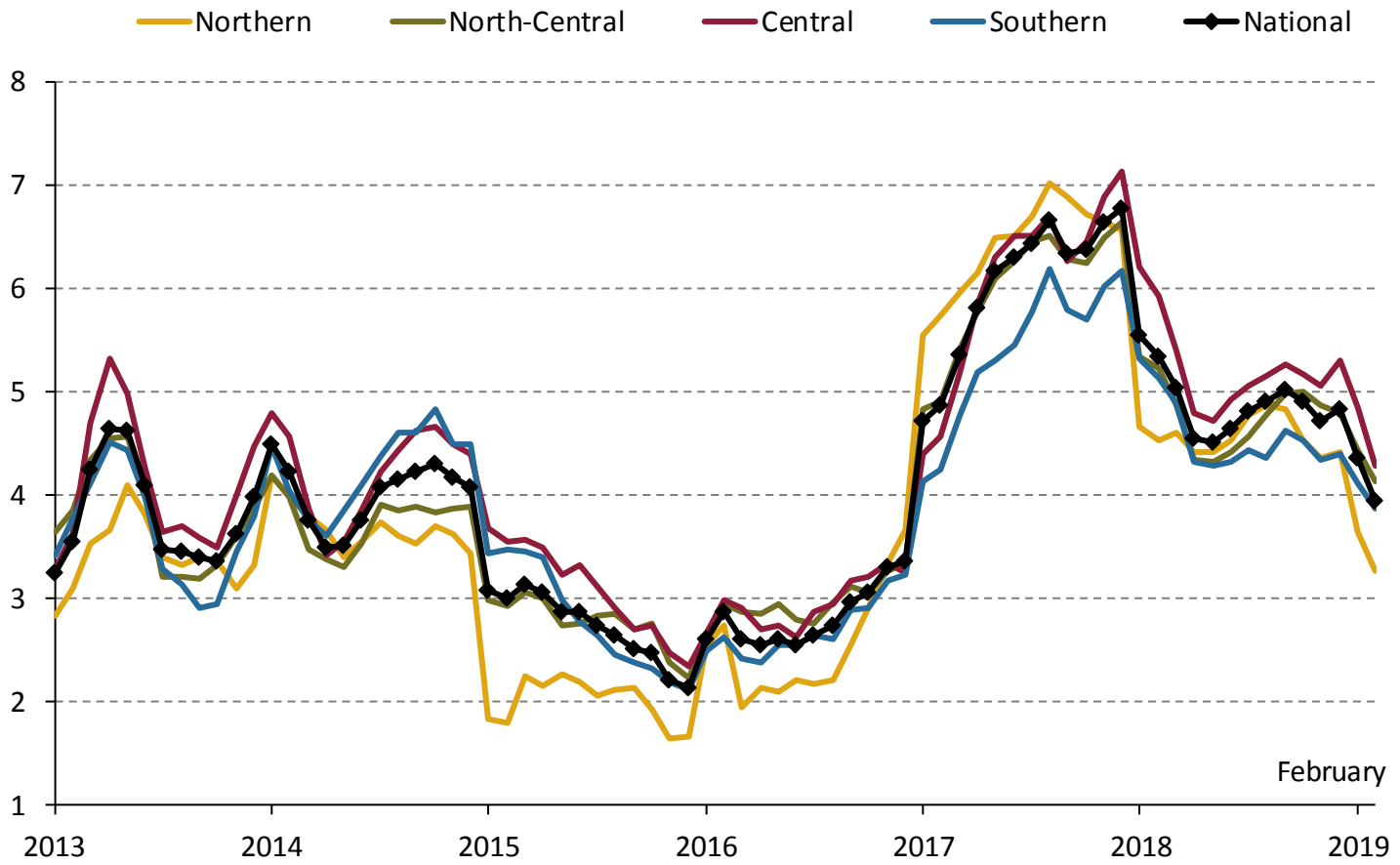
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Between Q2 and Q3 2018, annual headline inflation declined in all Mexican regions. This is essentially explained by the lower levels of annual non-core inflation.

Annual Headline Inflation, by Region

Data in percent

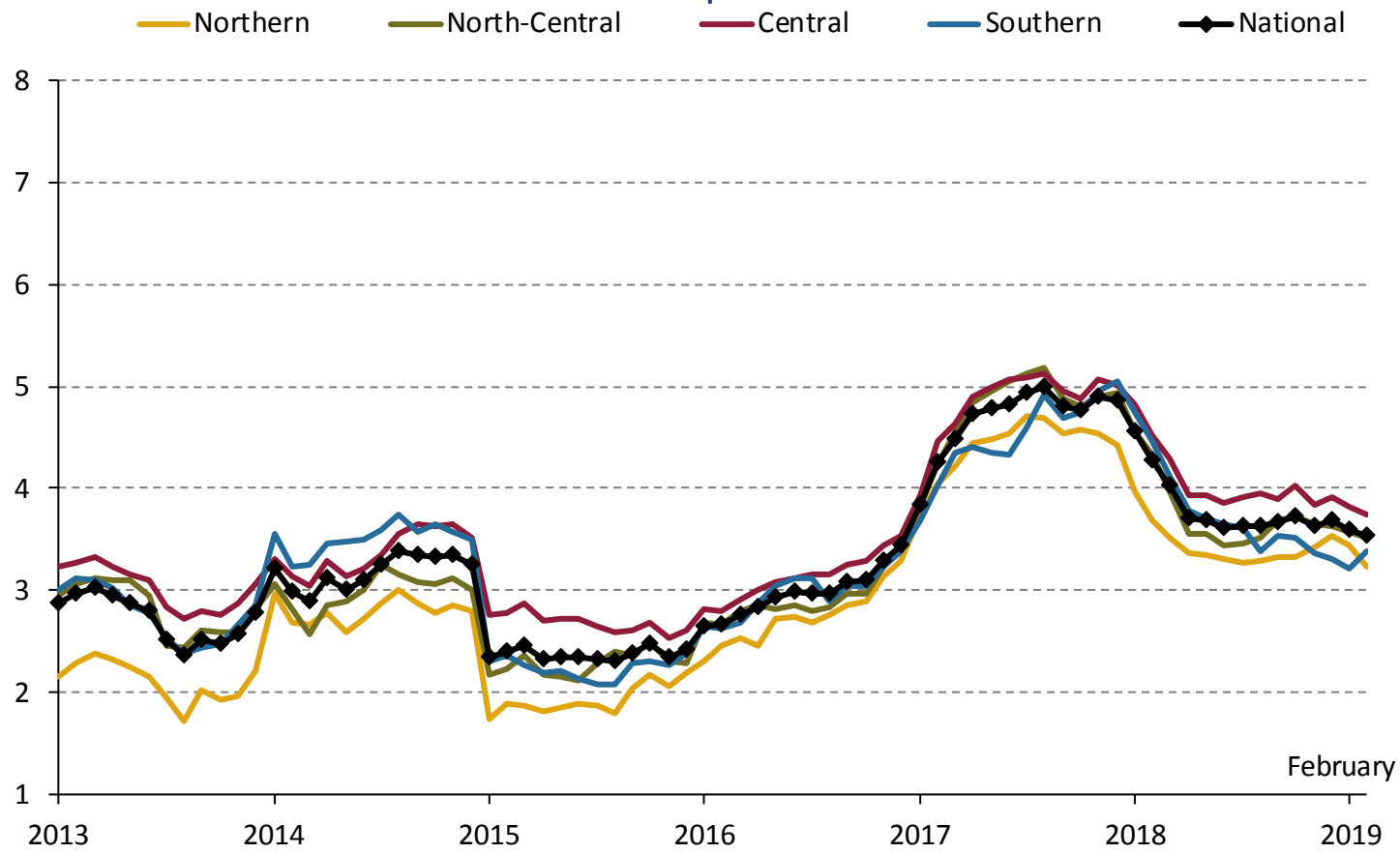


Source: Prepared by Banco de México with data from INEGI and Banco de México.

Core inflation showed a certain downward resistance in Q4 2018 in all regions, although it declined moderately in January and February 2019 in the Northern and central regions.

