

# Regional Economic Report
# April - June 2021

BANCO DE MÉXICO

Published– General Purpose

Information published by Banco de México

# Outline

I. Regional Economic Report

II. Results April - June 2021

A. Regional Economic Report

B. Inflation

C. Economic outlook

(based on data collected between June 28 and July 22, 2021)

III. Final remarks



Information published by Banco de México

# Regional Economic Report

- The Regional Economic Report is a quarterly publication that includes Banco de México's indicators and analysis on the trends in economic activity, inflation and business agents' expectations in Mexico's regions.

- The information presented herein is taken into account by Banco de México's Governing Board as part of the information used to evaluate the economic situation and the forecast for the national economy.

- The economic performance and inflation in the regions during Q2 2021, and the prospects of business agents surveyed between June 28 and July 22, 2021 on regional economic activity and inflation over the following twelve months are analyzed herein.

# Outline

I. Regional Economic Report

II. Results April - June 2021

A. Regional Economic Report

B. Inflation

C. Economic outlook

(based on data collected between June 28 and July 22, 2021)

III. Final remarks

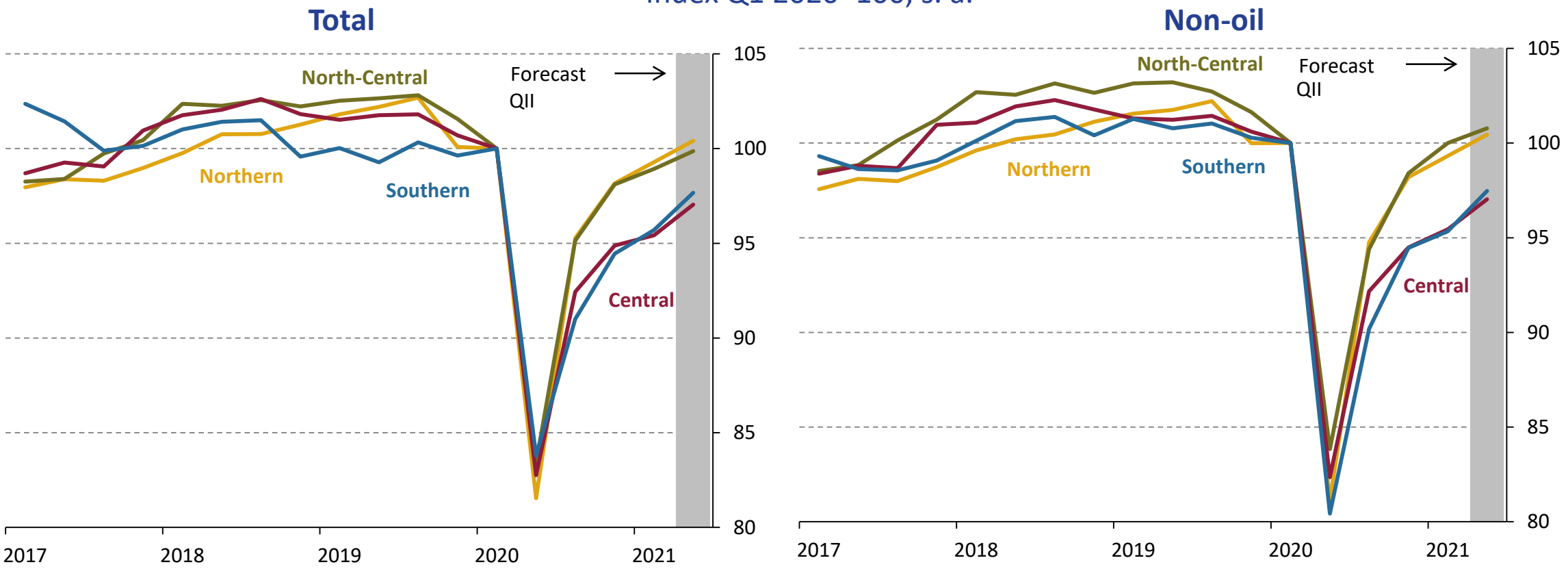
# Regional Economic Report

- **Economic activity** is estimated to **have continued recovering in all regions** during Q2 2021.
- **The more favorable evolution of tertiary activities is expected to have contributed to a greater extent** to regional economic recovery, given that **secondary activities are expected to have continued to decelerate**, although with heterogeneity across regions and sectors.
  - ✓ Services continued reactivating in a context in which progress in the vaccination process allowed to relax the restrictions associated with the health emergency.
  - ✓ Within the industrial sector, manufacturing exhibited difficulties associated with the shortage of certain inputs and other logistical problems, especially in the sector of transportation equipment.
  - ✓ The Southern region continued registering progress in public construction, which had been already observed for several quarters.

**Economic activity is estimated to have continued recovering in all regions during Q2 2021. However, the Central and Southern regions would continue exhibiting a wider gap with respect to the activity levels observed prior to the pandemic in Q1 2020, as compared to the Northern and North-Central regions.**

## Quarterly Indicator of Regional Economic Activity

Index Q1 2020=100, s. a.




s. a. / Seasonally adjusted data.

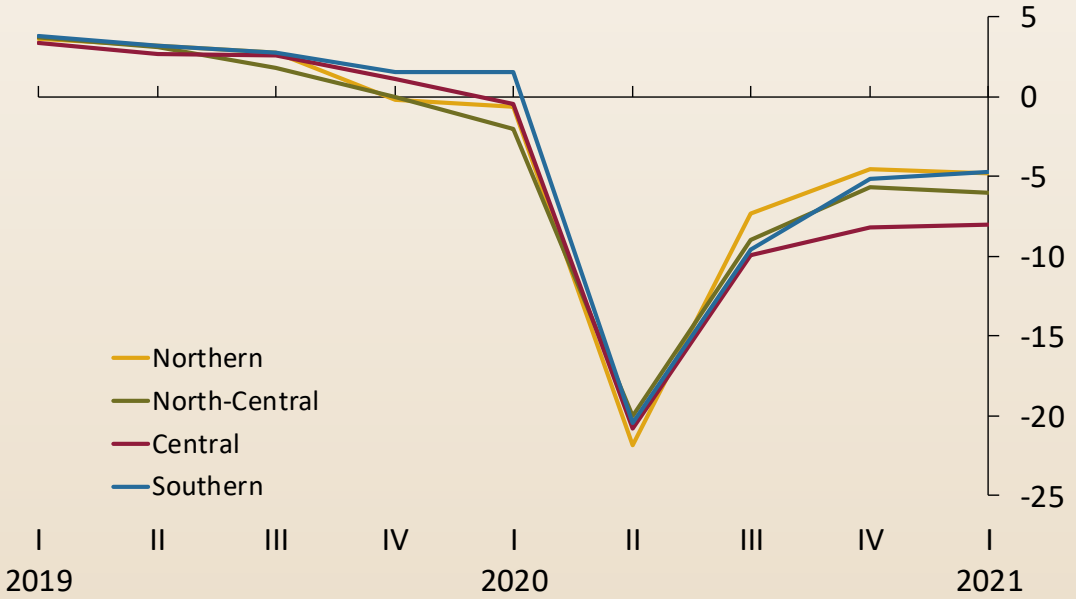
Source: Estimated by Banco de México with seasonally adjusted series of the Quarterly Indicator of Economic Activity by State from INEGI.

# Regional, State, and Sectoral Contributions to Aggregate Slack

- Output gap estimates in all regions continued registering negative figures during Q1 2021, with that of the Central region being the widest.

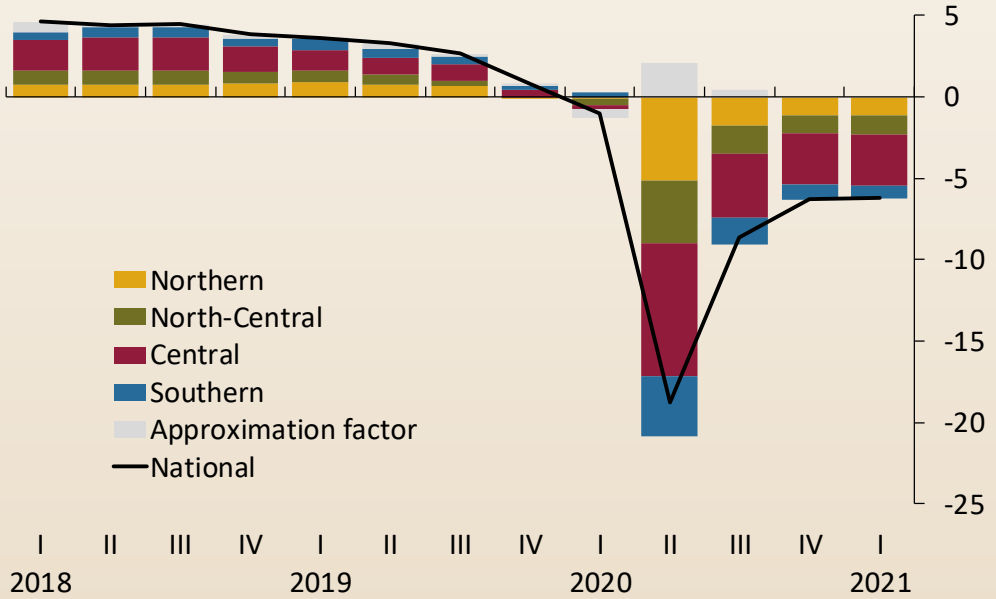
## Output Gap Estimate Excluding the Oil Sector[1/]

Percentage of potential output, s. a.




## Decomposition of the National Output Gap Estimate Excluding the Oil Sector, by Regions[1/]

Percentage of potential output and in percentage points, s. a.

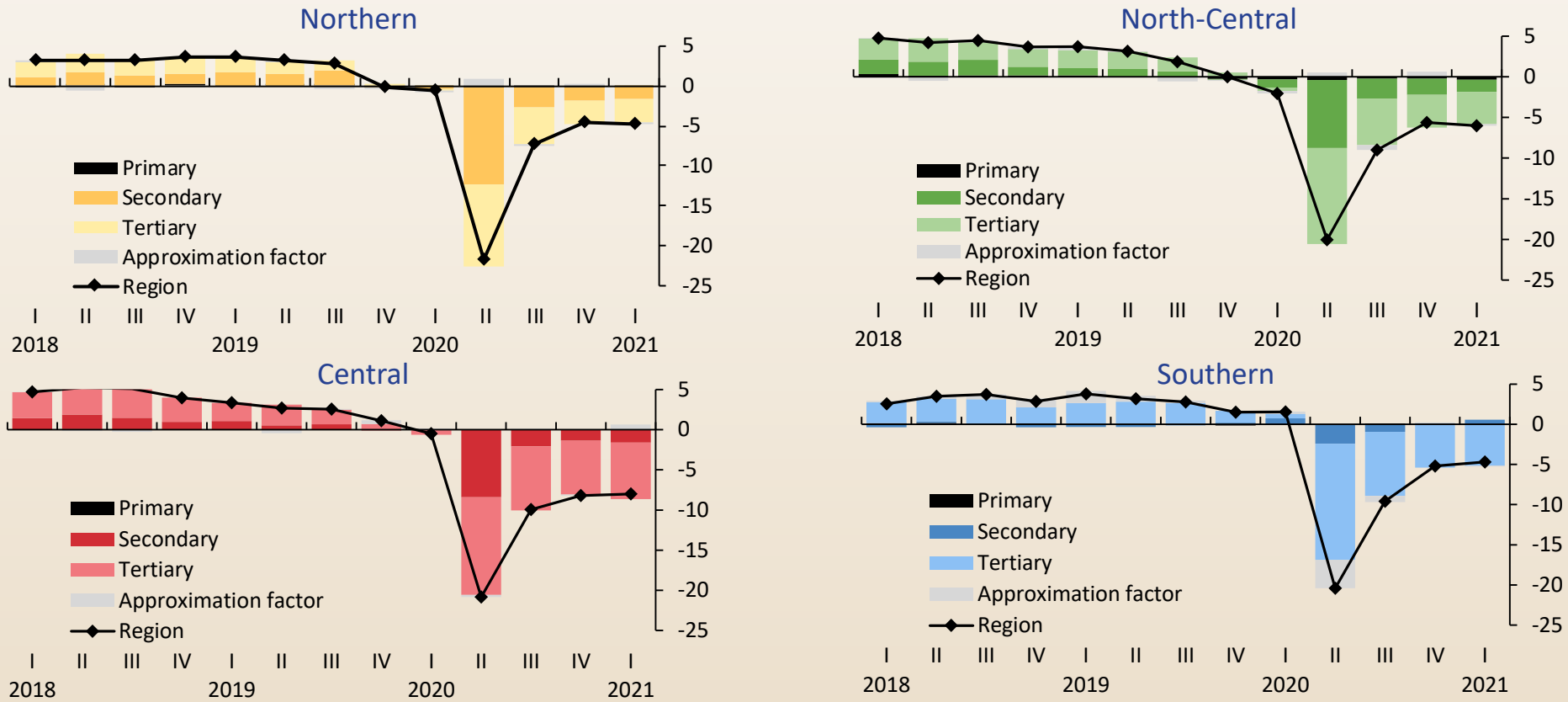



1/ Indices constructed using the Hodrick-Prescott filter with tail correction; see Inflation Report April - June 2009, Banco de México, p.69.
s. a. Prepared with seasonally adjusted figures.
Source: Prepared by Banco de México with data from INEGI.

# Regional, State, and Sectoral Contributions to Aggregate Slack

**Decomposition of the Regional Output Gap Estimate Excluding the Oil Sector, by Sectors[1/]**

Percent




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

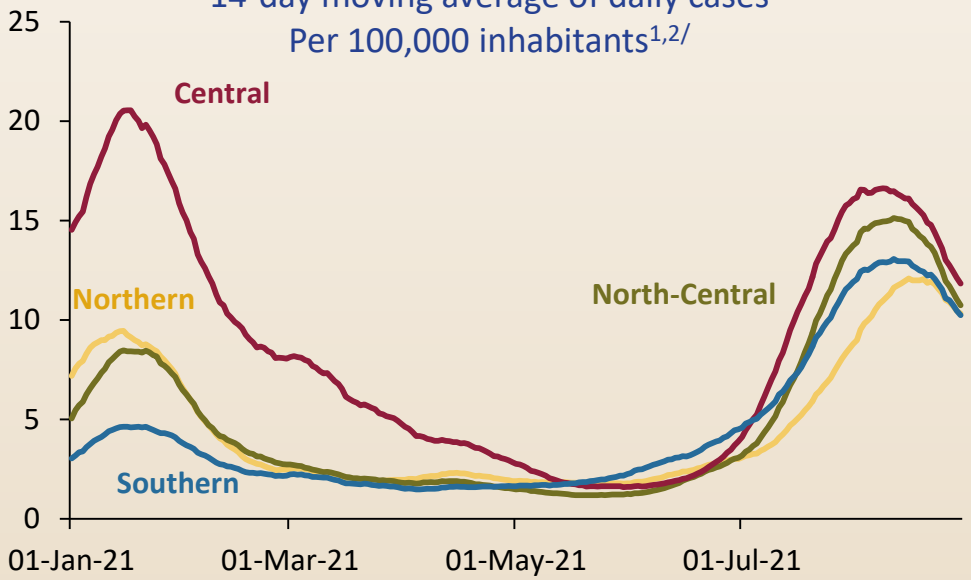
# Vaccination against COVID-19, New Cases and Deaths in Mexican Regions

- New daily cases of COVID-19 increased in June and July in all regions, peaking above historical maximums in August in the Southern, North-Central and Northern regions.

- Deaths per hundred thousand inhabitants grew less than proportionally relative to cases.

