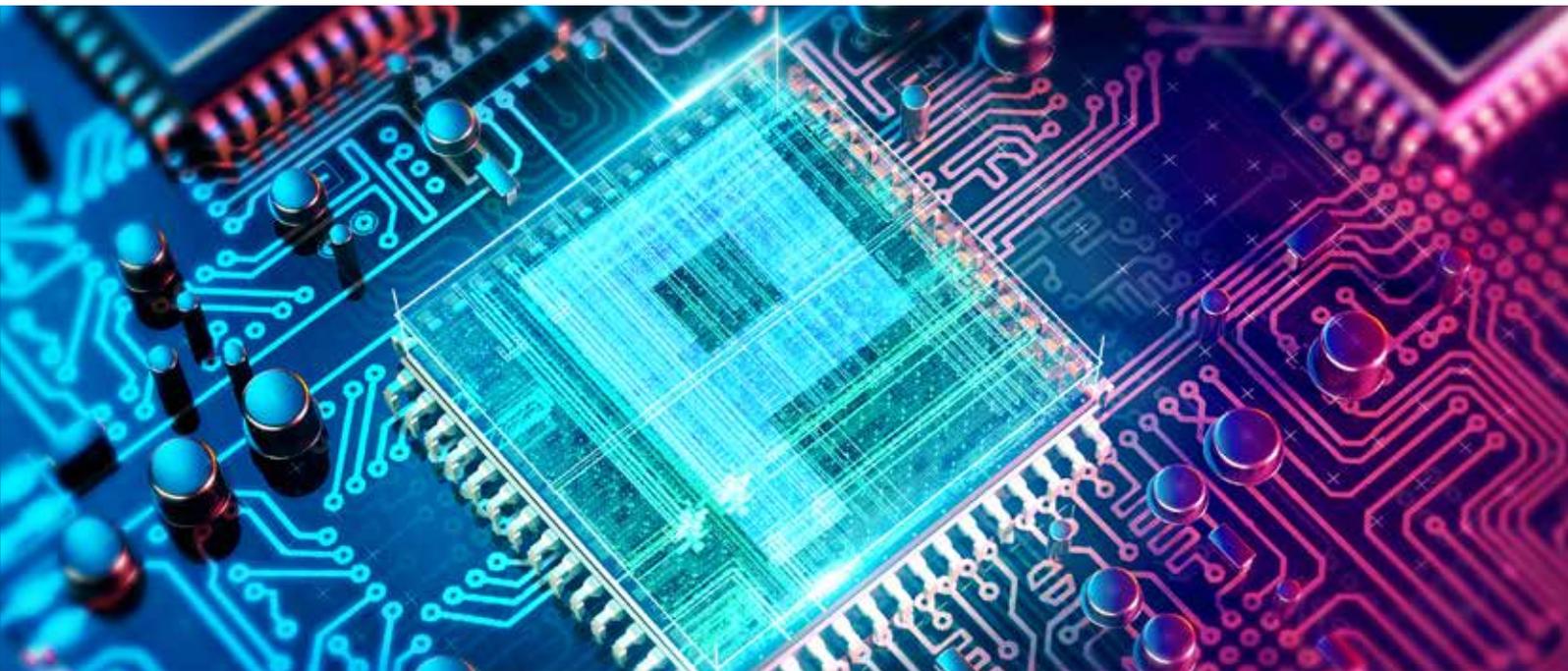


# MIR02

MONTHLY REPORT • ECONOMIC AND FINANCIAL MARKET OUTLOOK

NUMBER 442 | FEBRUARY 2020



## ECONOMIC & FINANCIAL ENVIRONMENT

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### FINANCIAL MARKETS

*The ECB and the Fed: two mandates, one target*

### INTERNATIONAL ECONOMY

*The new unknowns of Brexit in 2020*

### SPANISH ECONOMY

*The return of immigration to Spain*

### PORTUGUESE ECONOMY

*A favourable context facilitates the surplus of the Portuguese public accounts*

## DOSSIER: NEW TECHNOLOGIES AND PRODUCTIVITY

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*New technologies: what are they and how do they affect the economy?*

*Relevance, trends and differences of the technologies of the future*

*The role of new technologies in Spain's productivity*

## MONTHLY REPORT - ECONOMIC AND FINANCIAL MARKET OUTLOOK

February 2020

The *Monthly Report* is a publication developed jointly by CaixaBank Research and BPI Research (UEEF)

**CaixaBank Research**  
[www.caixabankresearch.com](http://www.caixabankresearch.com)  
[research@caixabank.com](mailto:research@caixabank.com)

**Enric Fernández**  
Chief Economist

**Oriol Aspachs**  
Director of Research

**Sandra Jódar**  
Director of Banking Strategy

**Adrià Morron Salmeron**  
*Monthly Report* coordinator

**Javier Garcia-Arenas**  
Dossier coordinator

**BPI Research (UEEF)**  
[www.bancobpi.pt](http://www.bancobpi.pt) /  
<http://www.bancobpi.pt/grupo-bpi/estudos-e-mercados/mercados-financeiros>  
[deef@bancobpi.pt](mailto:deef@bancobpi.pt)

**Paula Carvalho**  
Chief Economist

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## Improving productivity, key to kick-starting the economy

Now that the economy has started to slow down, wondering about the state of its engine is inevitable. As we have pointed out in these pages on several occasions, there is no reason to panic. It does not appear that we are on the brink of a recession. The engine is still working, but it is becoming apparent that it is losing power. As a result, the pace at which it will be able to drive economic activity will be more moderate, at around 1.5% per year, unless we take it in for a service.