Annual Core Inflation, by Region

Data in percent

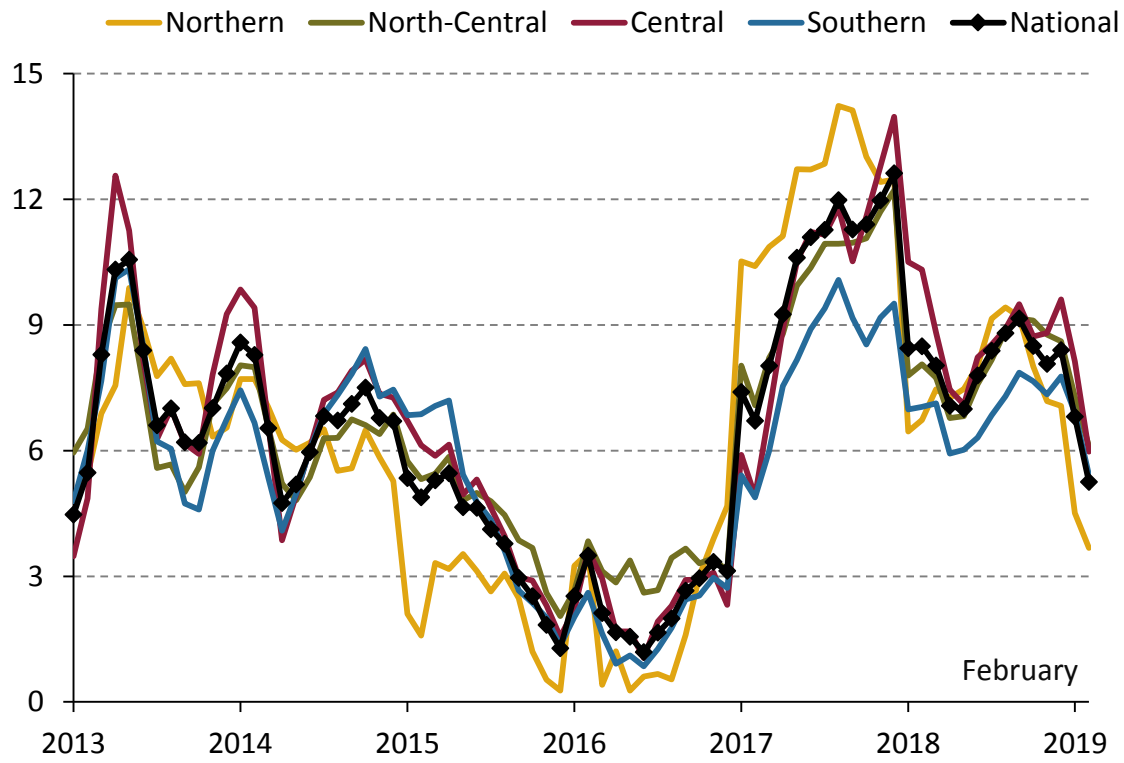


Source: Prepared by Banco de México with data from INEGI and own data.

During Q4 2018, non-core inflation declined in all regions. The following contributed to the decline in domestic non-core inflation: the lower growth rates of the Central region –influenced by the evolution of the agriculture and livestock sector– and those in the Northern border –as a result of the lower growth of energy goods, which was partly the result of the reduction of the VAT rate–.

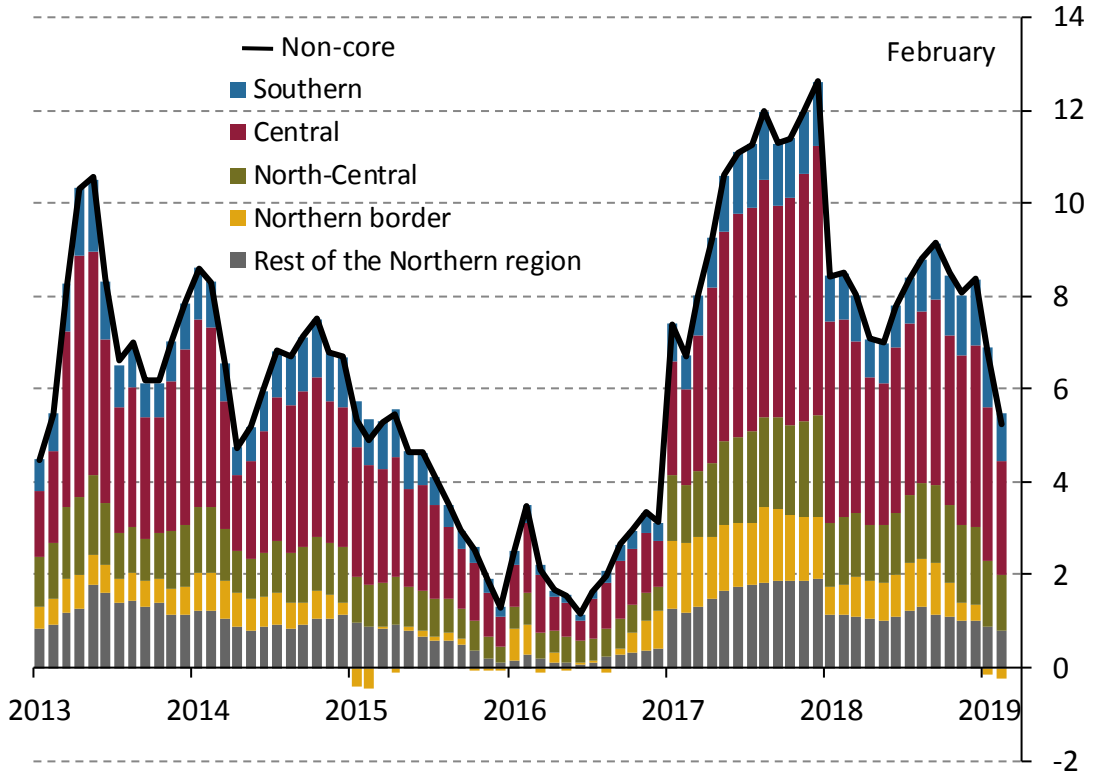
Annual Non-core Inflation, by Region

Data in percent



Impacts on Mexico's Annual Non-core Inflation

In percentage points



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

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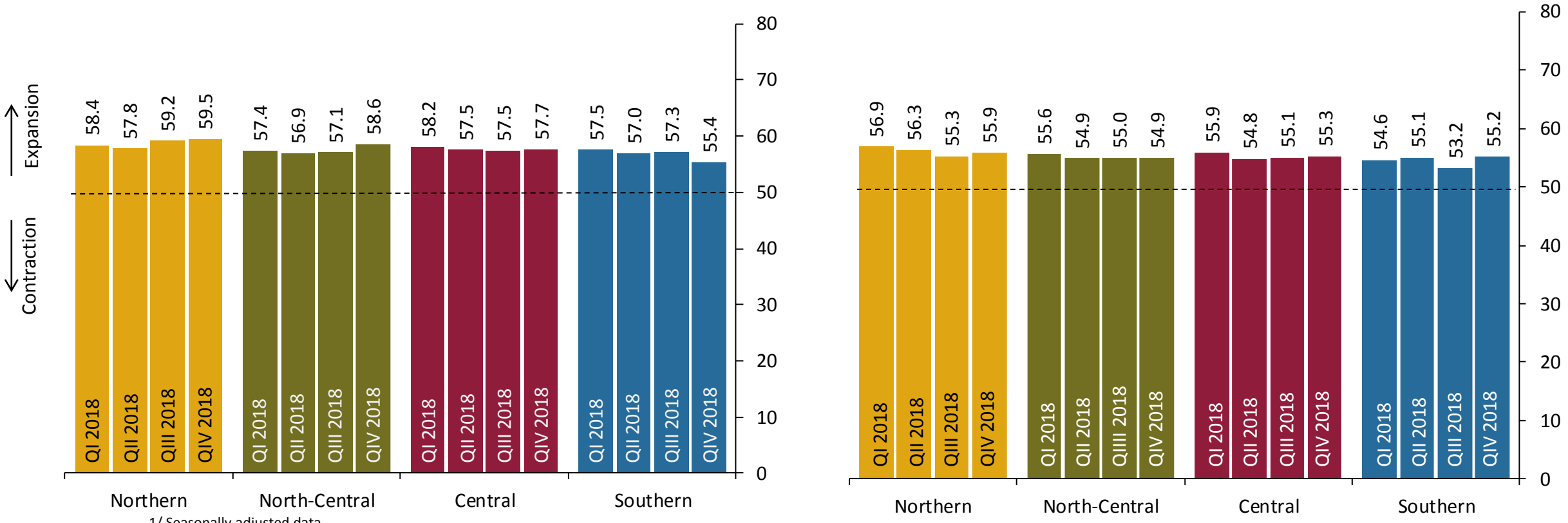
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Regional indices signal that both manufacturing and non-manufacturing activity will continue to expand in the next 3 months in all regional economies. In the manufacturing sector the signal of expansion strengthened, at the margin, in the North-Central region, and weakened in the Southern region. In the non-manufacturing sector the signal of expansion strengthened in the Northern and Southern regions.