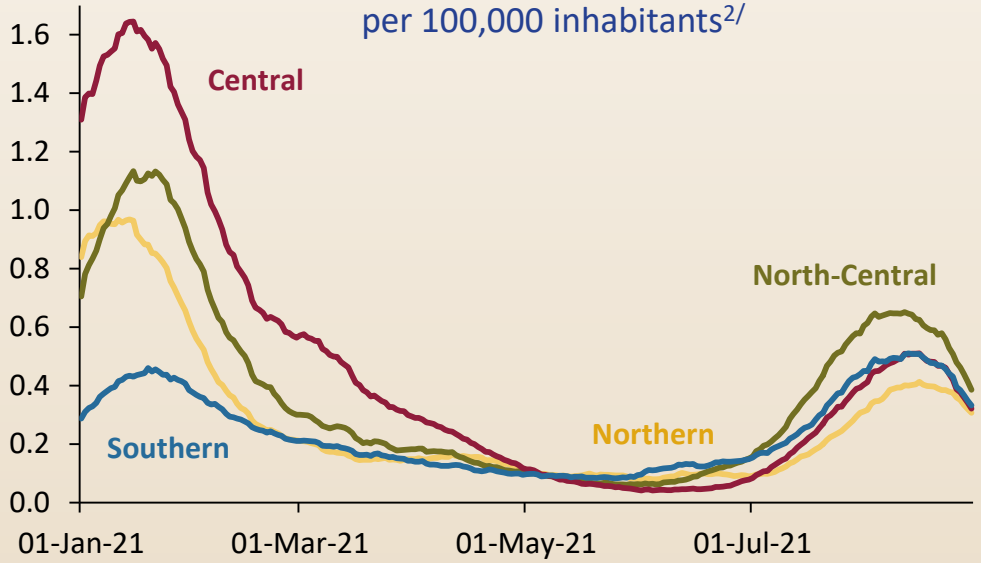
**Number of Daily COVID-19 Cases, by Region, in 2021**

14-day moving average of daily cases
Per 100,000 inhabitants[1,2/]




**Number of Daily COVID-19 Deaths , by Region, in 2021**

14-day moving average of the number of deaths
per 100,000 inhabitants[2/]

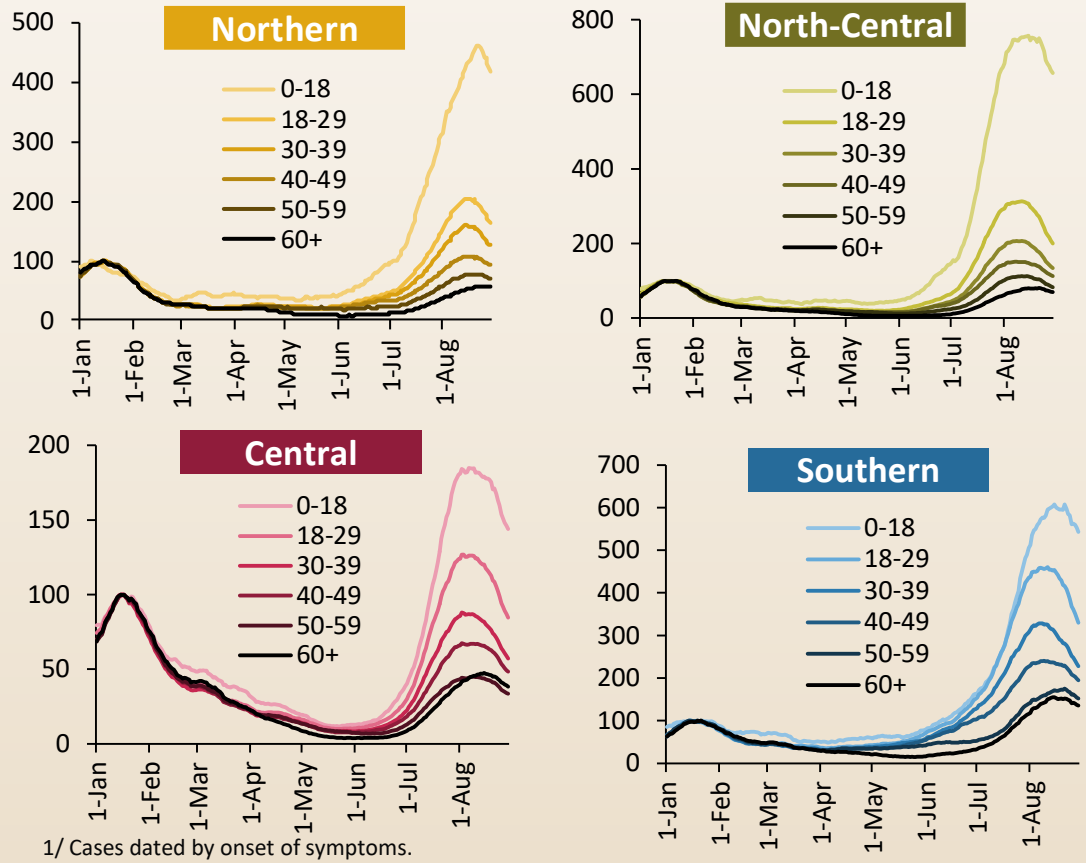



1/ 14-day moving average of positive cases dated by onset of symptoms, per 100,000 people.
2/ Information as of August 29,2021. Estimated using data released on September 12.
Source: Prepared by Banco de México, using data from the Ministry of Health and 2020 Population and Housing Census.

# Vaccination against COVID-19, New Cases and Deaths in Mexican Regions

**Index of Daily Cases by Region and Age Group**

January Maximum= 100, 14-day moving average[1,2/]




1/ Cases dated by onset of symptoms.
2/ From January 1 to August 29, 2021. Estimated using data released on September 12.
Source: Prepared by Banco de México, using data from the Ministry of Health and 2020 Population and Housing Census.

- Daily new cases increased at slower rates among age groups with higher vaccination rates.

**Percentage of Individuals over 18 Years of Age Vaccinated with at Least One Dose**

a) By age group[1/]

| 18-39 | 40-49 | 50-59 | 60+ |
|---|---|---|---|
| 7.4% | 55.2% | 71.0% | 73.8% |

B) By region[2/]

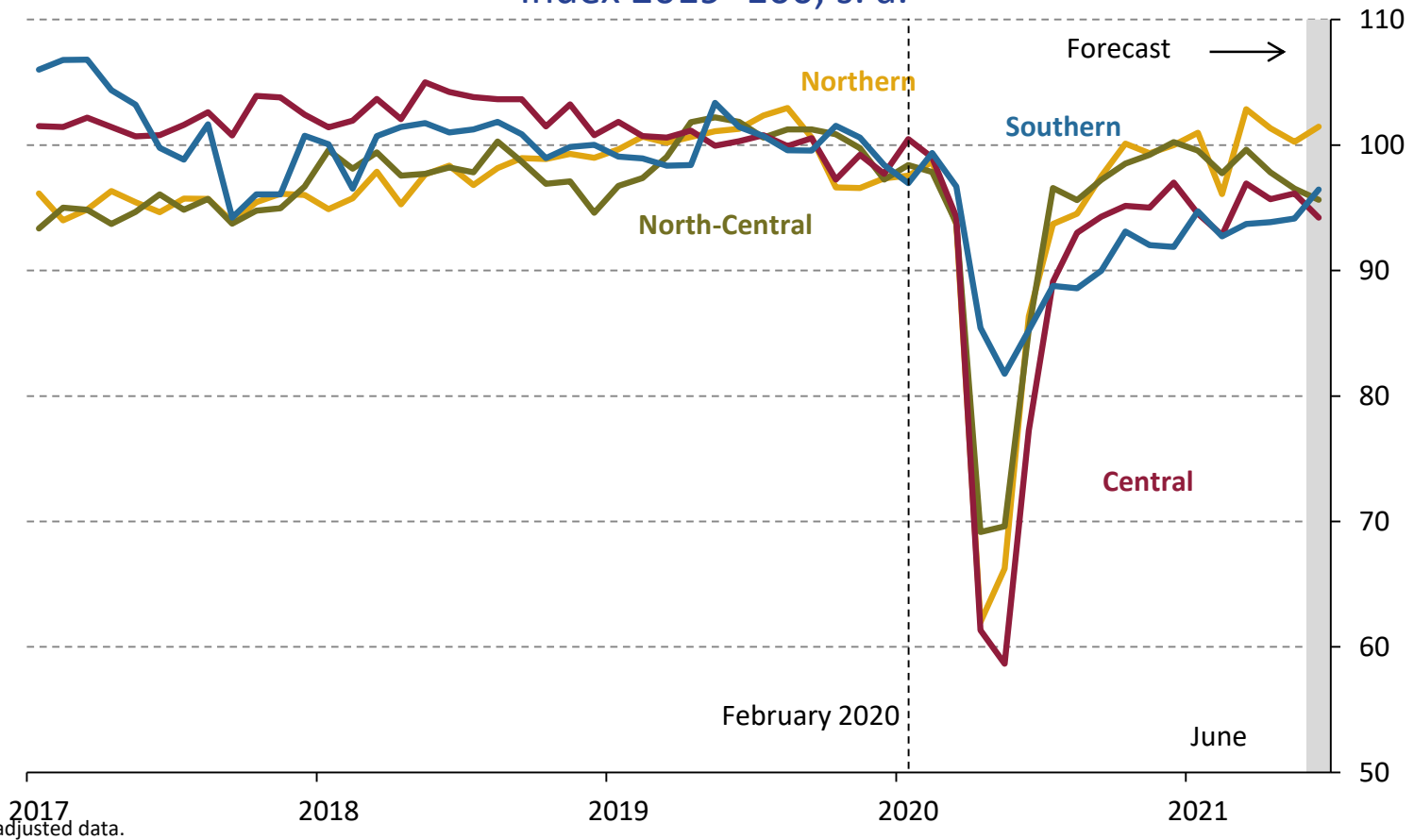
| Northern | North-Central | Central | Southern | Total |
|---|---|---|---|---|
| 75.8% | 67.9% | 68.4% | 58.6% | 67.4% |

1/ Individuals vaccinated with at least one dose as of July 19, 2021. The vaccination program covers adults over 18 years old.
2/ Individuals vaccinated with at least one dose as of September 5, 2021. The vaccination program covers adults over 18 years old.
Source: Prepared by Banco de México, using data from the Ministry of Health and CONAPO.

**In all regions, manufacturing is estimated to have followed a heterogeneous evolution in Q2 2021, in a context in which production of transportation equipment exhibited weakness in all regions, and manufacturing excluding transportation equipment registered differentiated results among regions.**

## Regional Manufacturing Indicator

Index 2019=100, s. a.



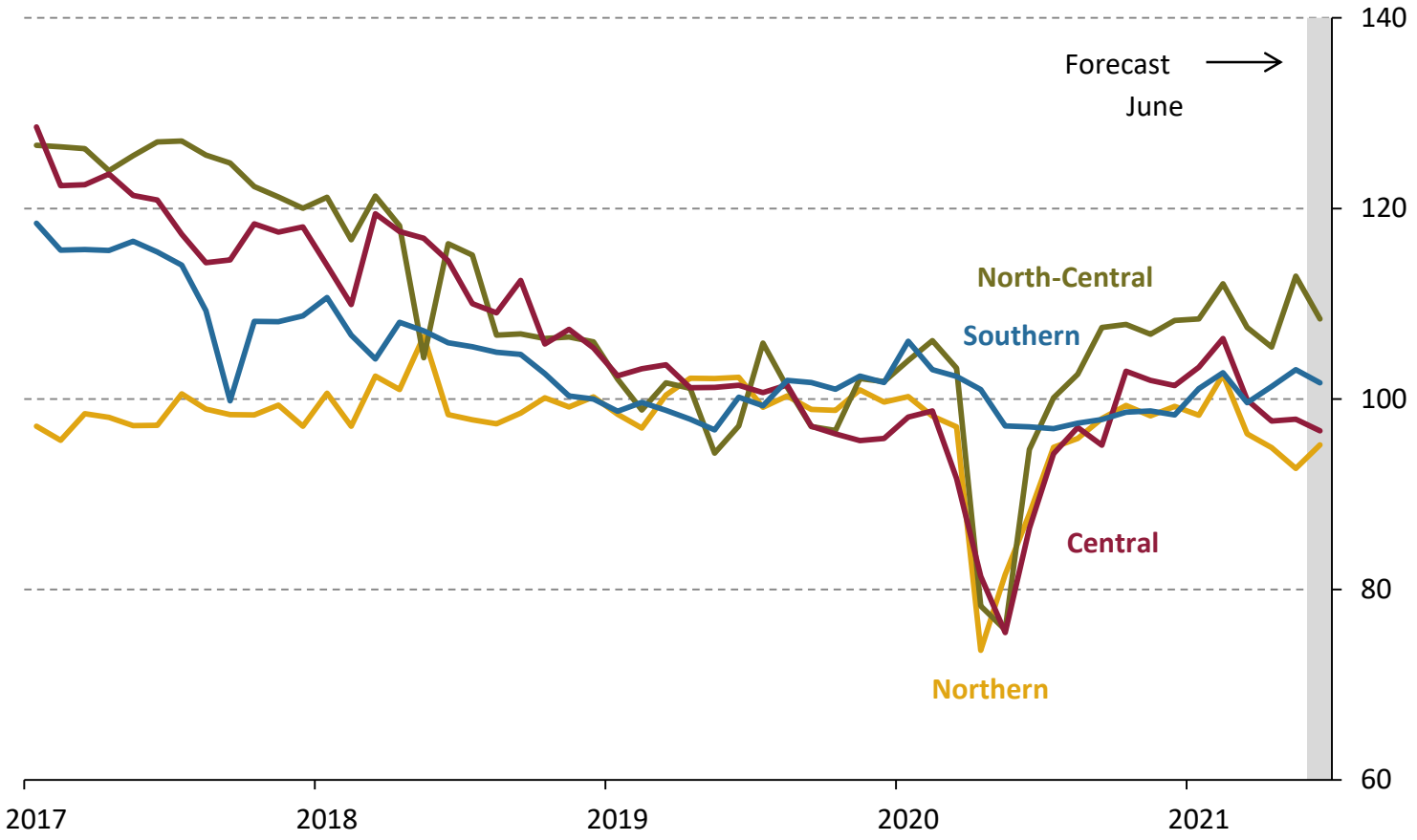

s. a. / Seasonally adjusted data.

Source: Estimated by Banco de México with seasonally adjusted series of the Quarterly Indicator of Manufacturing by State from INEGI.

**In Q2 2021, in the Northern and central regions mining is estimated to have contracted with respect to Q1 2021, basically as a consequence of the performance of mineral mining; while in the Southern region it is expected to have expanded.**

## Regional Indicator of Mining, Quarrying, and Oil and Gas Extraction

Index 2019=100, s. a.

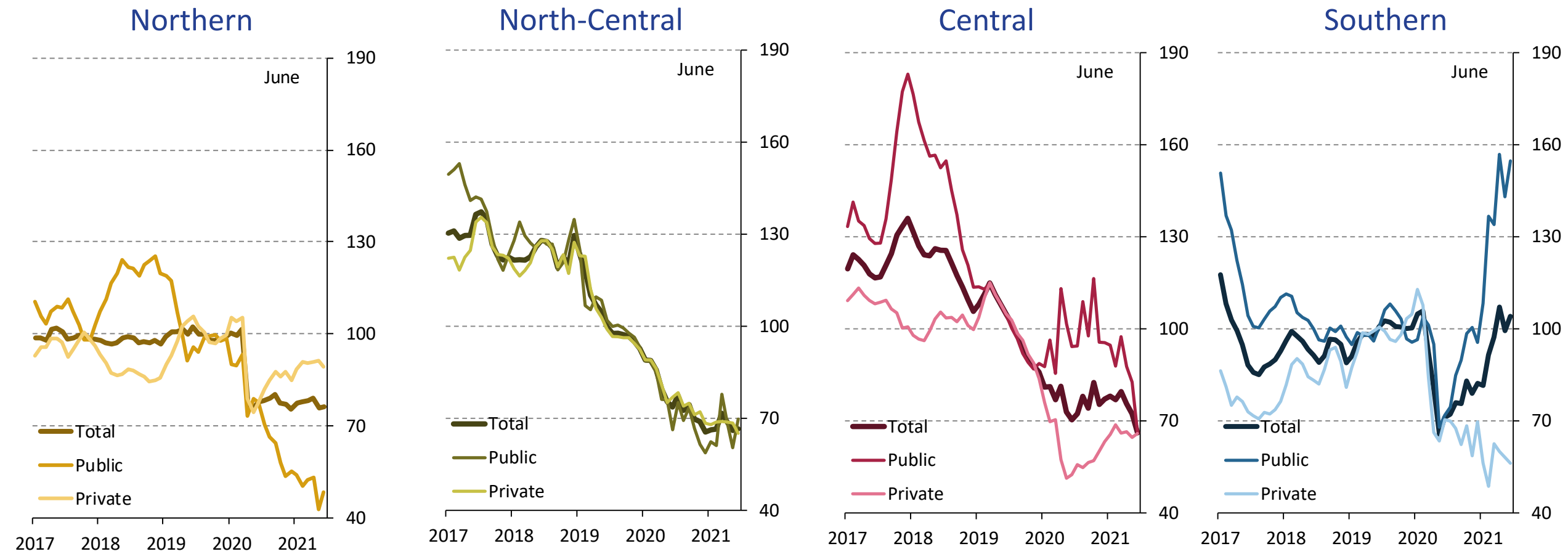



s. a. / Seasonally adjusted data.
Source: Estimated and seasonally adjusted by Banco de México with the series of the Monthly Indicator of Mining Activity by State (INEGI).