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

Diffusion indices

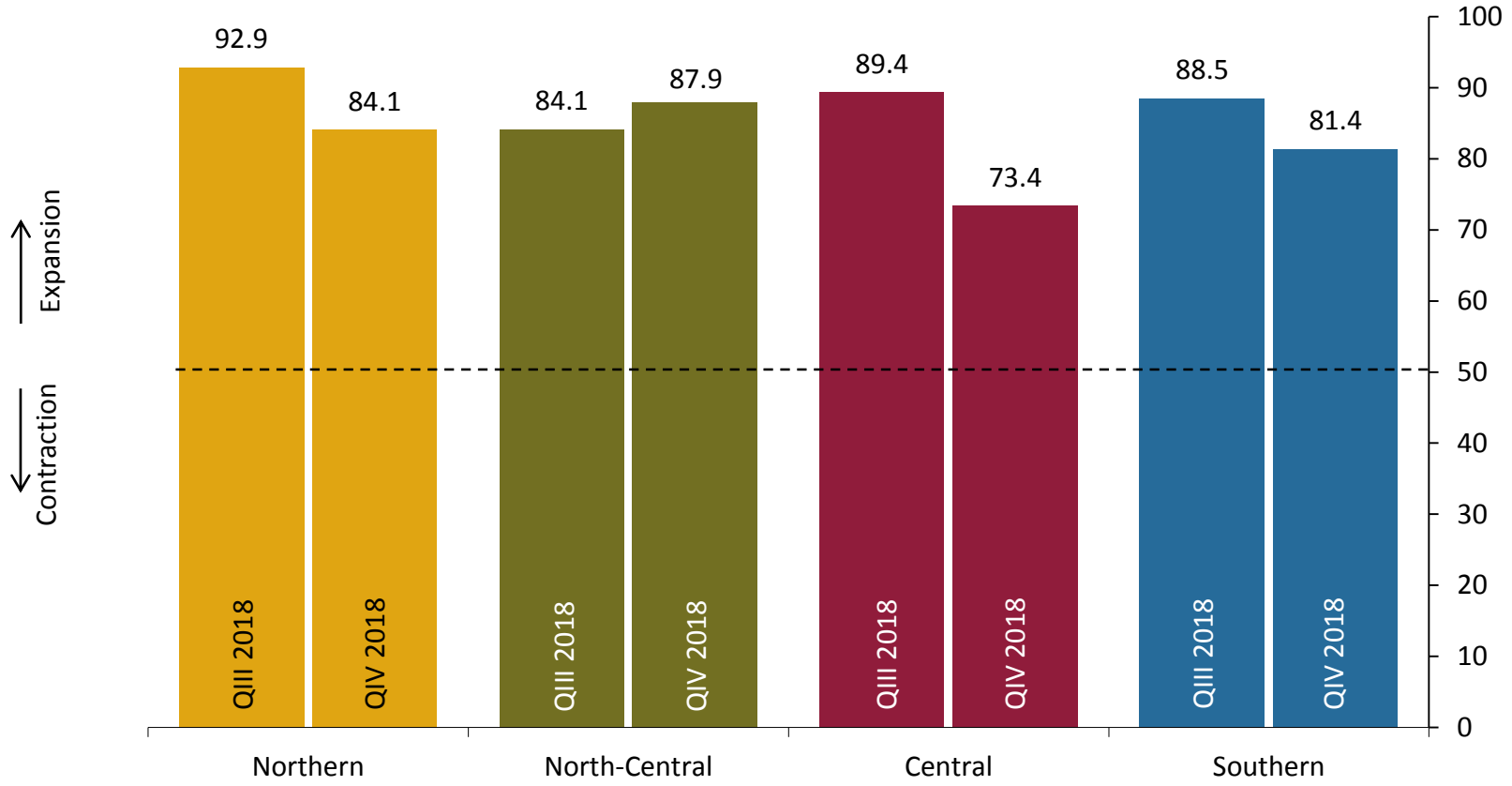


1/ Seasonally adjusted data.
Source: Banco de México.

During the next twelve months, business agents consulted in the four regions anticipate a higher demand for their goods and services. However, this signal was weaker than that in Q3 in all regions, except for the North-Central region, where it strengthened.

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

Diffusion indices

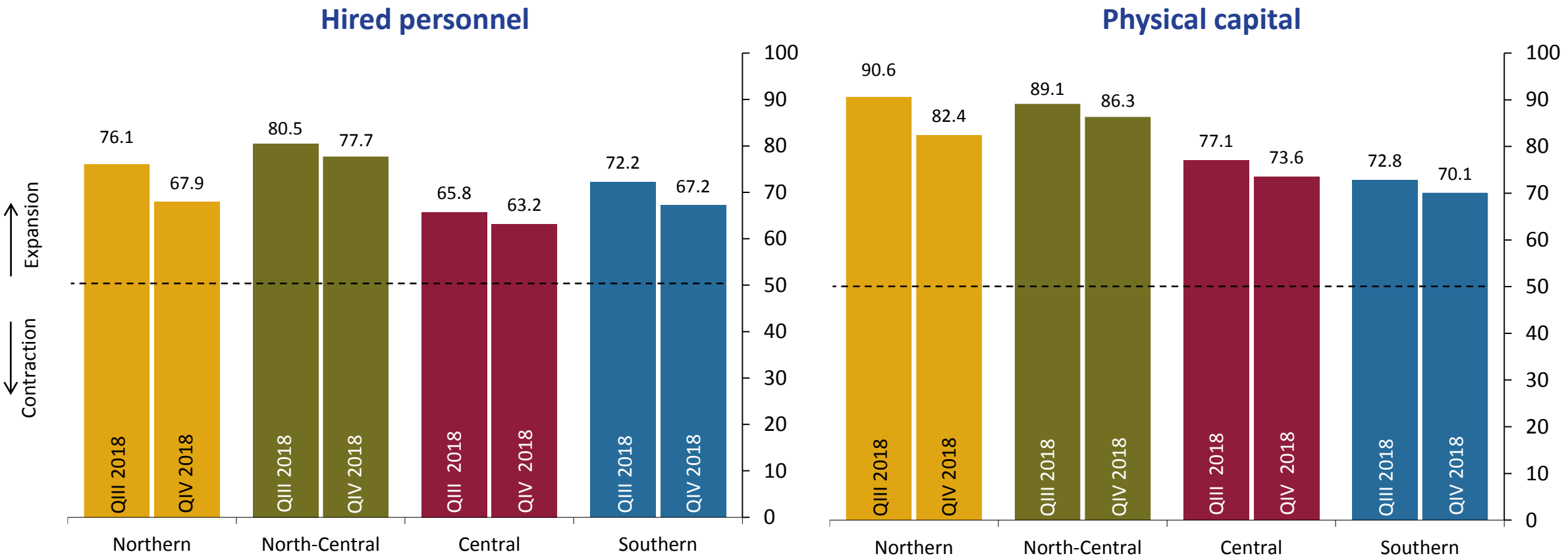


1/ Results obtained from responses to the question: "With respect to the volume of sales of your goods and services over the previous 12 months, how do you expect your sales' volume to change in the next 12 months?", from interviews conducted by Banco de México.

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 all regions of Mexico, although for these two indicators the signal weakened with respect to Q3.

Business Agents' Expectations: Hired Personnel and Physical Capital, Next 12 Months [1/]

Diffusion indices



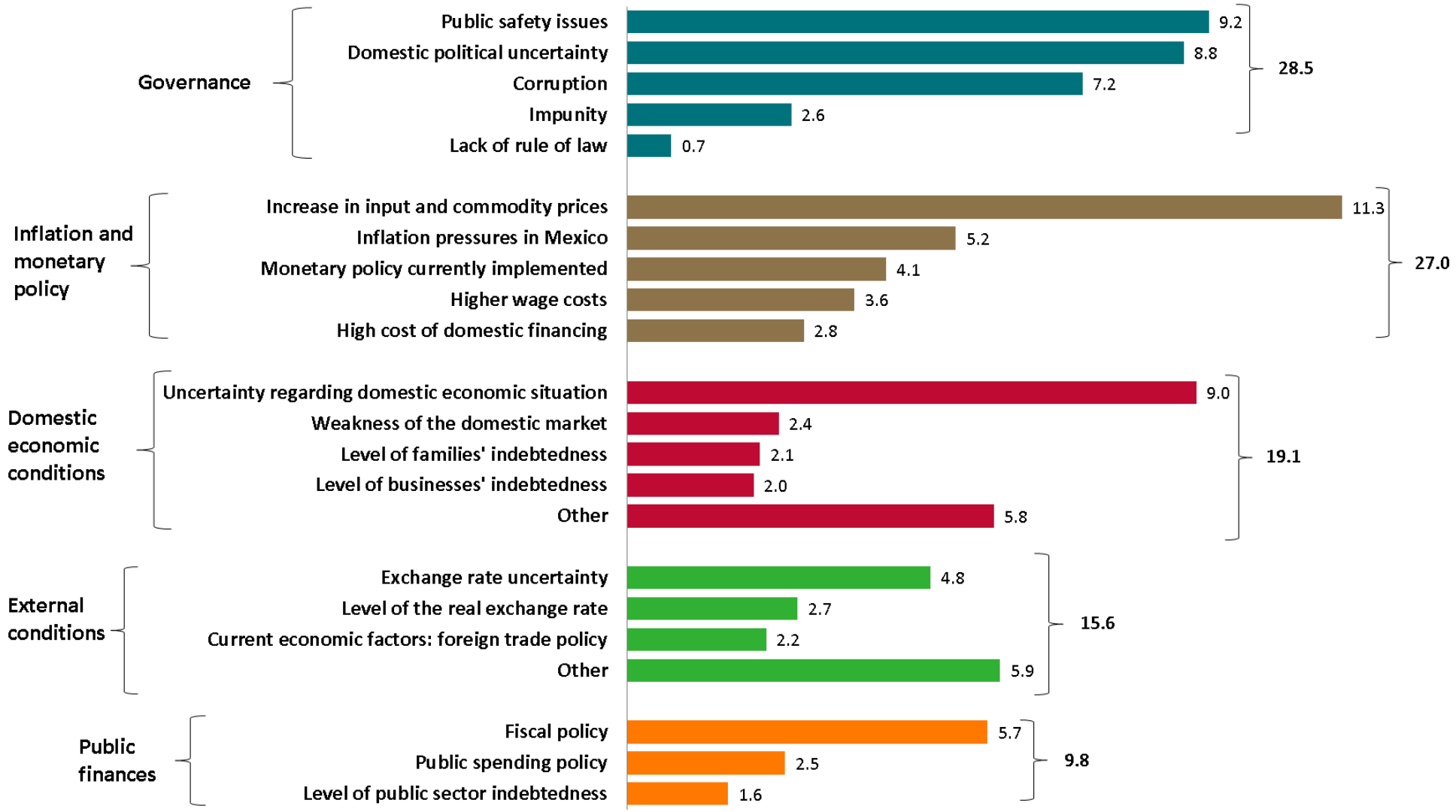
1/ Results obtained from responses to questions: "With respect to the previous 12 months, how do you expect the total number of workers in your firm to change for the next 12 months?", and " With respect to your firm's investment in fixed assets during the previous 12 months, how do you expect investment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

Factors Restricting Growth of Regional Economic Activity

- For the purposes of this Report, business contacts were interviewed about the factors restricting economic growth during the next six months in the state in which the company is located.
- The information was collected as part of the Monthly Survey of Regional Economic Activity conducted by Banco de México among businesses of both manufacturing and non-manufacturing sectors. In particular, for this Report, the information was gathered between January 2 and January 30, 2019.
- Business contacts were consulted on the factors that could be grouped into 5 categories: i) governance; ii) inflation and monetary policy; iii) domestic economic conditions; iv) external conditions; and v) public finances.
  - ✓ The question is similar to that used by Banco de México to consult economic analysts regarding this issue in the Survey of Professional Forecasters.
- In the future, this information will be collected on a quarterly basis to analyze long-term factors that, according to the interviewed business agents, could limit regional economic growth.

Share of Business Contacts' Responses regarding the Three Main Factors that could Hinder Economic Growth in Their Federal Entities

Percentage distribution of responses 1/



1/ Distribution relative to the total responses of business representatives, who can name up to three restricting factors for their respective state.

Share of Business Contacts' Responses regarding The Three Main Factors that could Hinder Economic Growth in Their Federal Entities

Percentage distribution of responses [1/]

		National	Northern	North-Central	Central	Southern
Governance	**Total**	**28.5**	**24.2**	**27.3**	**30.6**	**33.4**
	Public safety issues	9.2	7.5	10.2	9.1	12.6
	Domestic political uncertainty	8.8	8.7	8.6	9.1	7.6
	Corruption	7.2	5.8	6.2	8.2	8.8
	Impunity	2.6	1.7	1.6	3.4	3.5
	Lack of rule of law	0.7	0.5	0.7	0.8	0.9
Inflation and monetary policy	**Total**	**27.0**	**29.1**	**28.3**	**24.5**	**28.6**
	Increase in input and commodity prices	11.3	12.6	11.2	10.1	12.1
	Inflation pressures in Mexico	5.2	4.6	6.3	5.1	5.1
	Monetary policy currently implemented	4.1	3.7	4.0	4.5	4.0
	Higher wage costs	3.6	5.3	4.0	2.2	4.1
	High cost of domestic financing	2.8	2.9	2.8	2.6	3.3
Domestic economic conditions	**Total**	**19.1**	**17.6**	**18.3**	**20.5**	**19.3**
	Uncertainty regarding domestic economic situation	9.0	7.8	8.1	10.2	8.8
	Weakness of the domestic market	2.4	1.6	2.6	2.9	2.7
	Level of families' indebtedness	2.1	2.3	2.2	2.1	1.8
	Level of businesses' indebtedness	2.0	1.9	1.8	2.4	1.5
	Other [3/]	3.6	4.0	3.6	2.9	4.5
External conditions	**Total**	**15.6**	**18.6**	**12.7**	**16.2**	**10.3**
	Exchange rate uncertainty	4.8	6.4	5.1	4.3	2.6
	Level of the real exchange rate	2.7	2.8	1.0	3.8	1.6
	Foreign trade policy	2.2	2.9	1.6	2.1	1.4
	Other [4/]	5.9	6.5	5.0	6.0	4.7
Public finances	**Total**	**9.8**	**10.5**	**13.4**	**8.2**	**8.4**
	Fiscal policy	5.7	6.8	8.2	4.6	3.2
	Public spending policy	2.5	2.2	3.2	2.2	3.1
	Level of public sector indebtedness	1.6	1.5	2.0	1.4	2.1

1/ Distribution relative to the total responses of business representatives, who can name up to three restricting factors for their respective state.

Business Agents' Opinion on Risks to Regional Economic Activity (based on data collected between January 7 and January 31, 2019) 1/

Upward risks

- That the announcements of the new trade agreement between Mexico, the U.S. and Canada contribute to reactivate investment.
- That new programs and projects are adequately implemented by the federal government, which would contribute to lower the uncertainty prevailing among business agents.

Downward risks

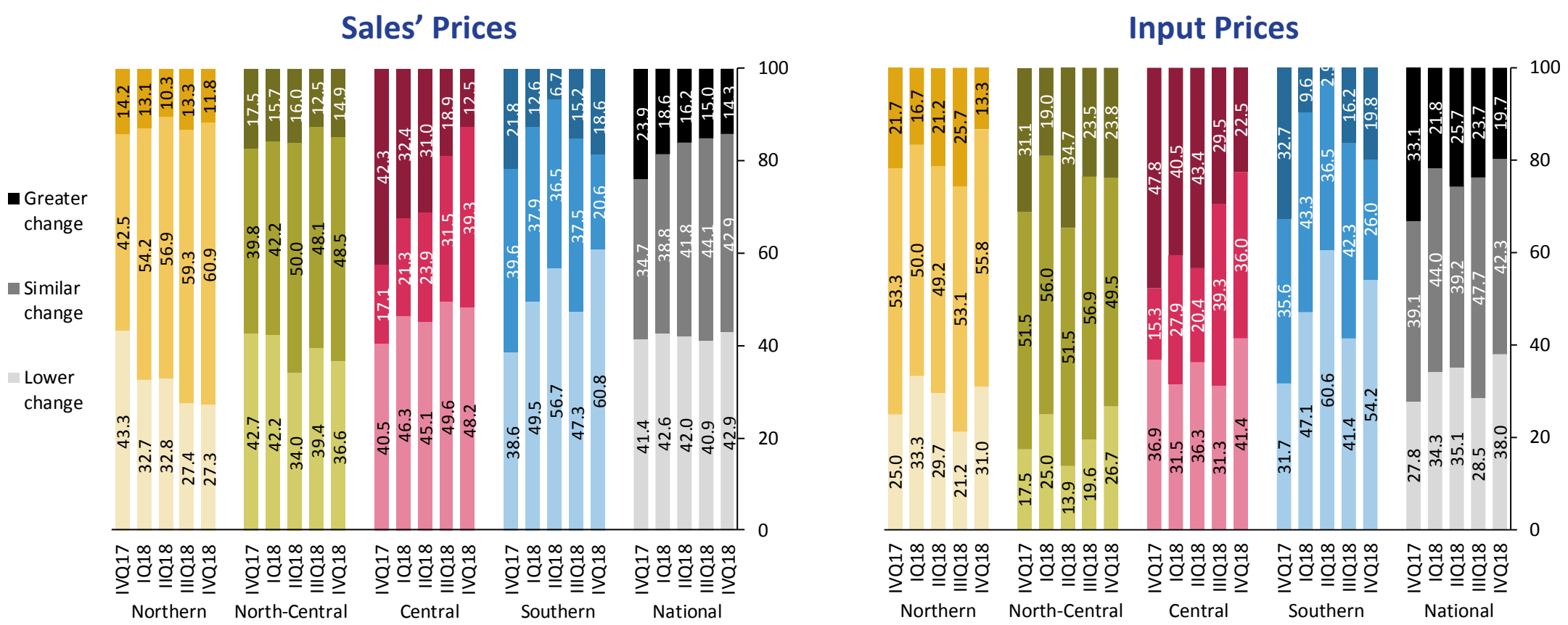
- That public safety conditions deteriorate.
- That new episodes of fuel shortages occur or that those they were already experiencing extend for a longer period, or that conflicts such as the blockage of railroads in Michoacán take place again.
- That uncertainty over the public policies of the new administration persists or increases, which could reduce investment to levels below the expected.

1/ Results obtained from responses to the question: "What are the 2 main events/situations/facts that, if they should take place, would boost the economic performance of your state in the next 12 months?" and "What are the 2 main events/situations/facts that, if they should take place, would limit the economic performance of your state in the next 12 months?", from Banco de México's survey conducted during January 7-31, 2019.

Regarding sales' prices of their own goods and services and their input prices, most interviewed business contacts expect similar or lower annual changes, as compared to those observed in the previous 12 months.