**In Q2 2021, construction continued recovering in the Southern region, supported by its public component. In contrast, construction contracted and remains at low levels in the rest of the Mexican regions.**

## Real Value of Production in the Construction Industry by Region

Index 2019=100, s. a., 3-month moving average except for 2020 and 2021



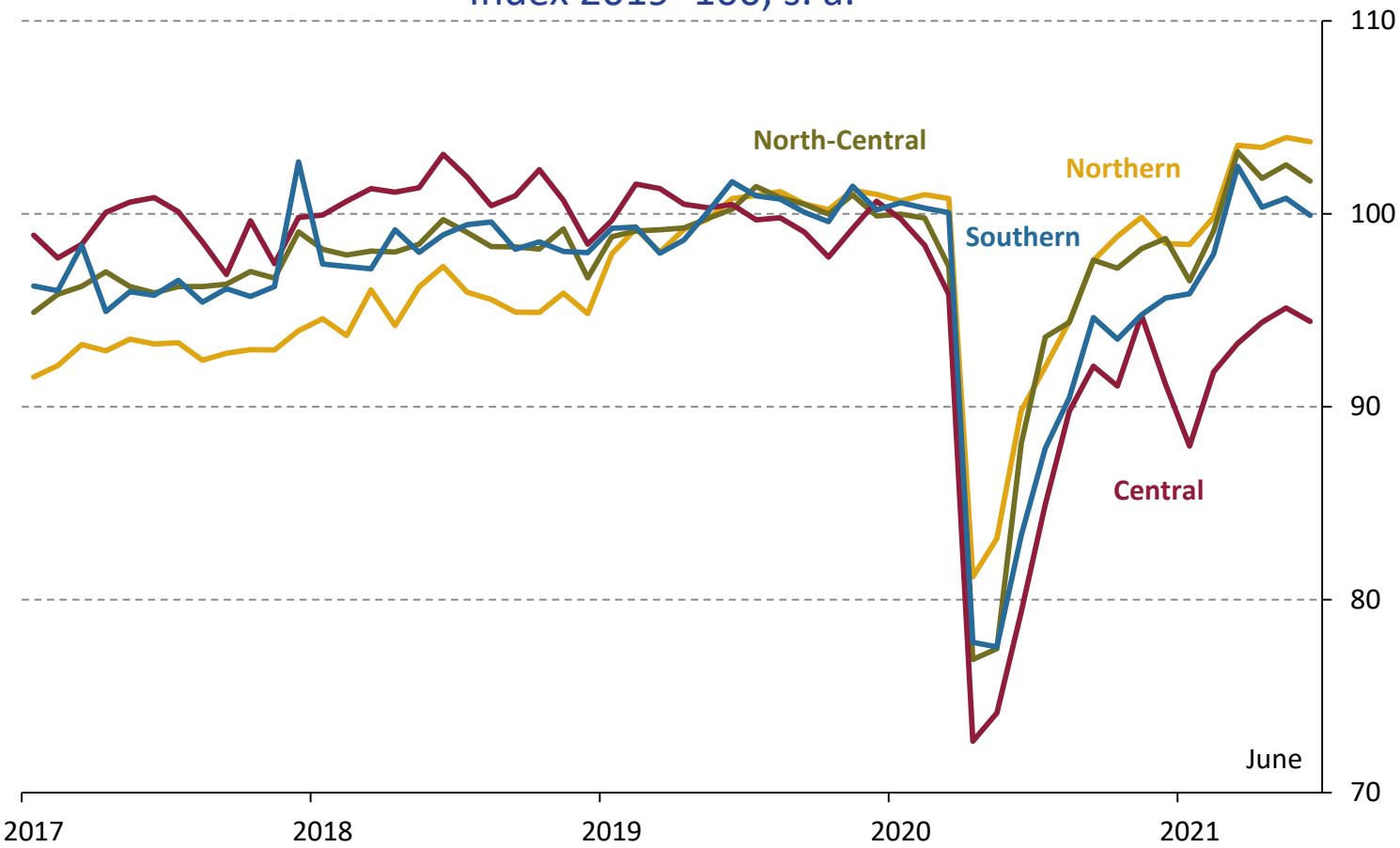

s. a. / Seasonally adjusted data.

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

**Commercial activity expanded in all regions in Q2 2021, as compared to Q1 2021. However, the Central region has shown a lower recovery in its levels than the rest of the regions.**

## Index of Revenues from Retailers' Supply of Goods and Services

Index 2019=100, s. a.




s. a. / Seasonally adjusted data.

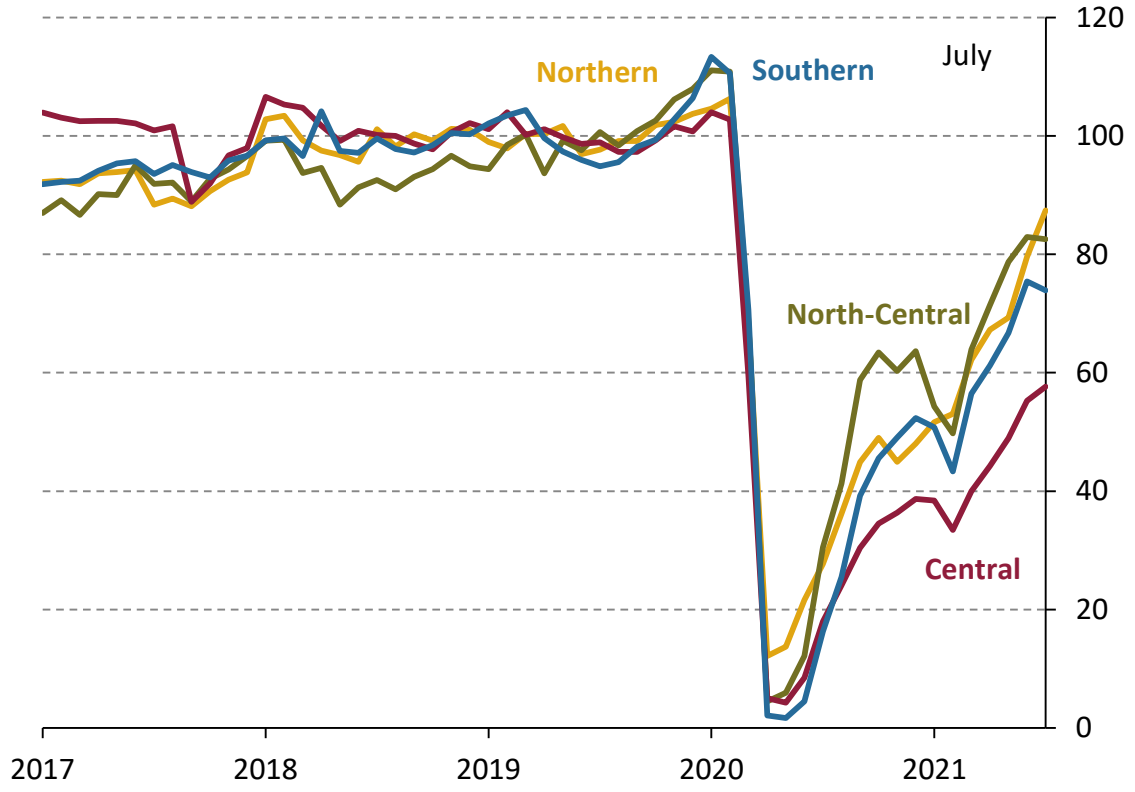
Source: Estimated and seasonally adjusted by Banco de México with the series of Revenues from Retailers' Supply of Goods and Services, by state (INEGI).

**Tourism activity continued recovering in Q2 2021 in all Mexican regions, although it is still below pre-pandemic levels, especially in the Central region.**

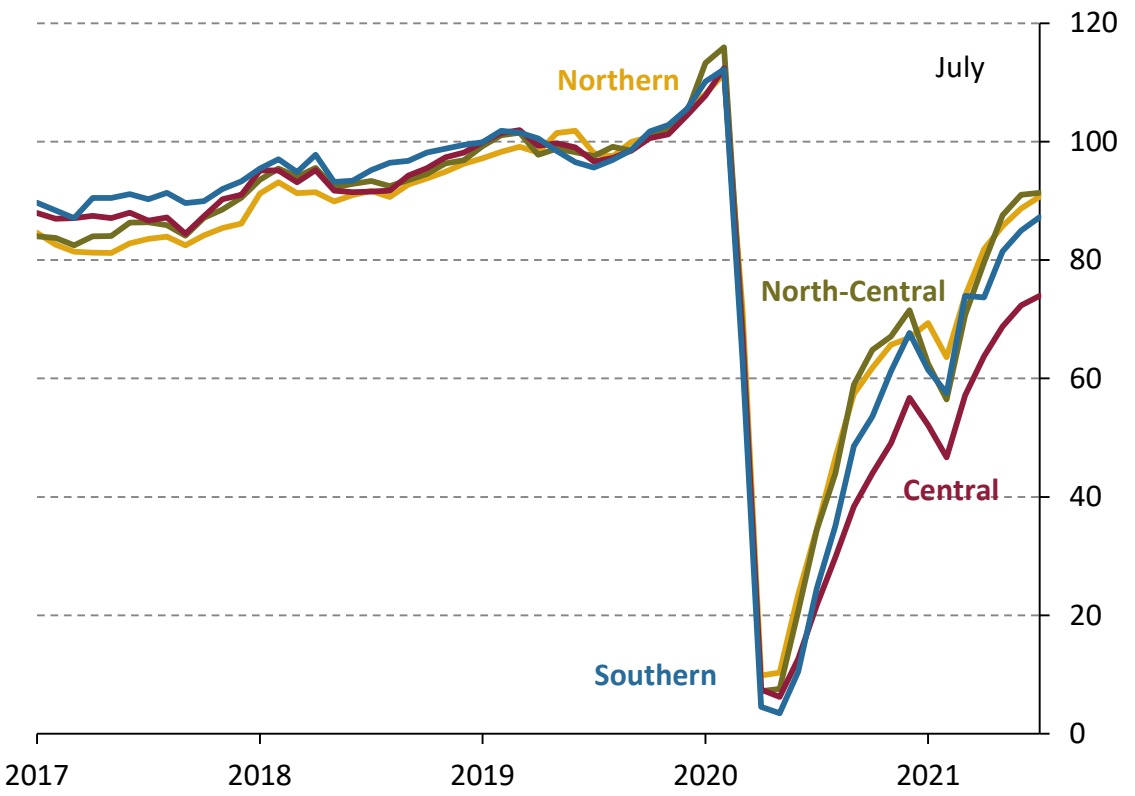
## Regional Indicators of Tourism

Index 2019=100, s. a.

### Hotel Occupancy




### Inflow of Passengers to Airports



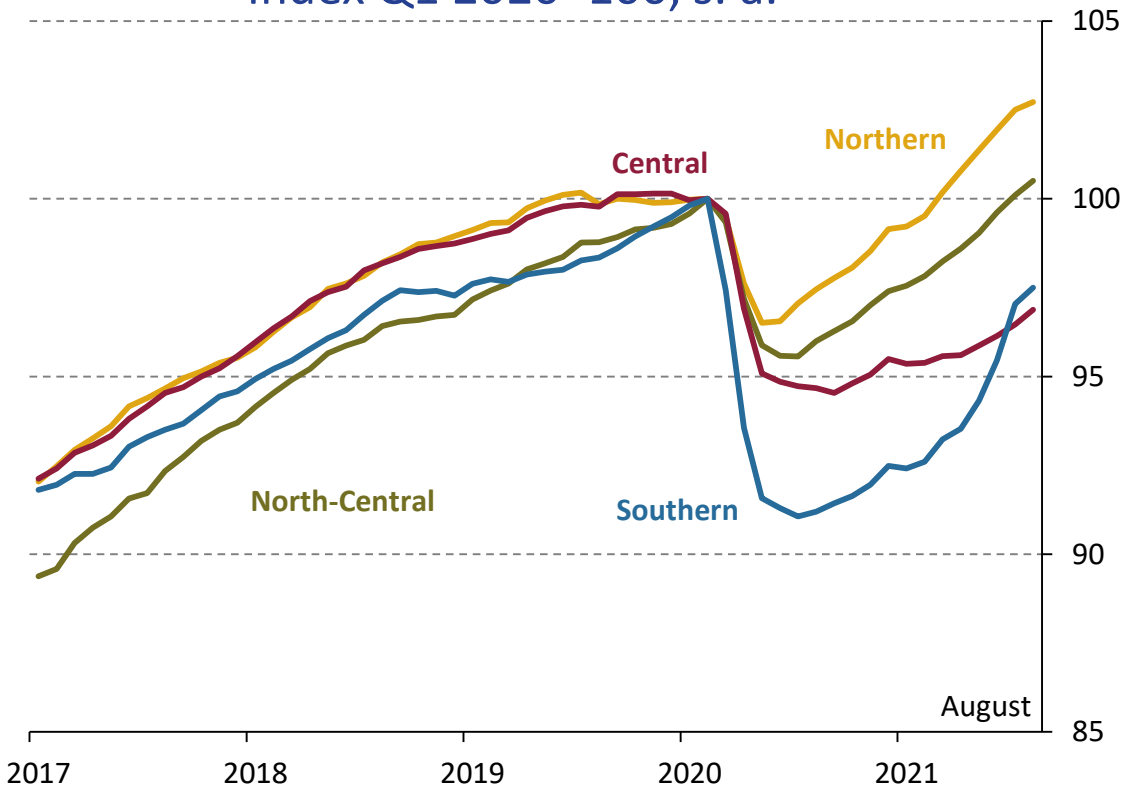

s. a. / Seasonally adjusted data.

Source: Prepared and seasonally adjusted by Banco de México with data from the Mexican Secretariat of Tourism and the state-owned company Airport and Auxiliary Services (ASA, for its acronym in Spanish).

# During Q2 2021, the number of IMSS-insured workers continued recovering in all regions, at an even higher rate than in Q1 2021, except for the Central region, where its growth rate was similar.

## Number of IMSS-insured Workers

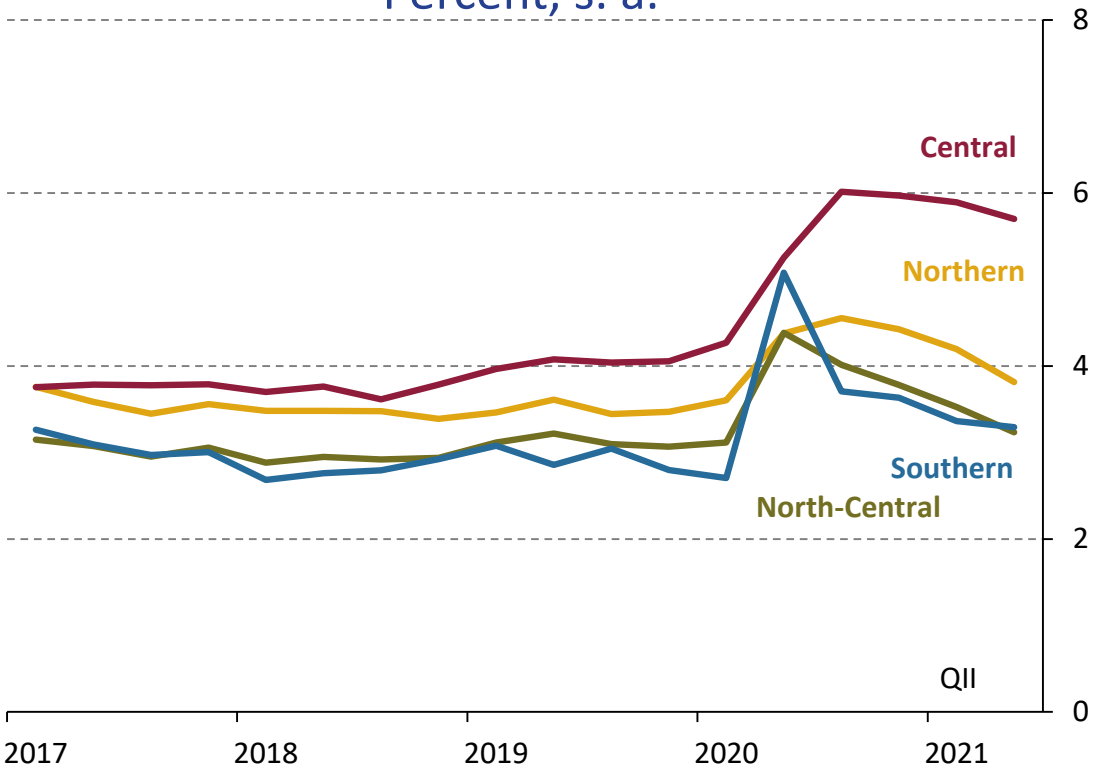
Index Q1 2020=100, s. a. 1/




s. a. / Seasonally adjusted data.
Permanent and temporary jobs in urban areas.
Source: Prepared and seasonally adjusted by Banco de México with data from IMSS.