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

Percentage of responses



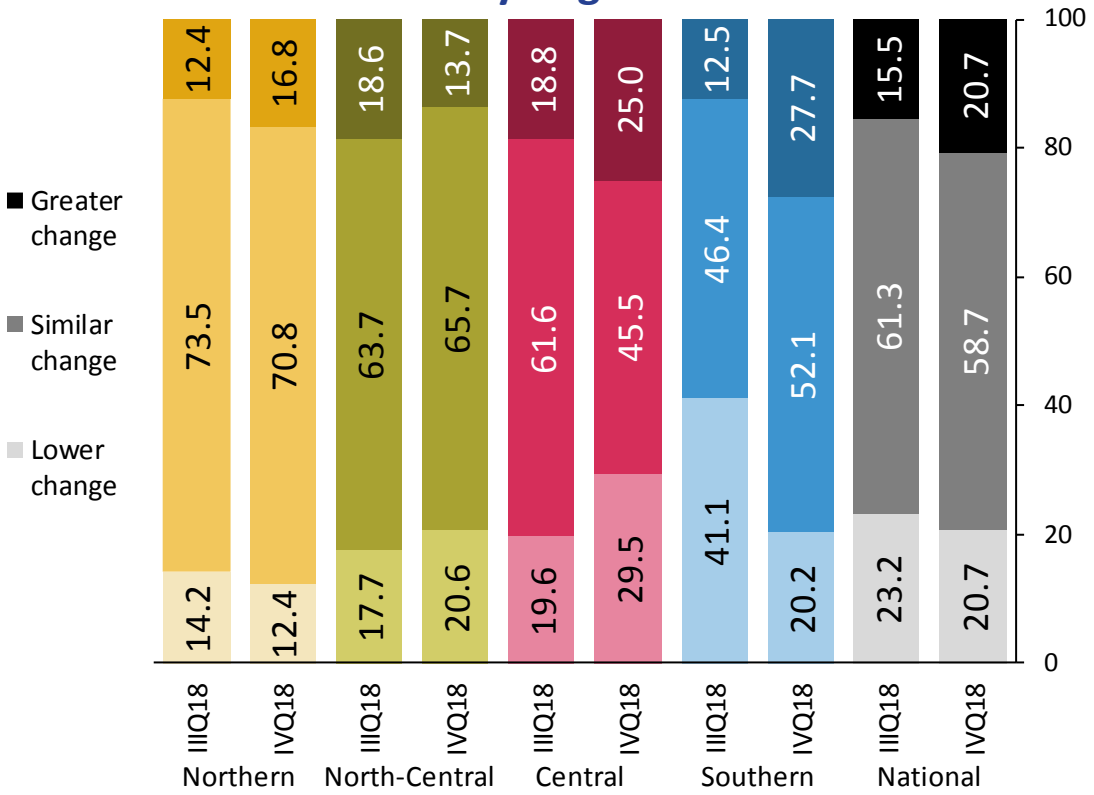
1/ Results obtained from responses to the question: "With respect to the previous 12 months, how do you expect sales' prices in your sector to change over the next 12 months?", and "With respect to the previous 12 months, how do you expect input prices (goods and services) used in your sector to change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

Regarding the expected growth of wage costs for the next 12 months, although most business contacts expect similar or lower changes, in all regions, except for the North-Central one, the share of business agents who anticipate a greater change increased as compared to Q3, especially in the south and in the northern border strip.

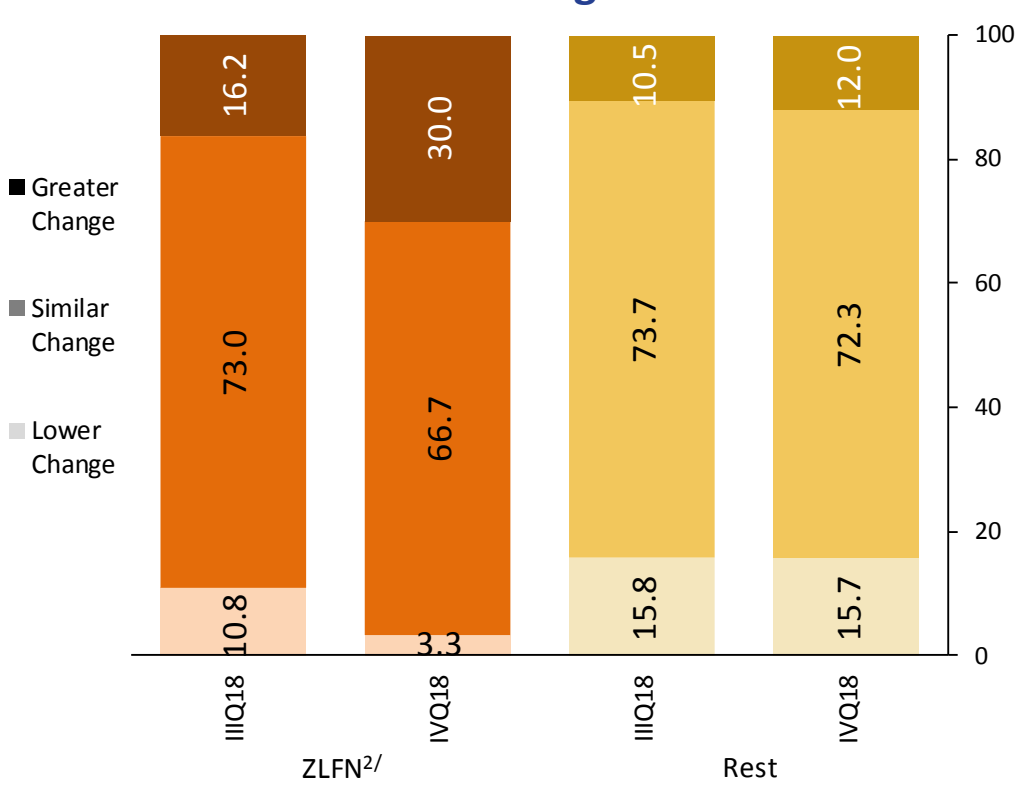
Business Agents' Expectations: Annual Change of Wage Costs, Next 12 Months [1/]

Share of responses

By Region



Northern region

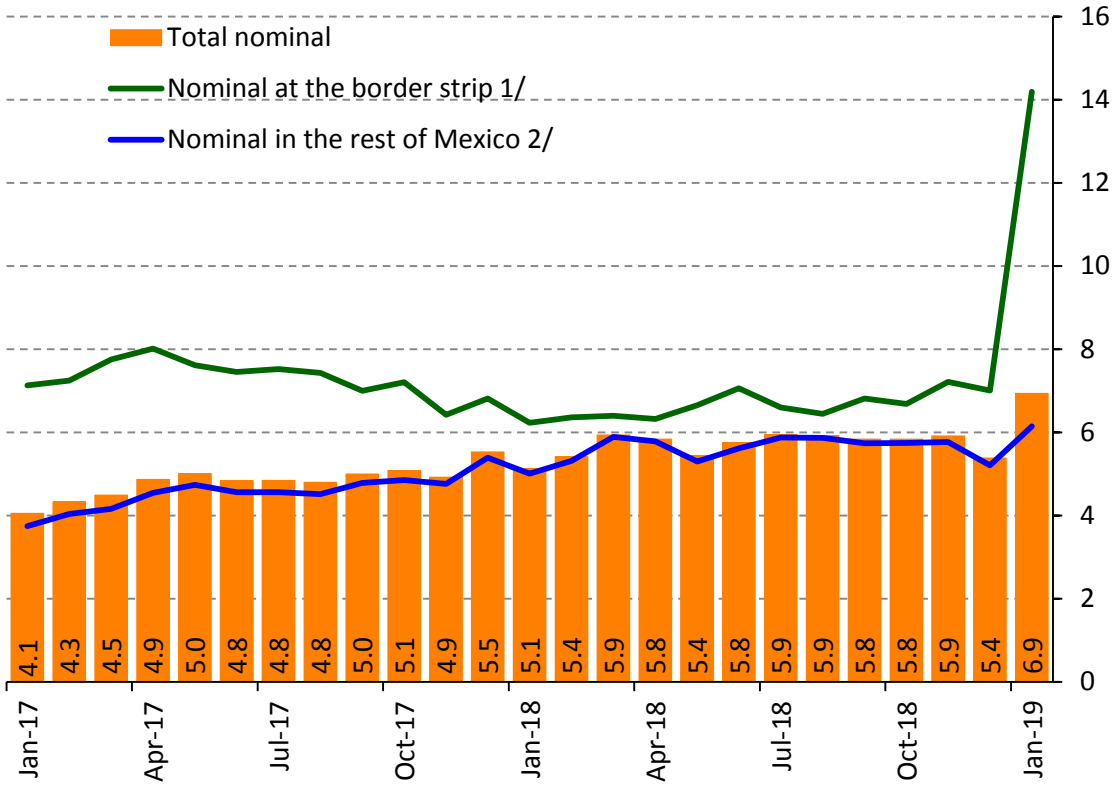


1/ Results obtained from responses to the question: "With respect to the previous 12 months, how do you expect wages of your sector's workers to change in the next 12 months?; from interviews conducted by Banco de México.
2/ Northern border free zone.

Wage costs' expectations evolved in a context in which the minimum wage in the northern border region doubled, while in the rest of Mexico it adjusted from 88.4 to 102.7 pesos a day.

Nominal Daily Wage of IMSS-insured Workers [1/]

Annual percent change



1/ It includes the municipalities listed in the DOF on December 26, 2018, most of which are adjacent to the Mexican northern border.
2/ This is the total of other Mexican municipalities.
Source: Prepared by Banco de México with data from IMSS.

Ratio of Minimum Wage to Mean Base Wage, by Region

	Northern			North-Central	Central	Southern	National [1/]
	Total [1/]	ZLFN	Other				
$\frac{\text{Minimum wage Dec 2018}}{\text{Mean base wage Dec 2018}}$ (%) [2/]	37.7	37.3	38.2	44.1	39.7	48.0	40.7
$\frac{\text{Minimum wage Jan 2019}}{\text{Mean base wage Dec 2018}}$ (%) [2/]	55.9	74.6	44.4	51.3	46.2	55.7	50.9
Increase (p.p.)	17.5	36.0	6.0	7.0	6.2	7.8	9.7

1/ Minimum wages for 2019, both in the Northern region and at the national level, are obtained by weighing the minimum wage of the Northern border free zone (ZLFN, for its acronym in Spanish) and the minimum wage in the rest of Mexico, by the number of ZLFN workers and the number of remaining workers, respectively.
2/ Mean base wage calculated for the region of the respective column.
Source: Banco de México with data from IMSS.

Outline

I. Regional Economic Report

II. Results October – December 2018

   A. Economic activity

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Boxes

1 Clusters of Related Industries in Regional Economies

2 Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

3 Factors Restricting Growth of Regional Economic Activity

Box:
Clusters of Related Industries in Regional Economies

- This Box explores the relationships between different sectors of the Mexican economy in order to define groups of related industries, called clusters.
- In order to do so, this Box implemented the methodology proposed by Delgado et al. (2016) to identify industrial clusters.
- This method, unlike others, such as the one suggested by Feser et al. (2005), which only includes purchase and sale transactions among industries to select the adequate configuration of clusters, considers multiple links among industries in order to group them, such as the resemblance in geographical distribution of employments and their establishments.
- 21 clusters were identified, out of which 4 concentrated over a third of the census gross value added: i) oil and gas extraction; ii) automobile and truck manufacturing; iii) head offices; and iv) wired communication carriers.

Box:
Clusters of Related Industries in Regional Economies

Cluster configuration

Cluster	Main industry [1\]	Other industries in the cluster	Number of industries in the cluster	Share of national output	Share of national census gross added value	Share of national employment in 2014 Economic Census	Added value by worker (thousands of jobs)
1	2111 Oil and gas extraction	3241 Petroleum and coal products manufacturing; 4831 Sea, coastal, and great lakes transportation; 4869 Other pipeline transportation	9	14.9	16.8	0.7	6,230.5
2	3361 Motor vehicle manufacturing	3363 Motor vehicle parts manufacturing; 3336 Turbine and power transmission equipment mfg; 3311 Iron and steel mills and ferroalloy mfg.	6	12.5	7.7	3.5	602.2
3	5511 Management of companies and enterprises	5616 Investigation and security services; 5611 Office administrative services; 5242 Insurance agencies and brokerages	32	7.9	10.0	6.8	405.2
4	3119 Other food manufacturing	3113 Sugar and confectionery product manufacturing; 4884 Support activities for road transportation; 3116 Animal slaughtering and processing	23	7.1	5.8	5.1	315.4

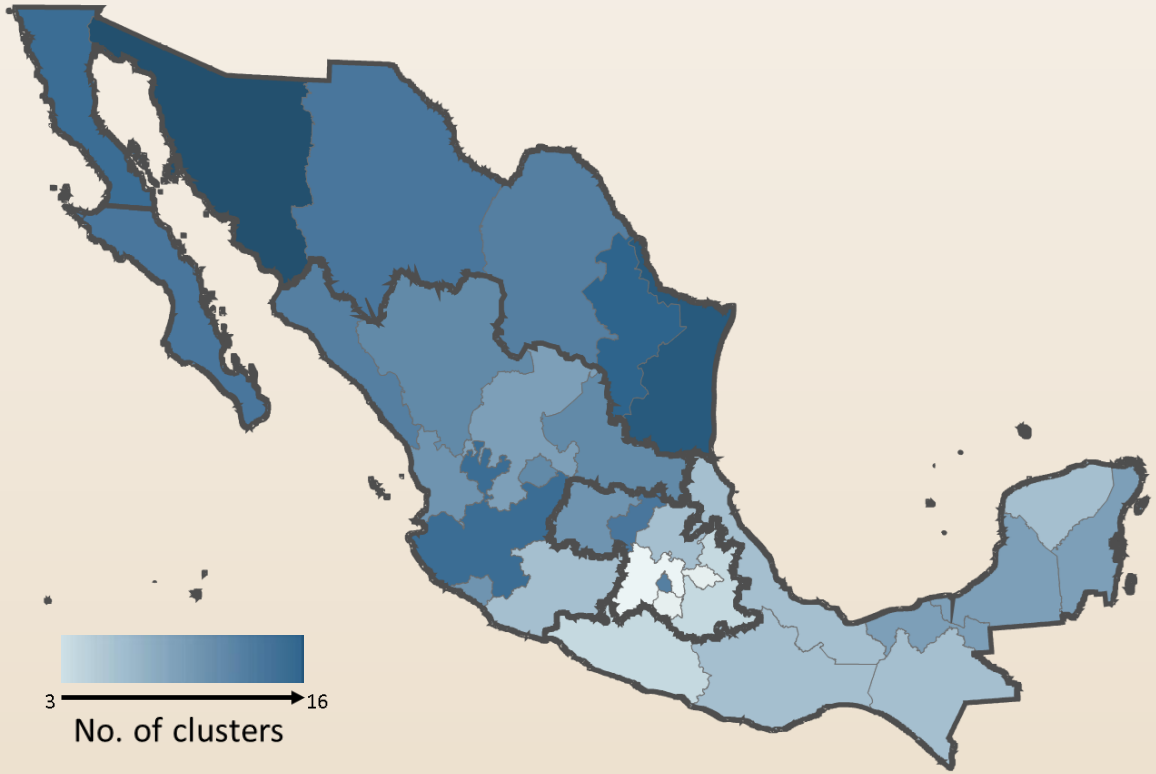
1\ The main industry of a cluster is the industry with the largest share in the census gross added value registered in said cluster.
Source: Prepared by Banco de México with data from 2014 Economic Census and 2012 Input-output matrix.

Box:
Clusters of Related Industries in Regional Economies

- Once 21 industrial clusters have been identified; the number of clusters in which each state has a relative specialization is explored.

Number of Clusters in which the State has a Relative Specialization

Shares

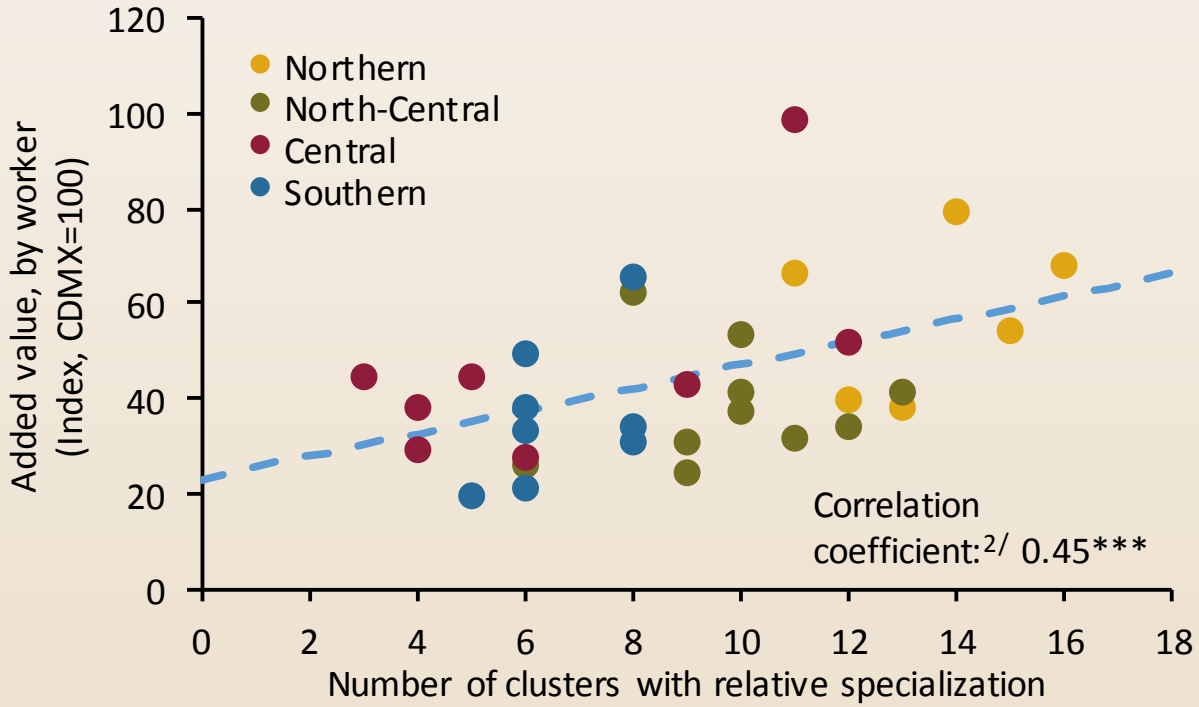


Source: Prepared by Banco de México based on data from 2014 Economic Census.

Box:
Clusters of Related Industries in Regional Economies

- It is observed that a greater economic diversity is positively associated with higher levels of labor productivity.

Presence of Clusters vs. Added Value by Worker, by State [1/]



1/ Excludes oil and gas extraction cluster.
2/ Spearman's correlation coefficient.
***Significant at 1% of confidence level.
Source: Prepared by Banco de México with data from 2014 Economic Census.