## Unemployment Rate

Percent, s. a.

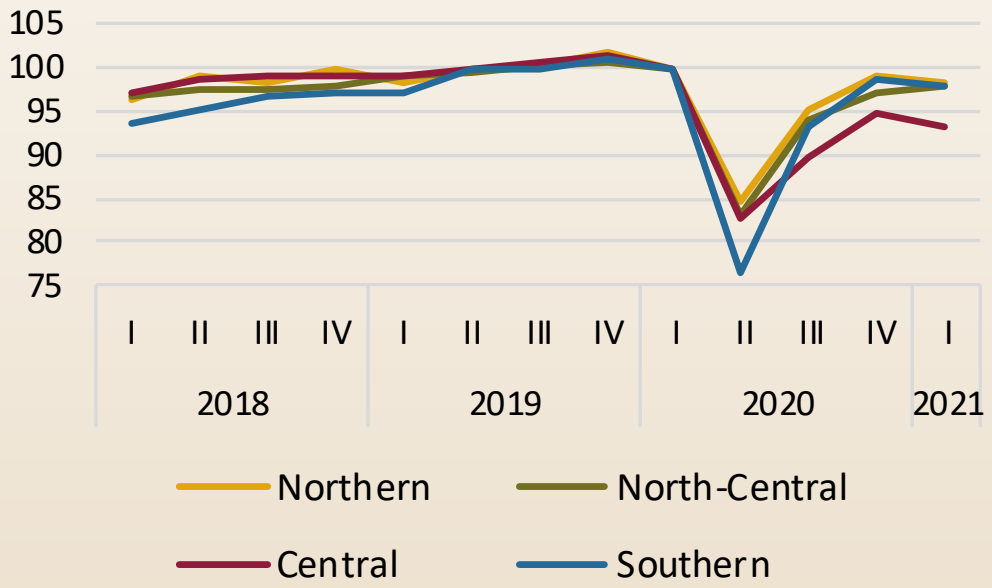



s. a. / Seasonally adjusted data.
Source: Prepared and seasonally adjusted by Banco de México with data from INEGI. Data as of Q2 2020 correspond to labor indicators for Mexican states with an estimate using INEGI statistical models and, starting from Q3 2020 data correspond to the New Telephone Survey on Occupation and Employment (ENOEN). Mexican states' population figures were obtained from INEGI.

# Recent Evolution of Employment and Regional Economic Activity

## Total Aggregated Employed Personnel, by Region

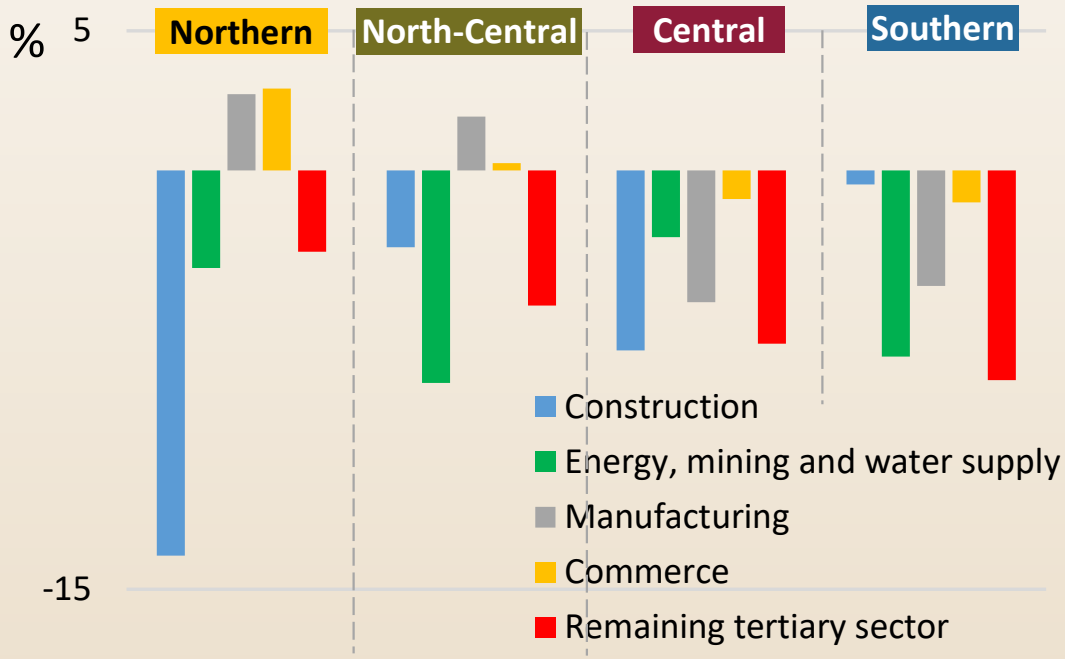
Q1 2020 = 100




Source: Prepared by Banco de México with data from INEGI (ENOE, ENOEN, and ETOE).

## Regional Growth of ITAEE between Q1 2020 and Q1 2021

Data in percent



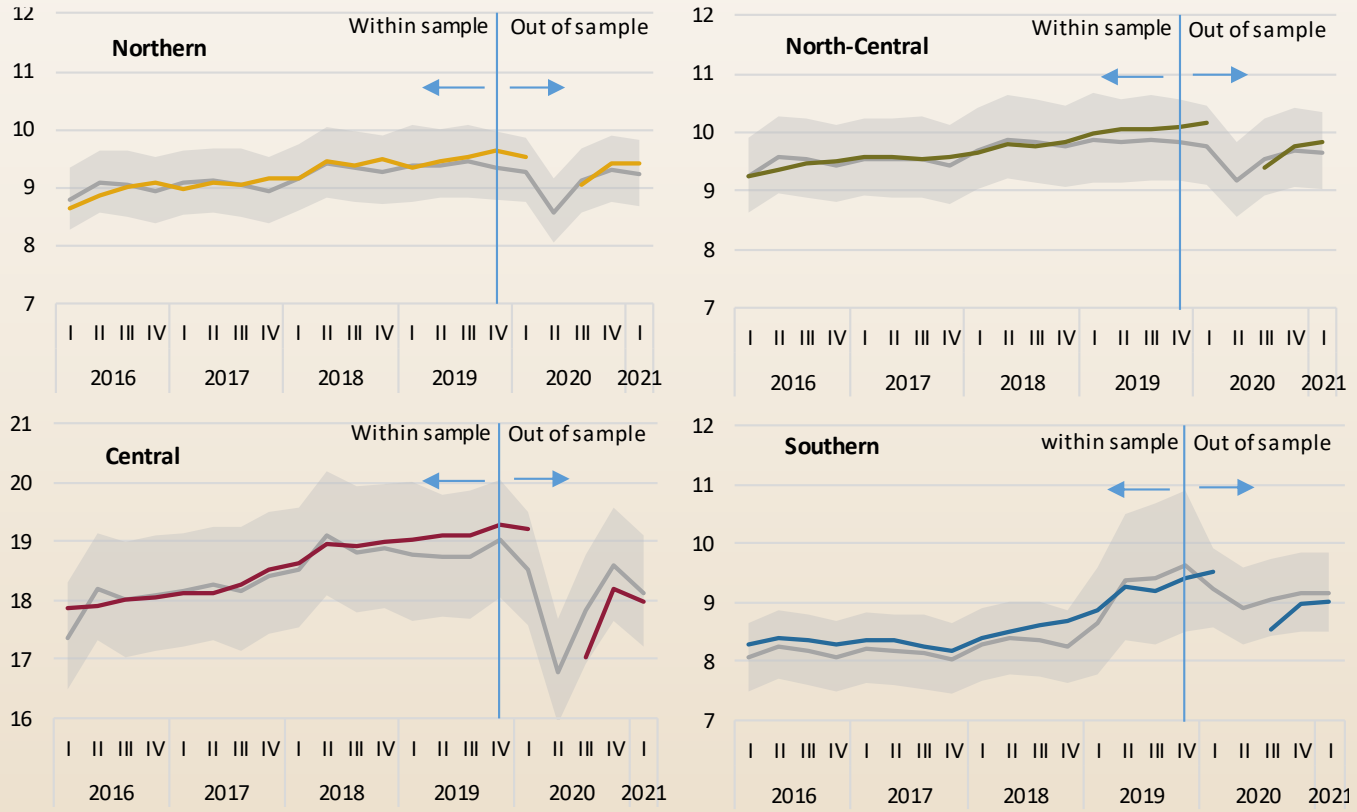

Note: The primary sector and the oil industry are excluded.
Source: Prepared by Banco de México with data from INEGI.

# Recent Evolution of Employment and Regional Economic Activity

- An econometric model was estimated to obtain elasticities of the adjustment in employment in view of changes in economic activity at the region-sector level.
- The results suggest that the observed evolution of employed personnel is consistent from a statistical point of view with the employment that, according to the econometric model, these regions should have registered, given their sectoral economic evolution.

**Estimated and Observed Employed Personnel**

Data in millions




Note: Confidence intervals in grey at 95%; the primary and oil sectors are excluded. Data of the employed personnel as of Q2 2020 are not available in the ENOE at the region-sector level.
Source: Estimated by Banco de México based on data from INEGI (ENOE, ITAEE, National Accounts).

# Recent Evolution of Employment and Regional Economic Activity

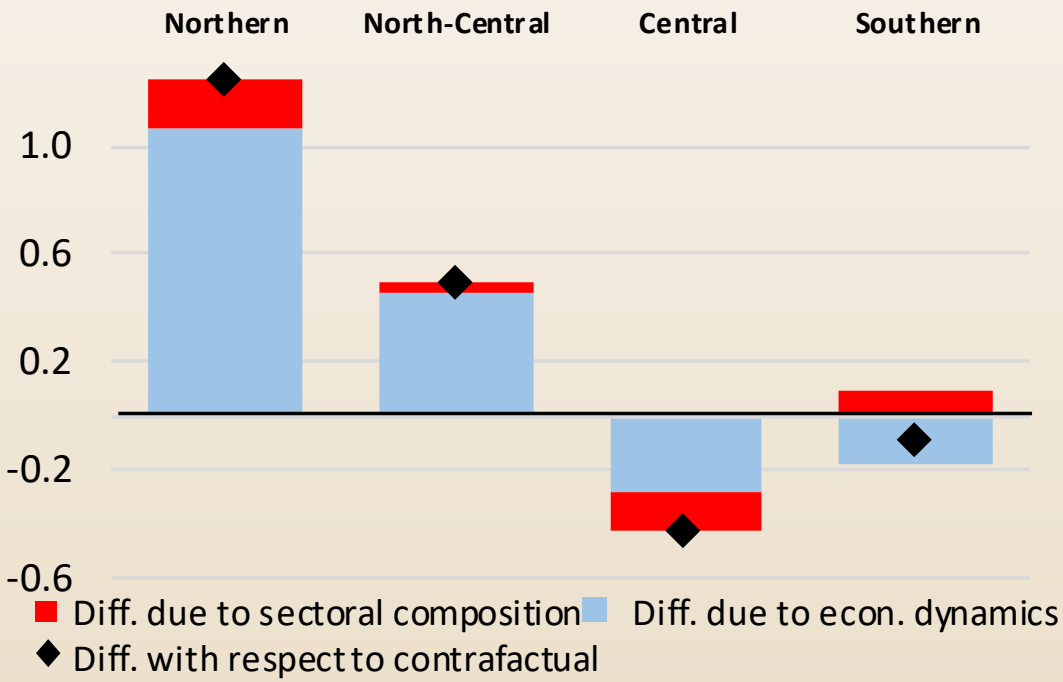
## Relevance of Economic Evolution and Sectoral Structure within Regions

- **Sectoral Composition Effect:** difference between estimated employment with the observed activity and a hypothetical situation, in which all the entities had the same sector structure observed at the national level.
- **Economic Dynamics Effect:** difference between estimated employment with observed activity and a hypothetical scenario, where in all entities economic activity of each sector grows at the rate of the national average of the corresponding sector.
- To measure the effects caused by the pandemic, the difference between the effects calculated for the period of the pandemic and those estimated prior to the health crisis was considered.
- The **reactivation** of employment in the **Northern** and **North-Central regions** is mainly explained by the **more favorable** evolution of their **economic dynamics**, although the **sectoral structure** of these regions has also influenced positively. In the **center**, the **slower** recovery is due to both **economic dynamics** and **sectoral composition**. Finally, the evolution of employment in the **south** is explained by its **lower sectoral dynamism**, partially offset by the positive effect of its sectoral economic composition.

**Decomposition of Deviations in Employed Personnel with Respect to the Counterfactual Scenario**

Differences between the pre-pandemic period (2016-2019) and during the pandemic (2020-2021)

Figures in percentage points

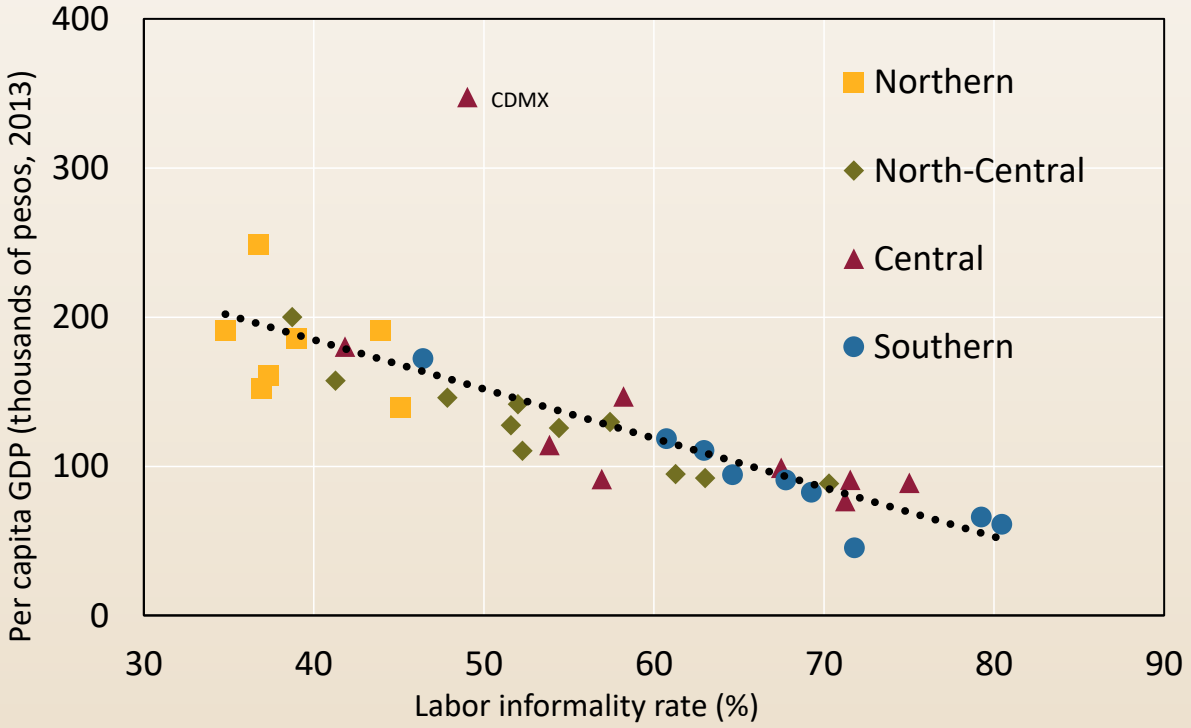



Source: Estimates by Banco de México with data from INEGI.

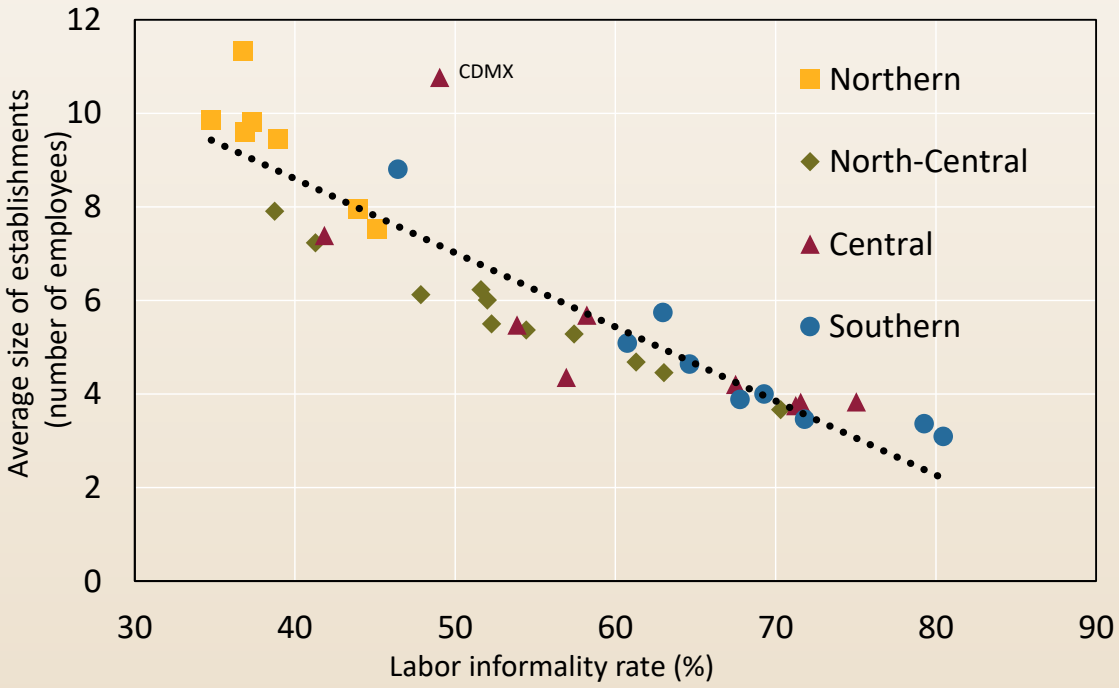
# Labor Informality and its Effect on the Size of Establishments and Per Capita GDP in Mexico's Regions

## Relationship between Labor Informality and Indirect Measures of Productivity by State

### Per Capita GDP and Labor Informality (2019)




### Average Size of Establishments and Labor Informality (2019)



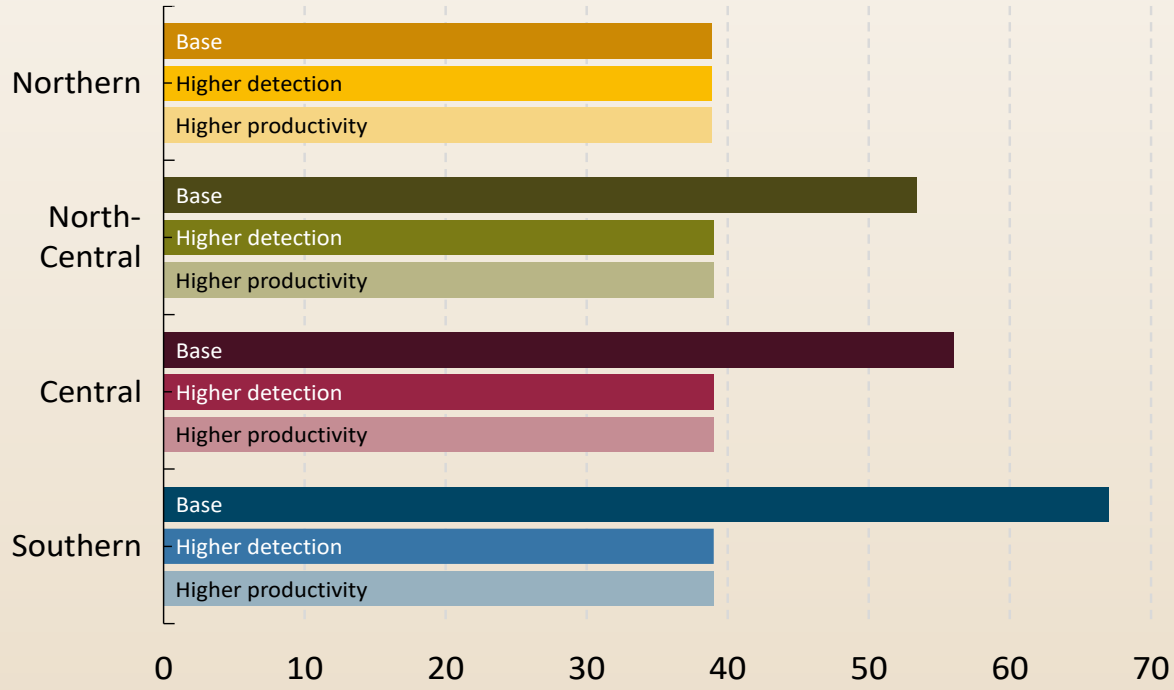

Source: Prepared by Banco de México with INEGI data.

# Labor Informality and its Effect on the Size of Establishments and Per Capita GDP in Mexico's Regions

- The general equilibrium occupational model based on Leal-Ordoñez (2014) is calibrated for Mexico's regions.[1/]
- Two scenarios of decreasing informality are simulated, such that the labor informality of each region is equal to that of the Northern one.
  1) Greater ability to detect informal workers
  2) Greater productivity
- Per capita GDP and establishment size would increase in all regions as labor informality decreases. Increases in per capita GDP per capita would be greater in the second scenario.

**Counterfactual Scenario Resulting from Adjusting Capacity for Detection of Informal Workers or Productivity**

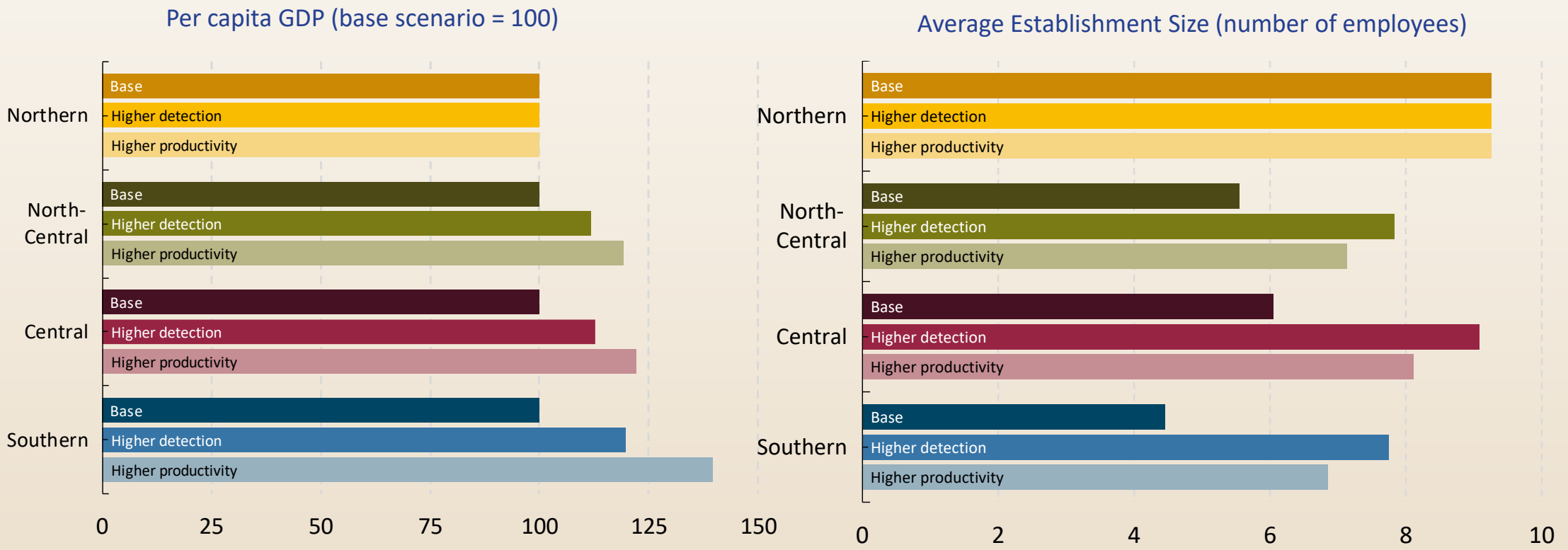
Labor informality rate (percent)




1/ Leal-Ordoñez, J.C., 2014. Tax Collection, the Informal Sector, and Productivity. Review of Economic Dynamics, 17(2), pp.262-286.

# Labor Informality and its Effect on the Size of Establishments and Per Capita GDP in Mexico's Regions

## Counterfactual Scenario Resulting from Adjusting Capacity for Detection of Informal Workers or Productivity




Note: In the Higher Detection scenario, the detection of informal entrepreneurs is adjusted in the model to obtain the labor informality rate of the Northern region and the tax rate is adjusted to leave tax collection unchanged. In the Higher Productivity scenario, productivity in each region is adjusted to obtain the informality rate of the Northern region.

# Outline

I. Regional Economic Report

**II. Results April – June 2021**

A. Economic activity

**B. Inflation**

C. Economic outlook

(based on data collected between June 28 and July 22, 2021)

III. Final remarks

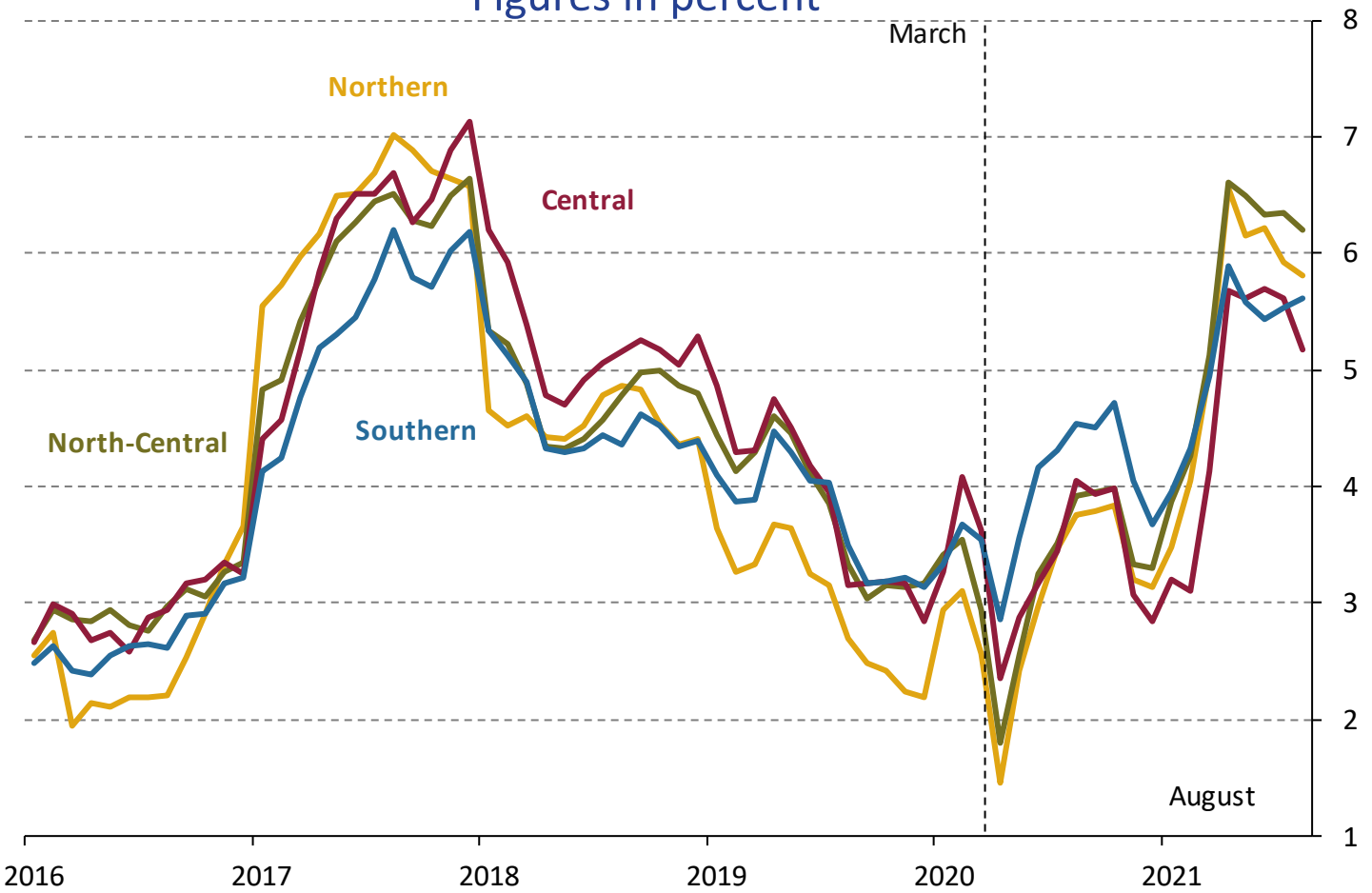


Information published by Banco de México

# In all regions, average annual headline inflation increased between Q1 2021 and Q2 2021, remaining at high levels so far in Q3 2021.

## Annual Headline Inflation by Region

Figures in percent

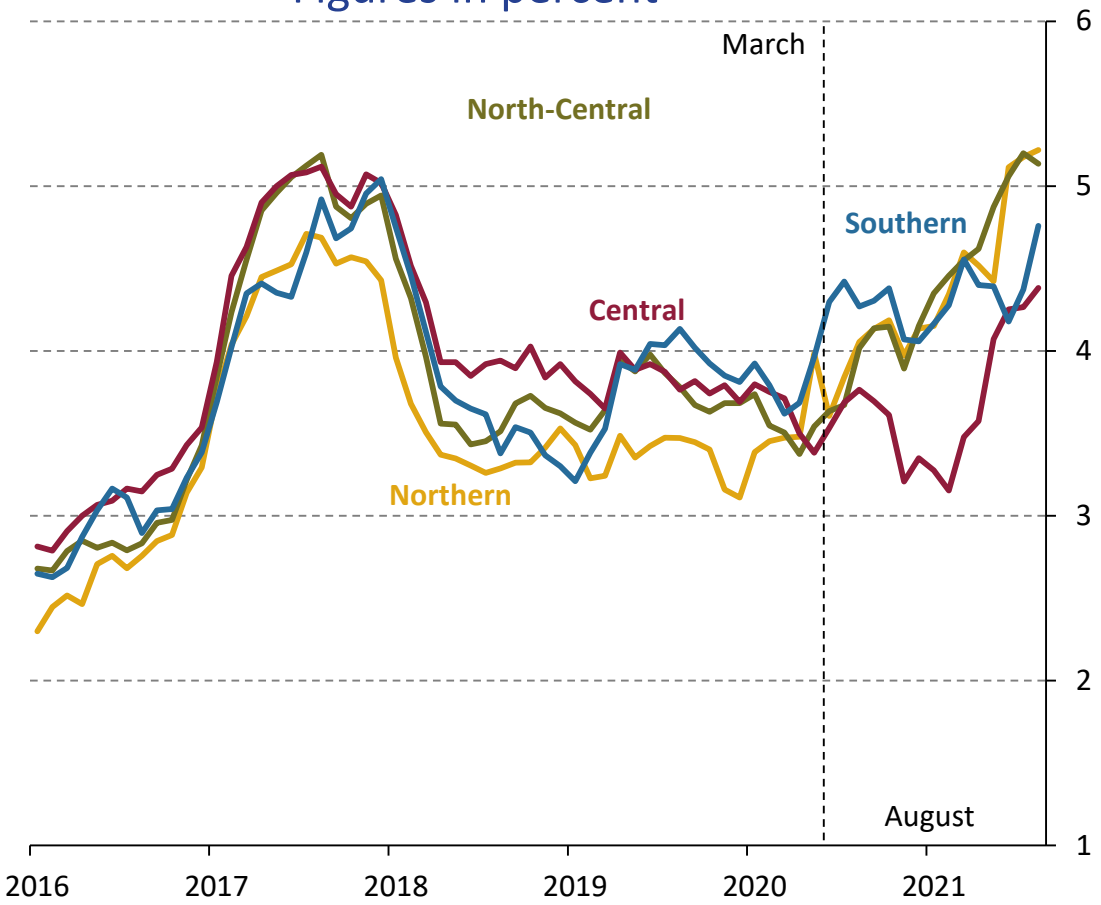



Source: Prepared by Banco de México with INEGI data.