Boxes

1 Clusters of Related Industries in Regional Economies

2 Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

3 Factors Restricting Growth of Regional Economic Activity

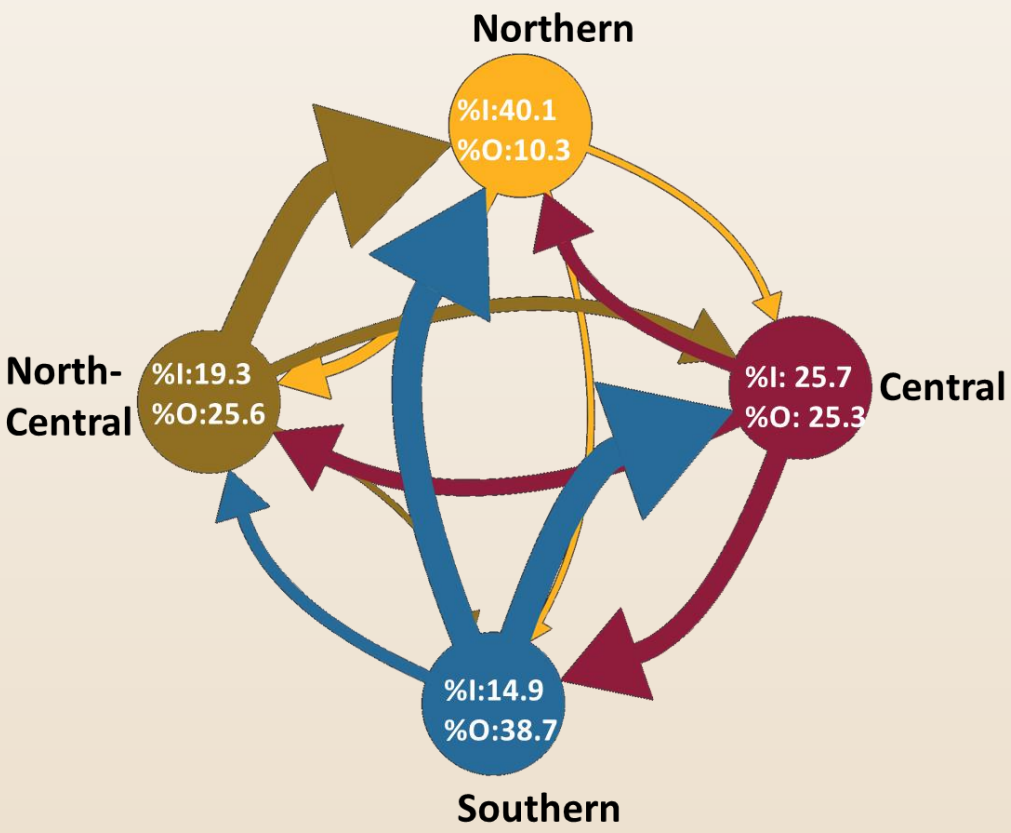
Box:
Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

- As part of Mexico's open trade policy and, particularly of NAFTA's entry into force, the Northern region experienced a higher demand for unskilled labor, which in turn raised the relative wages of this type of workers.
- However, labor demand in the manufacturing sector seems to have declined as a consequence of China's accession to the WTO and to the 2009 global financial crisis.
- Likewise, there is evidence that after 1994, the relative wages of skilled workers increased in the Central region.
- Although labor mobility determinants are complex and diverse, this Box presents evidence of changes in the dynamics of interregional migratory flows in Mexico regarding both skilled and unskilled workers, which are consistent with the effects of trade openness.

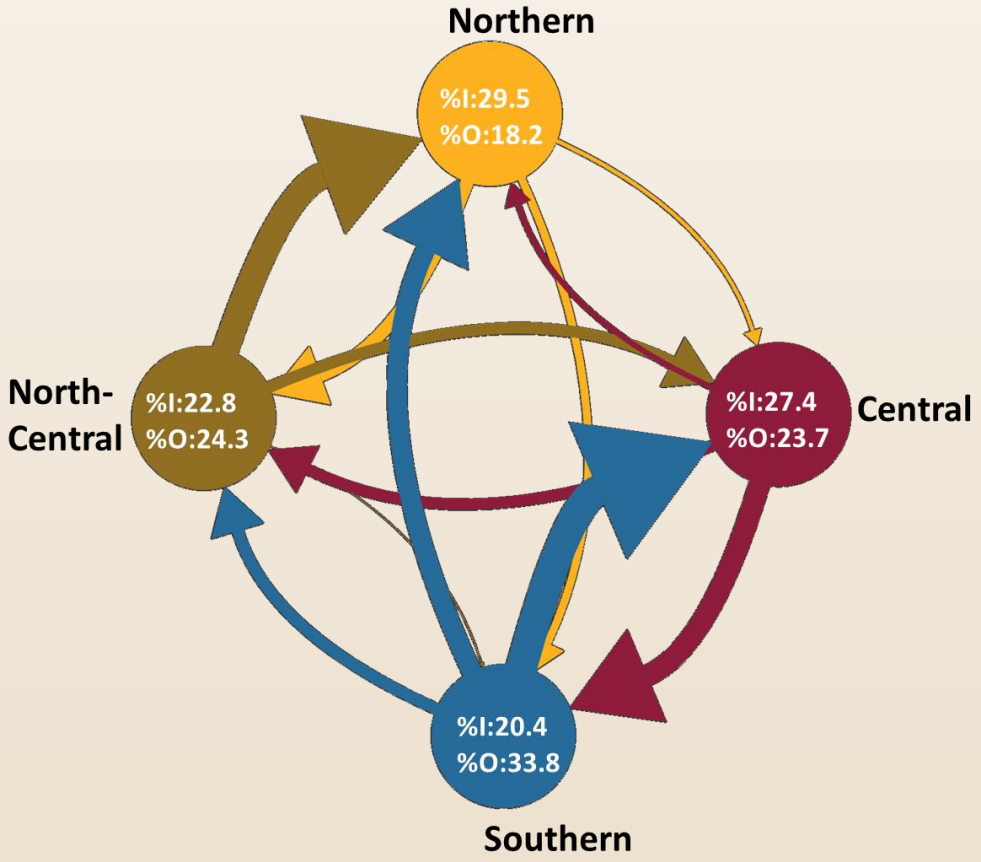
Box:
Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

Flows of Unskilled Interregional Migration

1995 - 2000



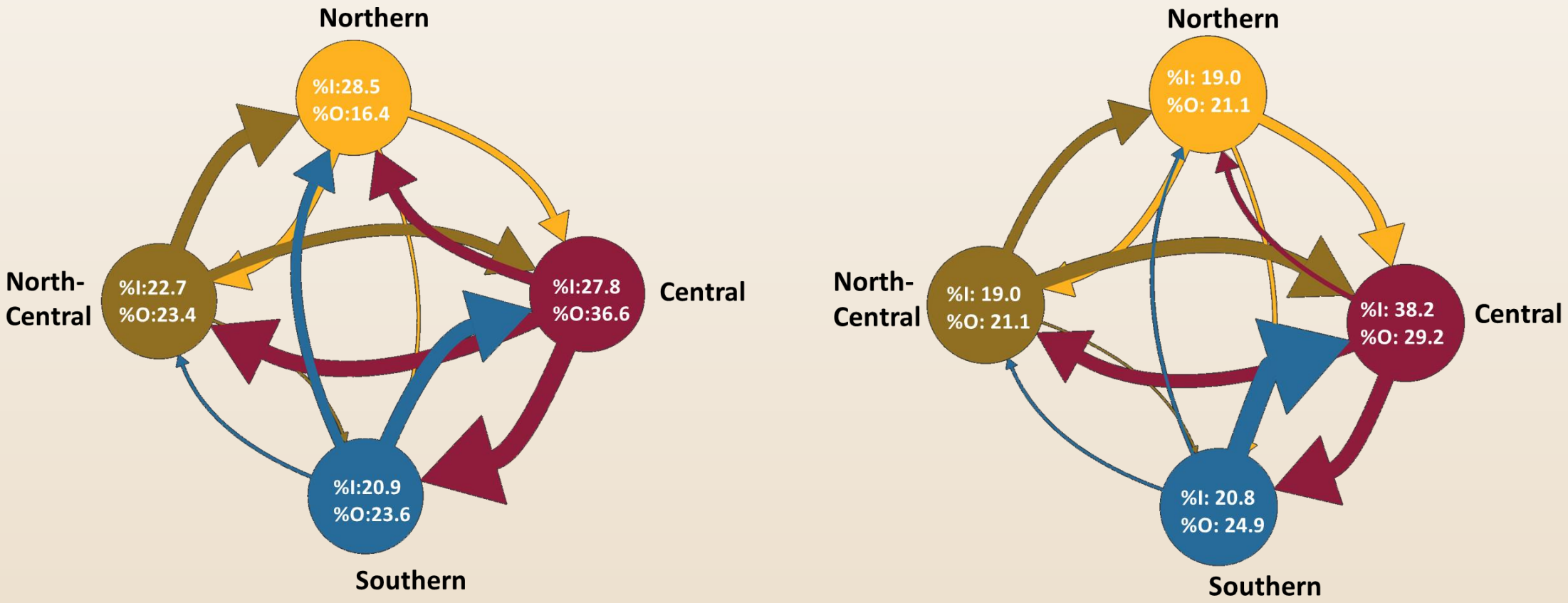
2010 - 2015



Note: %I is % of each region with respect to migrants' inflow; %O is % of each region with respect to migrants' outflow.
Source: Estimated by Banco de México with data from 2000 Population Census and 2015 Inter-census Survey.