**In Q2 2021, regional annual core inflation experienced upward pressures from the increase in production-related costs, as well as from the increase in service inflation, derived from the gradual reopening of several services.**

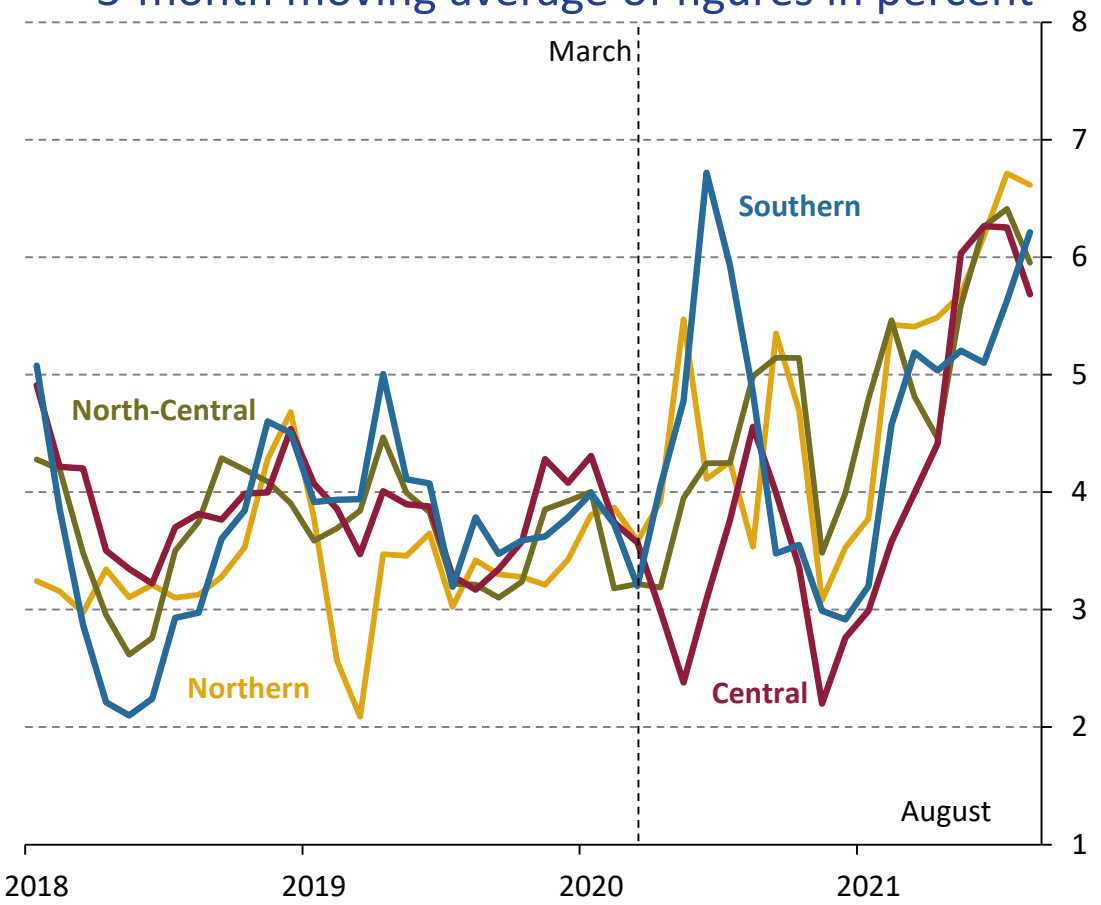
## Annual Core Inflation by Region

Figures in percent




## Annualized Seasonally Adjusted Monthly Variation of the Core Inflation Index

3-month moving average of figures in percent

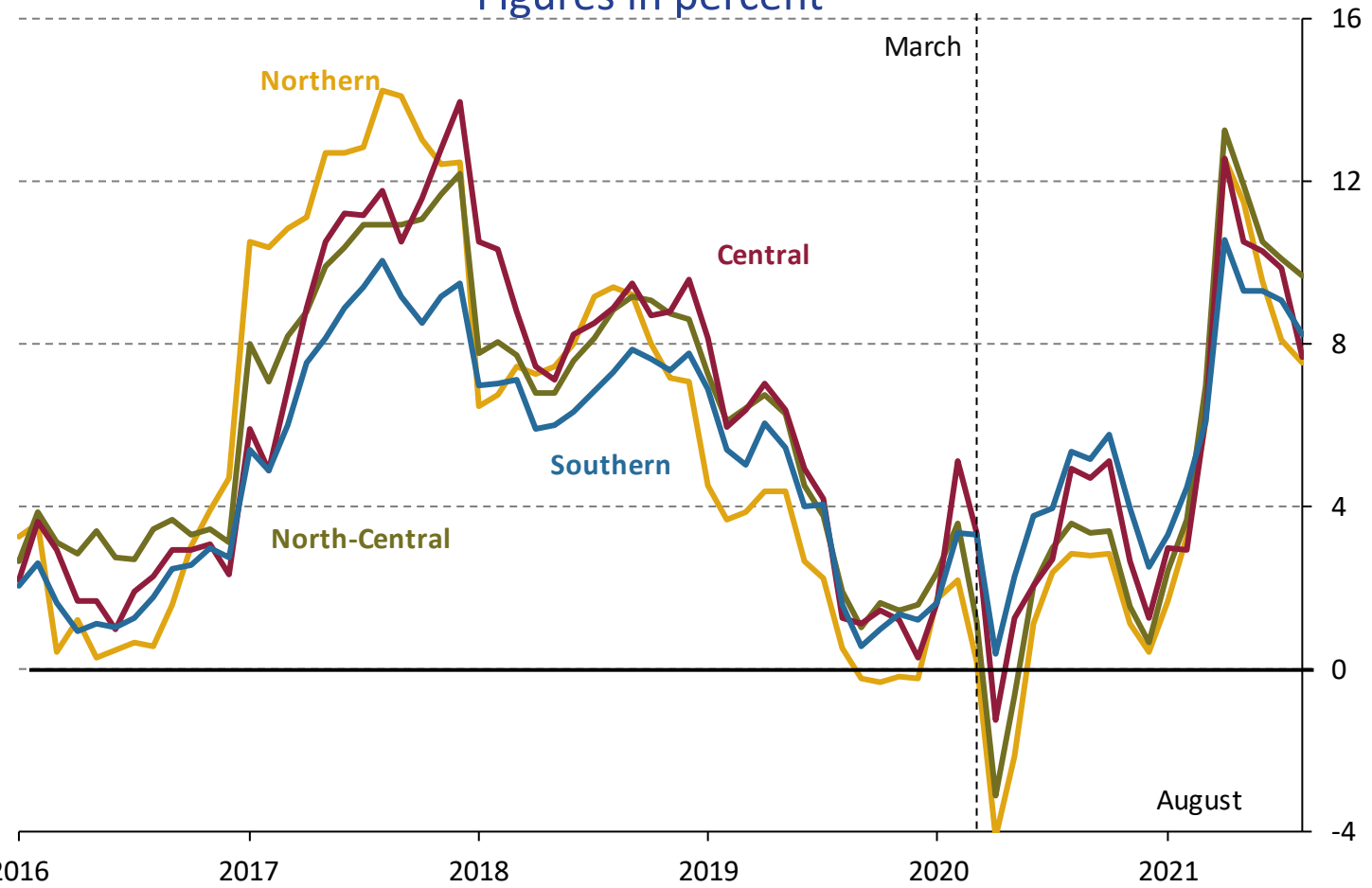



Source: Prepared by Banco de México with INEGI data.

**Between Q1 2021 and Q2 2021, non-core inflation increased significantly in all regions. This result was determined by the high levels this indicator reached in April in all regions. Subsequently, it has decreased, and in August it was influenced by the L.P. gas price-cap policy, which implied a reduction in the price of this energy product in all regions.**

## Annual Non-core Inflation by Region

Figures in percent

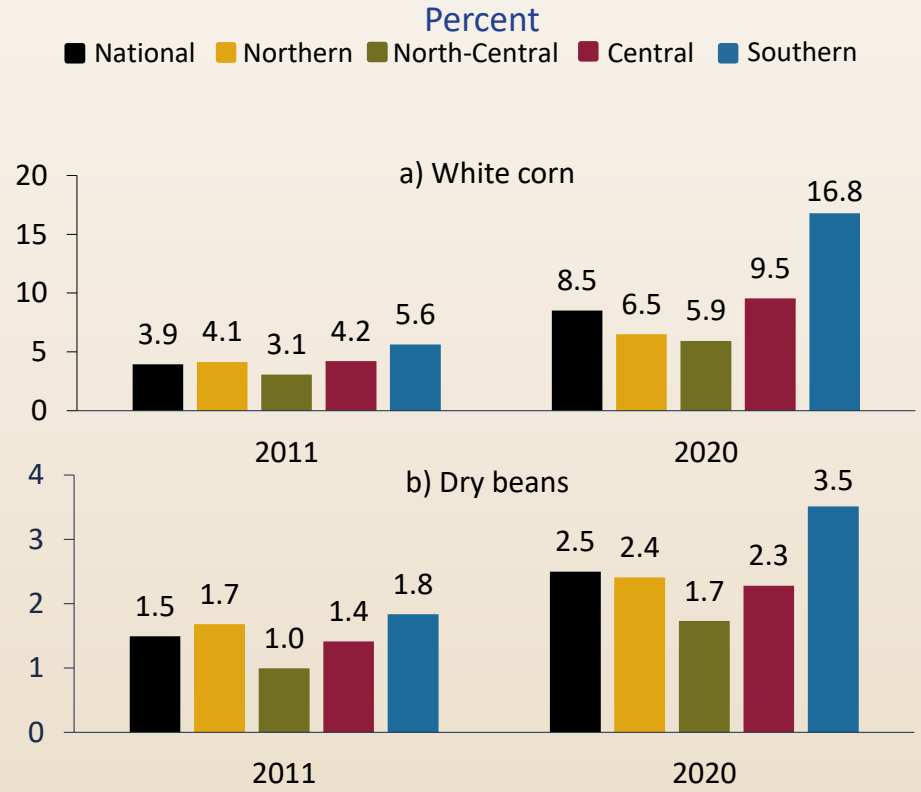



Source: Prepared by Banco de México with INEGI data.

# The Effect of Low Precipitation on the Prices of White Corn and Dry Beans

- A panel data econometric model with monthly observations at the market level was used to estimate the **causal effect of low precipitation episodes between January 2001 and December 2020** in the producing states **on the price levels of white corn and dry beans**.

**Estimated Effect of Low Precipitation Events on the Prices of White Corn and Dry Beans in 2011 and 2020**




Note: The chart shows the estimated percentage change in prices under the model-adjusted scenario with observed precipitation data relative to a scenario with no shortage of precipitation.
Source: Banco de México estimates based on data from SNIIM, INEGI, DAYMET and CONAGUA.

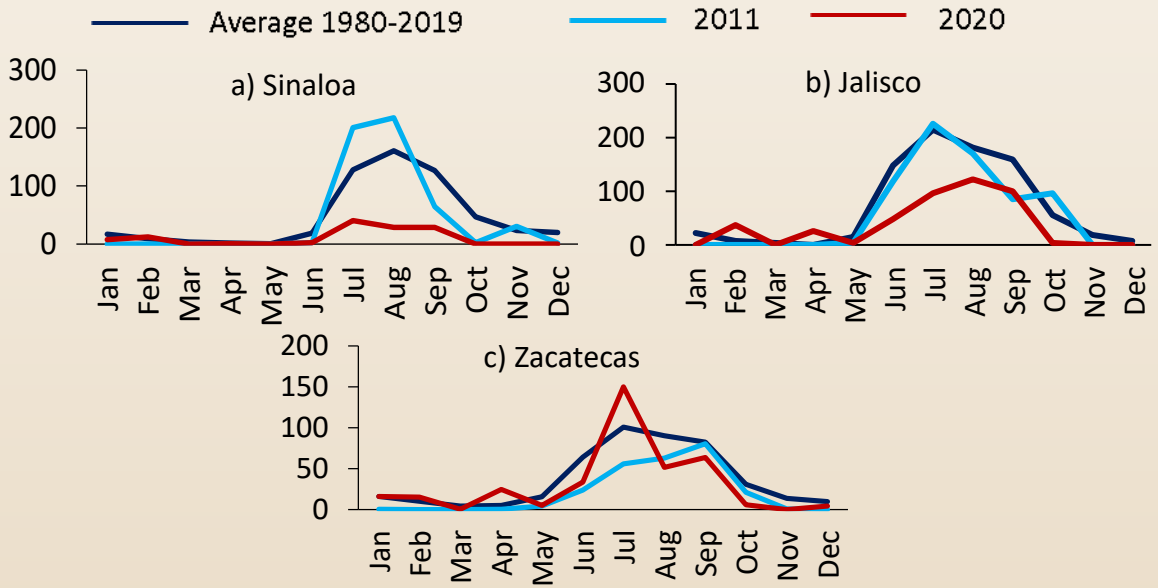
# The Effect of Low Precipitation on the Prices of White Corn and Dry Beans

- The **aggregate effect on prices** depends on the different **precipitation** conditions observed in the respective **supplying states** of each market.

- This pattern of **increases** in periods of **low precipitation levels** might suggest **upward pressures** on the prices of these agricultural commodities in the future.

## Precipitation in the Main White Corn and Dry Beans Producing States

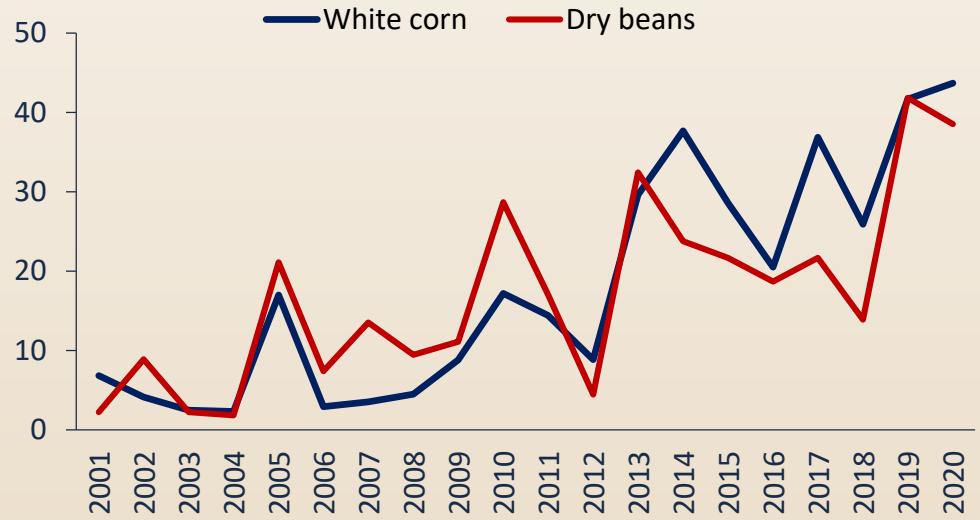
Millimeters




Source: Banco de México estimates based on data from SNIIM, INEGI, DAYMET and CONAGUA.

## Sample Observations in which Precipitation was at Least 1 Std. Dev. Below the Historical Average[1\]

Percent




[1\] The historical average was calculated with information from the period 1980-2019.
Source: Banco de México estimates based on data from SNIIM, INEGI, DAYMET and CONAGUA.

# Outline

I. Regional Economic Report

**II. Results April – June 2021**

A. Economic activity

B. Inflation

**C. Economic outlook**

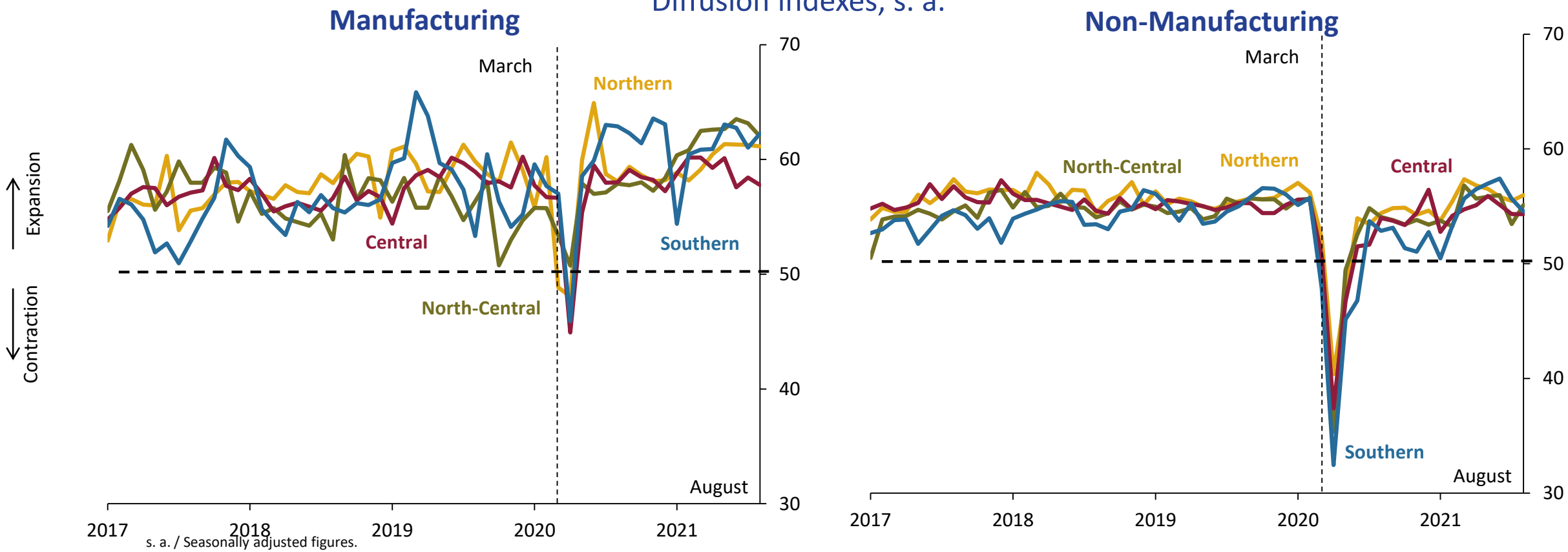
**(based on data collected between June 28 and July 22, 2021)**

III. Final remarks

# Regional manufacturing and non-manufacturing orders' indices remain in expansionary territory.

## Regional Manufacturing and Non-Manufacturing Orders Index: Activity Outlook, Next 3 Months

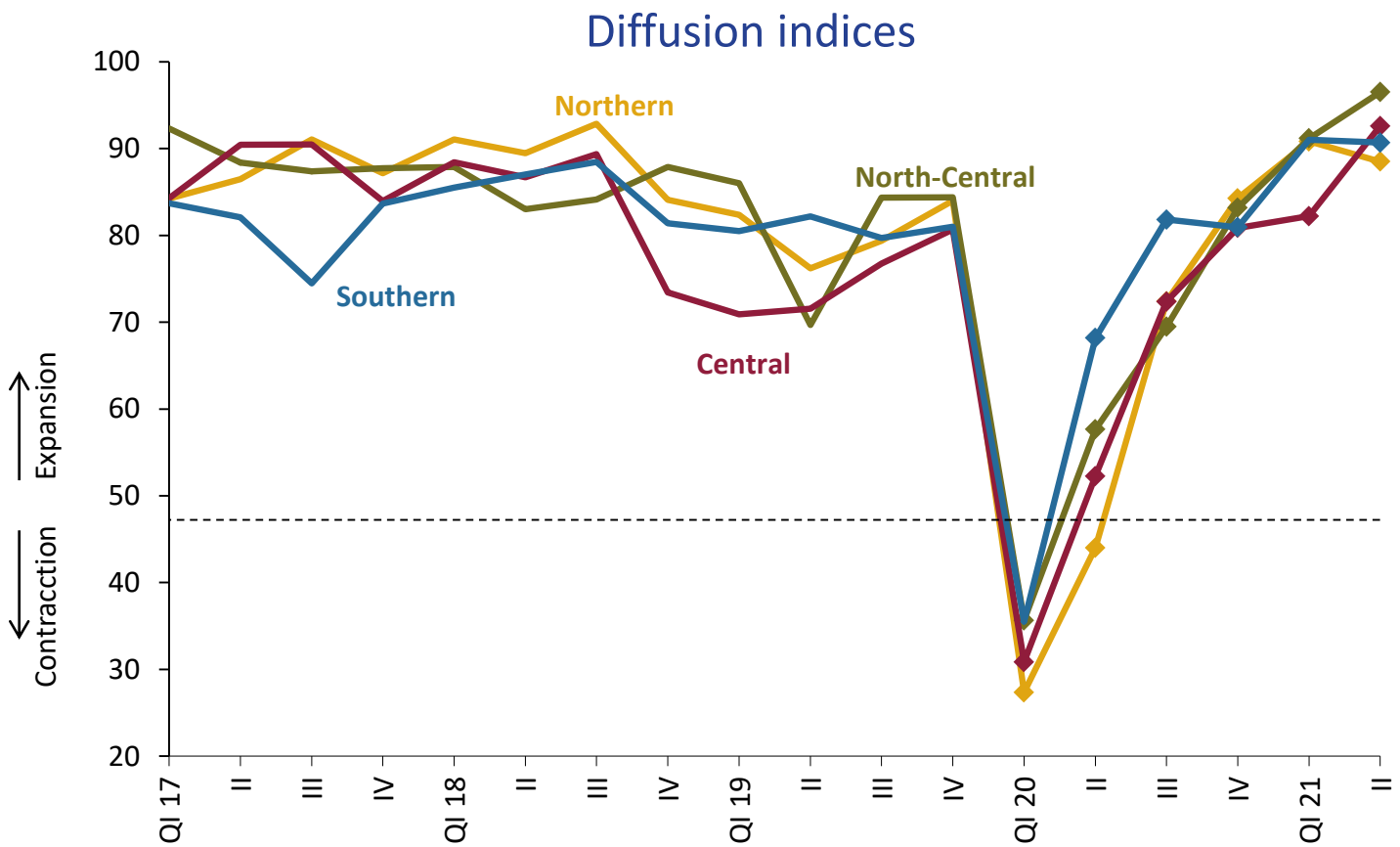
Diffusion indexes, s. a.




s. a. / Seasonally adjusted figures.
Source: Banco de México.

**During Q2 2021, the diffusion index of business agents' expected demand for goods and services they will offer in the next twelve months as compared to the previous twelve months continued to expand in all regions, improving in relation to the previous quarter in the central regions.**

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

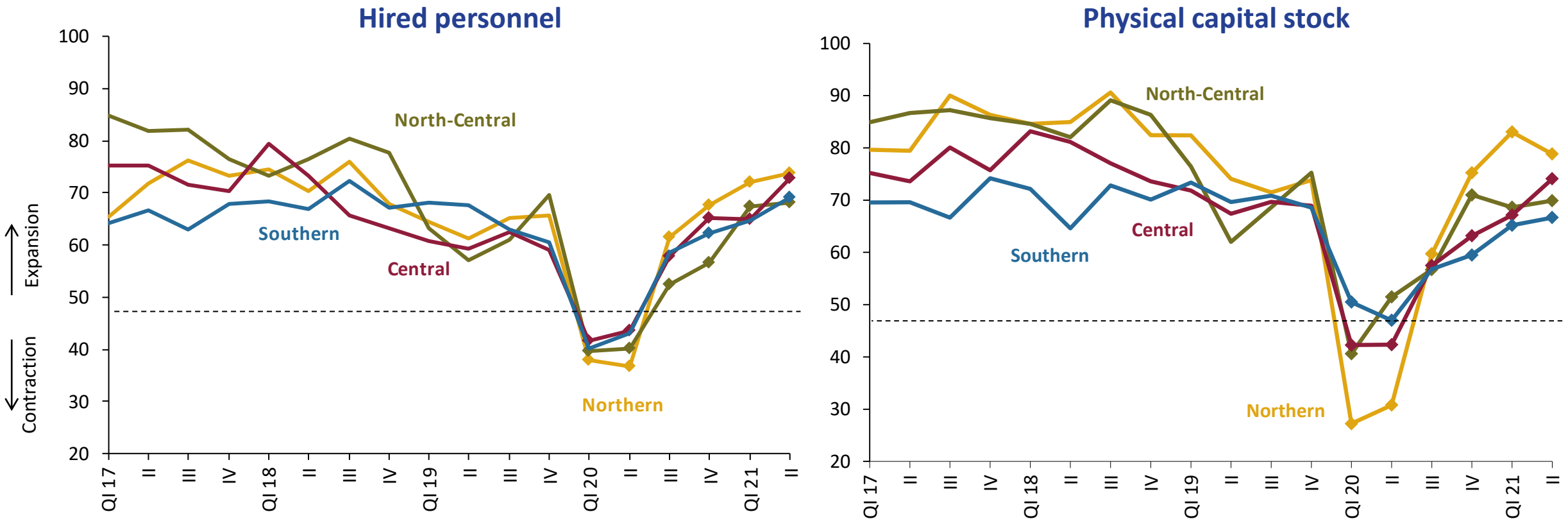



1/ Results obtained from the question: " With respect to the sales volume of your products or services during the previous 12 months, how do you expect your sales volume to change in the next 12 months?", from the interviews conducted by Banco de México. Expectations corresponding to the Report for the first quarter of 2020 and the second quarter of 2021 were collected between March 23 and April 23, 2020 and June 28 and July 22, 2021, respectively.

**The diffusion indexes corresponding to expectations regarding the number of workers employed in companies and investment in fixed assets continued to increase in all regions, except in the Northern one in the case of investment.**

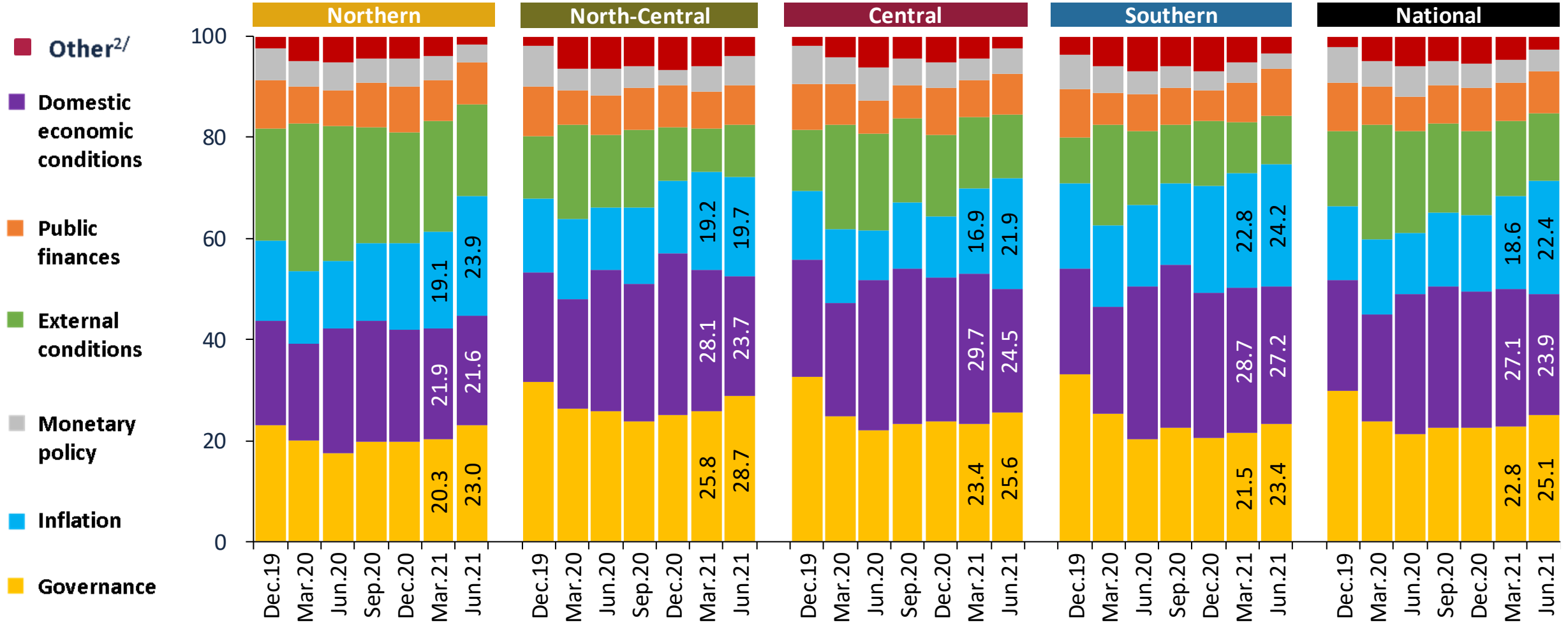
## Business Agents' Expectations: Hired Personnel and Physical Capital Stock, Next 12 Months[1/]

Percentage of responses




1/ Results obtained from the questions: "With respect to the previous 12 months, how do you expect the total number of workers in your company to change over the next 12 months?" and "With respect to the investment in fixed assets made by your company during the previous 12 months, how do you expect the level of investment to change over the next 12 months?", from interviews conducted by Banco de México. Expectations corresponding to the Report for the first quarter of 2020 and the second quarter of 2021 were collected between March 23 and April 23, 2020 and June 28 and July 22, 2021, respectively.

# Percentage Distribution of Responses of Business Representatives Asked about the Top Three Factors that Could Hinder the Growth of Economic Activity in their Entities in the Next Six Months (based on information collected between June 1 and June 29, 2021)[1/]




1/ Question: What do you consider to be the three main factors limiting the economic activity growth in your federal entity during the next six months? This question is similar to the one included in the questionnaire of the Survey on the Expectations of the Private Sector Economic Specialists. Figures for June 2021 were obtained based on information collected between June 1 and June 29, 2021.

2/ The question includes several specific factors, as well as an open option for " other" in which business contacts can indicate other factors they consider relevant. For the March, June, September, December 2020, March and June 2021 survey in this item it is noteworthy that virtually the entire number of mentions refer to the COVID-19 pandemic.

Source: Banco de México.

# Business Agents' Opinion on Risks to Regional Economic Activity (based on data collected between June 28 and July 22, 2021) 1/

## Upward risks

- That the pandemic dissipates more rapidly, particularly through a faster vaccination campaign.
- That tourism activity recovers at a faster pace than anticipated.
- That growth in the United States and the stimulus programs implemented in that country provide a greater boost to the regional economies.

## Downward risks

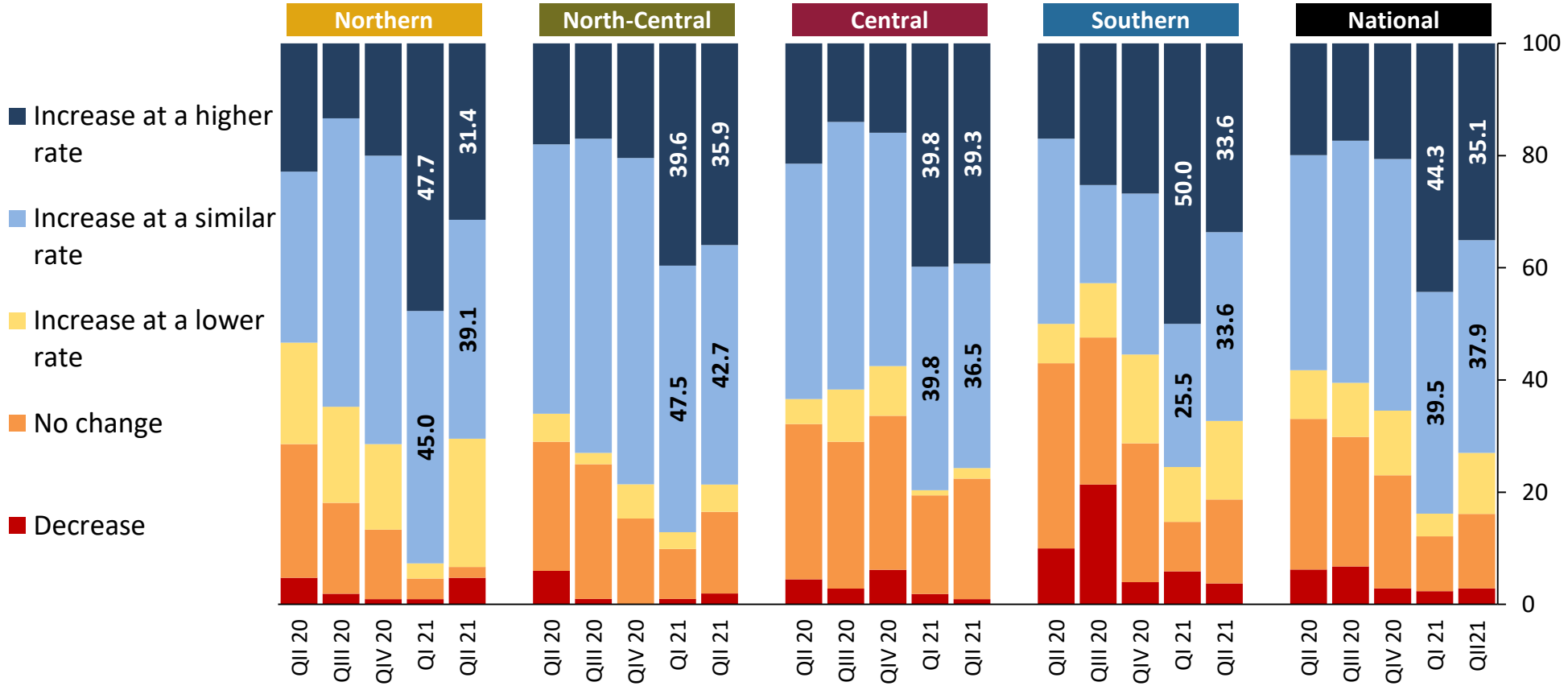
- Delays in the distribution or application of vaccines or a new upsurge of the pandemic, implying the adoption of new measures to contain it.
- That public safety indicators continue to deteriorate.
- That domestic uncertainty persists, thus affecting investment.