Box:
Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

Flows of Skilled Interregional Migration



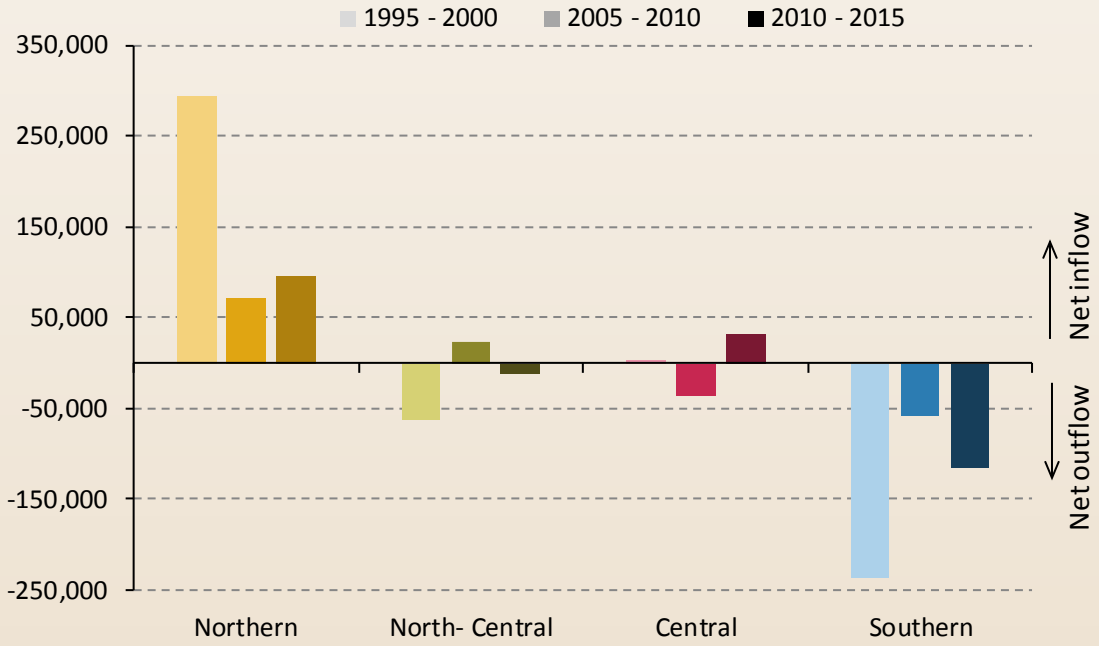
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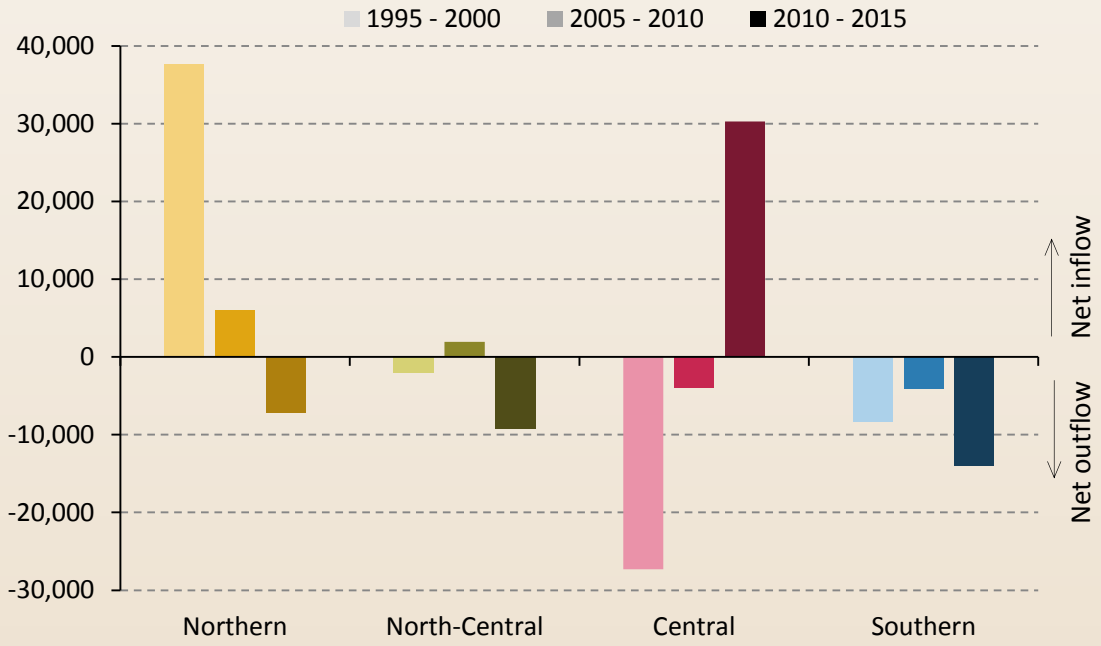
Net Balance of Migrants

Number of people

Unskilled



Skilled



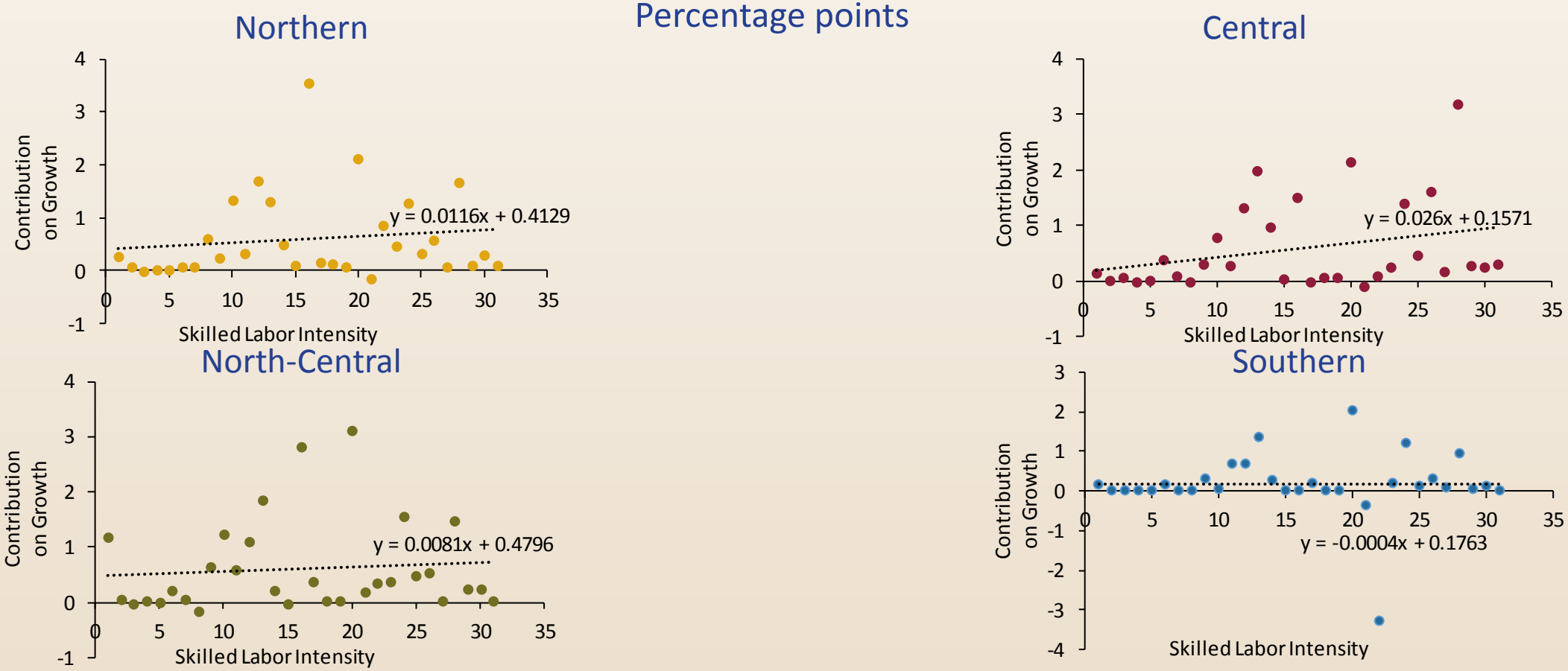
Source: Estimated by Banco de México with data from 2000 Population Census and 2015 Inter-census Survey.

Box:

Interregional Labor Mobility of Skilled and Unskilled Workers in Mexico, 2000 - 2015

Relationship between Contribution on Regional Growth and Skilled Labor Intensity of a Sector [1/] 2010 - 2015.

Percentage points



1/ A sector least intensive in skilled labor force is marked with a value of 1, and the most intensive one, with a value of 31.
Source: Estimated by Banco de México based on GDP series by state and data from 2010 Economic Census, INEGI.

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Final Remarks

- For different regions of Mexico to attain a more dynamic and sustained growth that can raise the welfare of Mexico's population, in addition to continuously strengthening the macroeconomic framework, structural and institutional problems need to be addressed, both at the national and local levels, which have prevented the economy from achieving higher levels of productivity and which have discouraged investment.
- To reach these goals, the institutional design of incentives needs to be revised, so that value creation is favored, the adoption of cutting-edge technologies is encouraged, trade openness and investment flows are maintained, and economic competition is fostered. In the same way, it is necessary to adopt policies to fight public insecurity, corruption and impunity, and to guarantee legal certainty and respect for private property in all regions of Mexico.
- By improving the efficiency of the economy and fostering the rule of law, the regional economies will be in a better condition to address different challenges that may emerge and grant a better quality of life to their population.



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