1/ Results obtained from the questions: "What are the 2 main events/situations/facts that if they were to occur 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 were to occur would limit the economic performance of your state in the next 12 months?", asked in the interviews conducted by Banco de México between June 28 and July 22, 2021.

**73% of business' agents surveyed expect input prices to increase at the same or higher rate over the next twelve months than that observed in the previous twelve months (83.8% in Q1 2021).**

## Business Agents' Expectations: Input Prices, Next 12 Months with respect to Last 12 Months[1/]

Percentage of responses

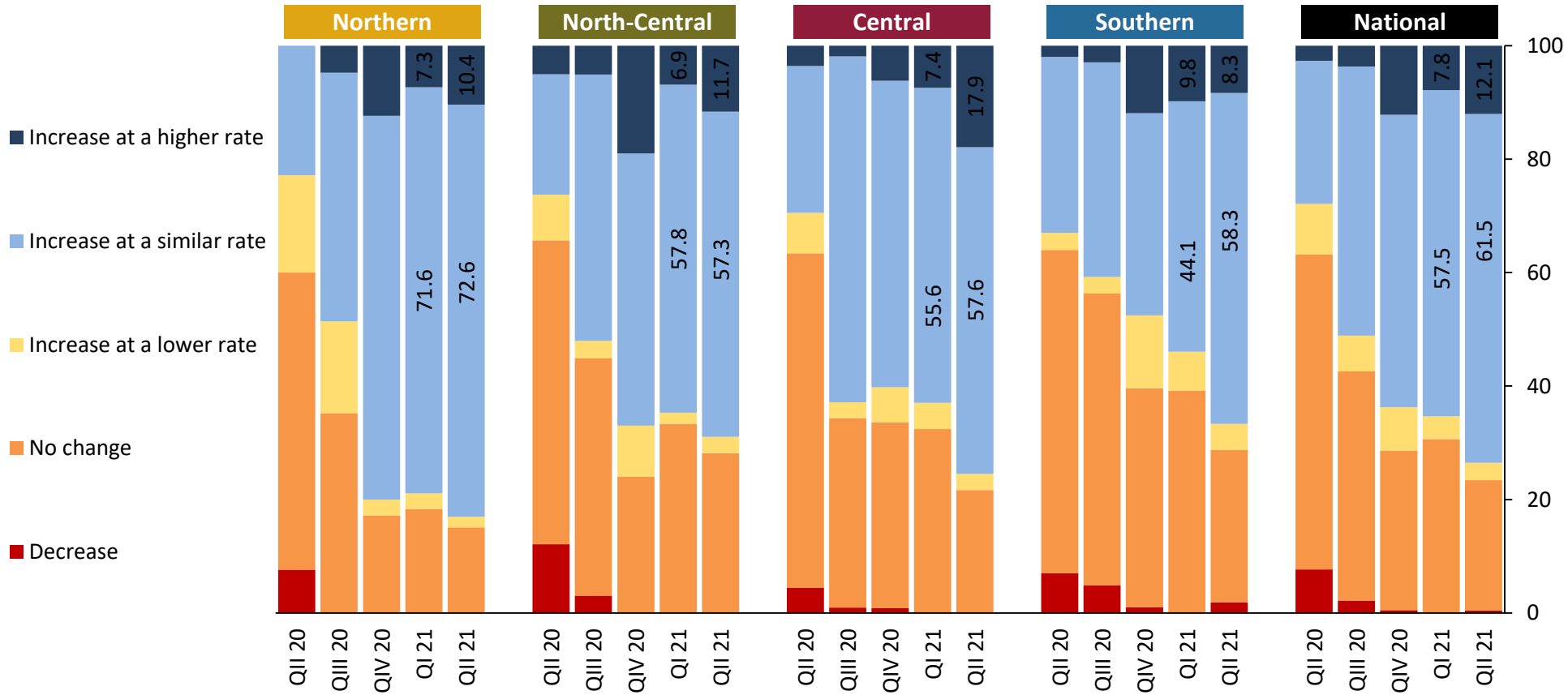



1/ Results obtained from the question: "With respect to the previous 12 months, how do you anticipate the change in the prices of inputs (goods and services) used in your sector for the next 12 months?", from interviews conducted by Banco de México. Expectations corresponding to the Report for the first quarter of 2020 and the second quarter of 2021 were collected between March 23 and April 23, 2020 and June 28 and July 22, 2021, respectively.

# The percentage of business' agents who expect a similar o greater variation in salary costs for the next twelve months than in the previous year increased in all regions.

## Business Agents' Expectations: Wage Costs, Next 12 Months with respect to Last 12 Months[1/]

Percentage of responses

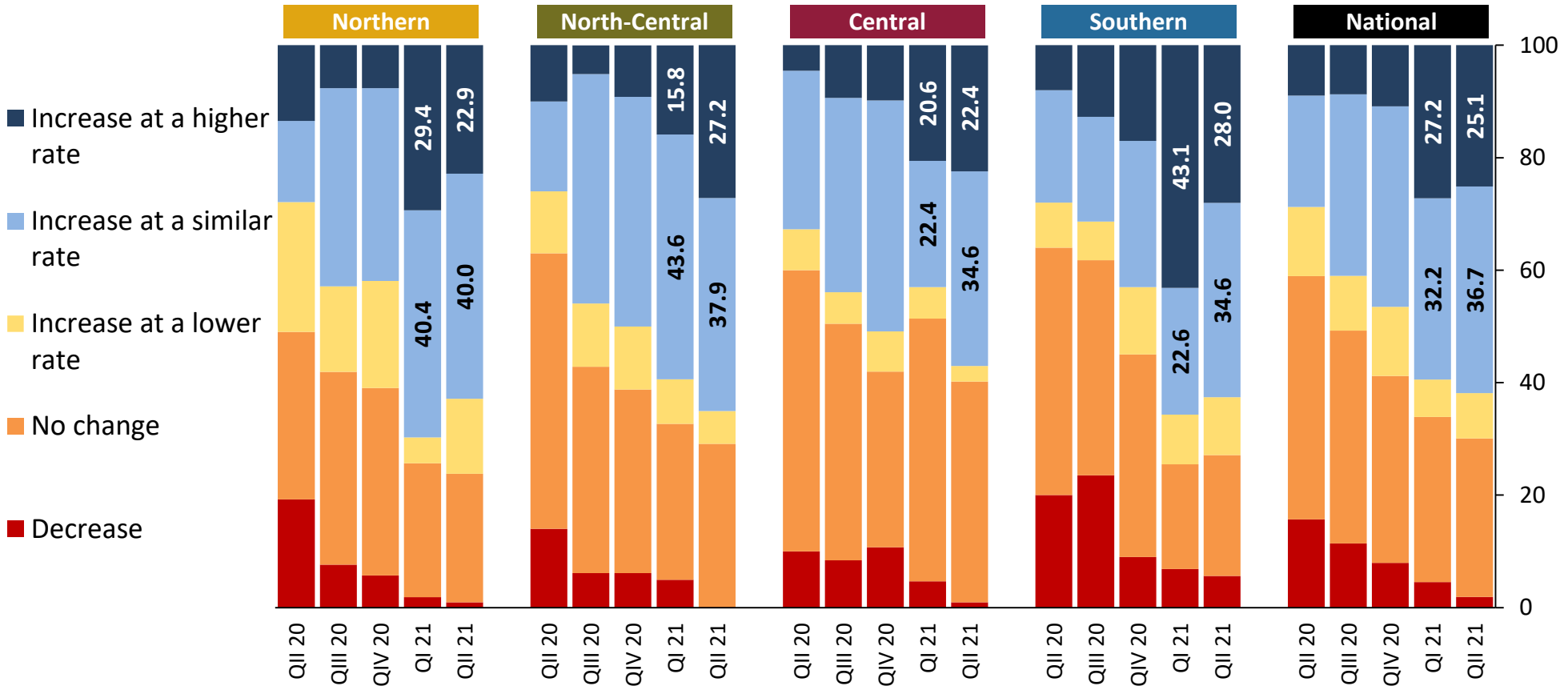



Results obtained from the question: "With respect to the previous 12 months, how do you anticipate the change in wages and salaries of workers in your sector over the next 12 months?", from the interviews conducted by Banco de México. Expectations corresponding to the Report for the first quarter of 2020 and the second quarter of 2021 were collected between March 23 and April 23, 2020 and June 28 and July 22, 2021, respectively.

**In all regions, most surveyed business agents anticipate the prices of the goods and services they offer to increase at a similar or higher rate for the following twelve months, as compared to the previous twelve months.**

## Business Agents' Expectations: Sales Prices, Next 12 Months with respect to Last 12 Months[1/]

Percentage of responses

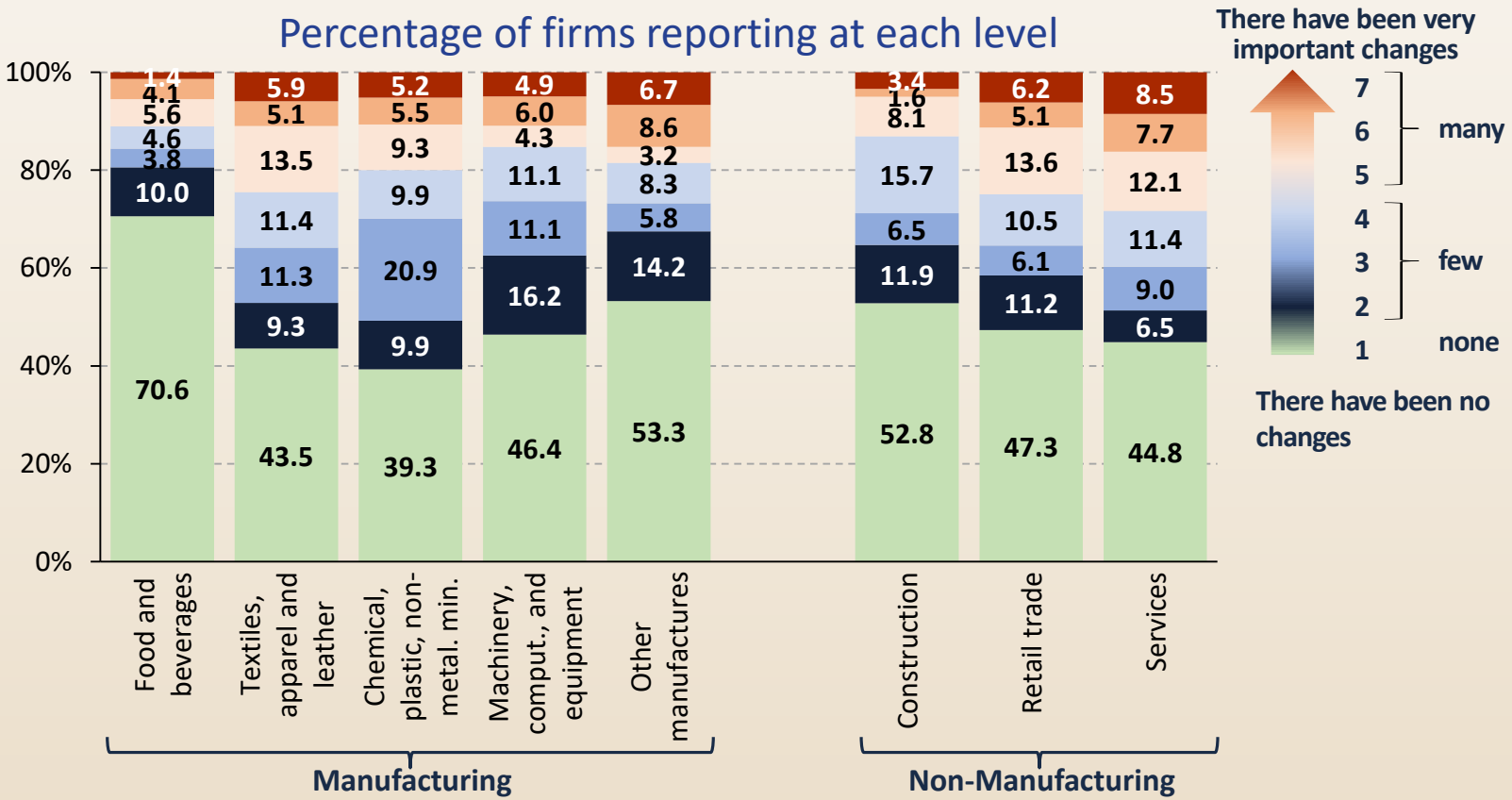



1/ Results obtained from the question: "With respect to the previous 12 months, how do you anticipate the change in sales prices in your sector for the next 12 months?", from interviews conducted by Banco de México. Expectations corresponding to the Report for the first quarter of 2020 and the second quarter of 2021 were collected between March 23 and April 23, 2020 and June 28 and July 22, 2021, respectively.

# Business Agents' Opinion on the Effect of the Pandemic on the Composition of Production Inputs

## Changes in the Type of Inputs, in their Characteristics, or in the Proportion of Firms' Input Purchases

Percentage of firms reporting at each level







- There is **limited flexibility** to change the way of producing in the short term.
- Nevertheless, **the composition of inputs used by firms has changed**, as they have had to **readjust the production of goods and services** whose inputs are scarce or have become more expensive, **to adapt their supply to the type of goods demanded** during the contingency, and to **adopt sanitary measures** to avoid contagions.

Source: Prepared by Banco de México with data from EMAER corresponding to the July 2021 survey. Results obtained from the question: "Considering the period from the beginning of the COVID-19 pandemic until now, rate the changes observed in your firm in the type of inputs or materials used, in their characteristics, or in the proportions of inputs or materials purchased to carry out your activity". Results are reported for some groups of industries in order to show heterogeneity for different subsectors, although the survey is not designed to be representative at that level of disaggregation.

# Outline

I. Regional Economic Report

II. Results April – June 2021

A. Economic activity

B. Inflation

C. Economic outlook

(based on data collected between June 28 and July 21, 2021)

**III. Final remarks**

# Final remarks

1. **All regions are foreseen to have continued to recover gradually** in Q2 2021. **The Northern and North-Central regions are expected to continue to show greater progress in their recovery than the Central and Southern regions.**

2. **Looking ahead, the economic recovery is expected to continue**, although uncertainty prevails about the course of the pandemic and the extent to which the external and domestic factors that have supported the regional recovery will maintain their momentum.

   - ✓ The emergence of more contagious variants of the SARS-CoV-2 virus represents a significant risk for the recovery of the regional economies, especially those like the Central region, which are more closely linked to the domestic market. However, the effects of these variants could be differentiated across regions depending on progress in the vaccination campaign.
   - ✓ The persistence of some disruptions in global supply chains could limit the effect of global demand on regional economic activity, especially in those federal entities of the Northern and central regions that specialize in manufacturing exports.

3. **In the long run, it is difficult to foresee the more permanent consequences of the pandemic on the regional economies.**

   - ✓ Given the regional heterogeneity in the progress of employment recovery, a more lasting gap could be generated between states due to the possible presence of hysteresis in their labor markets.
   - ✓ In a related manner, it is important to reduce labor informality, particularly in the Central and Southern regions, which register higher levels than the Northern and North-Central regions, especially since they are currently above pre-pandemic levels. This would lead to greater levels of productivity, with its consequent implications for business entities' profitability and scale of operation.



BANCO DE MÉXICO

# September 2021

**www.banxico.org.mx**

Published– General Purpose

Information published by Banco de México