The need for a visit to the mechanic is not unique to Spain. All the indicators suggest that, over the next few years, the speed at which the developed bloc of countries will grow will also be around 1.5%. The decline with respect to the figures of previous expansionary cycles is clear. For instance, between 2000 and 2007, developed countries grew at an average rate of 2.7%, while the Spanish economy did so at a much higher rate (3.7%).

Certainly, if we take a broad perspective, Spain's economic trajectory has been very good. GDP per capita, which best captures the underlying trend in the economy since it is not influenced by the demographic factor, has doubled in the past four decades. This is a feat that few countries have achieved. Some of those that have include the United Kingdom, the US and Portugal, all with similar figures to those of the Spanish economy. In contrast, the great European powers, such as Germany, France and Italy, trail far behind. For example, Italy's GDP per capita has grown by less than half the rate of Spain's since 1980.

This has enabled Spain to narrow the gap with the leading European countries. Nevertheless, it should be noted that the bulk of this growth took place during the 1980s and 1990s. Whereas in 1980 Spain's GDP per capita was 30% lower than that of Germany, by the end of the 1990s it was just 20% lower. In contrast, in the last 20 years the gap has stopped getting narrower and has even widened slightly.

This largely reflects poor productivity growth over the past two decades. Whether we look at the growth of apparent labour productivity, which simply measures GDP per hour worked, or total factor productivity, which corrects for the increase in the stock of physical and human capital, both exhibit a less dynamic pattern than most advanced countries. It is a picture that hardly invites optimism.

At this juncture, it is essential to have a list of reforms to try to improve the situation. Usually, we emphasise the need to improve the availability and quality of education, we try to highlight the alternatives available to reduce the dysfunctions that still persist in the labour market or we underline the importance of eliminating regulations that penalise business growth. The list is well known and has been repeated in more or less depth by economists of all political colours. There are many areas in which there is a broad consensus in the profession, and reforms of this type are not at odds with achieving a more inclusive growth path. Quite the contrary: it is easier to strengthen social cohesion in a context of productivity growth.

So, why do we remain immobile? This, without doubt, is the million dollar question. In part, confidence in the profession – that of economists – was eroded during the financial crisis. We must now be more cautious and justify our recommendations very well. The high degree of uncertainty surrounding the rapid pace of technological change does not help much either. However, to a large extent, the inaction is due to the social and political polarisation in which many developed countries are currently immersed, as this makes it difficult to generate broad social consensus, something so necessary in times like the present. We have to be patient and insist on the need for and the capacity to deliver ambitious reforms: sooner rather than later, we will end up making necessity a virtue.

**Oriol Aspachs**  
Head of Research  
31 January 2020

## Chronology

### JANUARY 2020

- 15 The US and China sign a first trade agreement (the first phase of a three-stage negotiation process).
- 31 The United Kingdom's withdrawal from the EU takes effect and a transition period begins, lasting until 31 December 2020.

### NOVEMBER 2019

- 10 General elections are held in Spain.

### SEPTEMBER 2019

- 1 The US implements a tariff increase on 112 billion dollars of Chinese imports and China imposes tariffs on around 2,000 US products.
- 12 The ECB announces a new stimulus package, with a 10-bp cut in the deposit facility interest rate (-0.50%), a tiered system for deposit remuneration and the resumption of net purchases of assets (20 billion per month).
- 18 The Fed cuts its reference interest rates by 25 bps, down to the 1.75%-2.00% range.
- 20 The rating agency S&P improves Spain's credit rating from A- to A.

### DECEMBER 2019

- 5 OPEC and its partners raise crude oil production cuts to 1.7 million barrels per day until March 2020.
- 13 The US and China announce a preliminary trade deal (the first phase of a three-phase agreement).
- 20 Following the early election on 12 December, the United Kingdom's House of Commons approves the Brexit withdrawal agreement.

### OCTOBER 2019

- 11 The US and China work on phase one of a trade deal, and the US suspends the implementation of a tariff increase due to take effect on 15 October.
- 17 The United Kingdom and the EU reach a new withdrawal agreement.
- 28 The EU extends the Brexit deadline to 31 January 2020.
- 31 The Fed cuts its benchmark interest rates by 25 bps down to the 1.50%-1.75% range. Mario Draghi's mandate as ECB president comes to an end.

### AUGUST 2019

- 1 The US announces a new tariff increase on 300 billion dollars of Chinese imports not previously subject to tariffs.
- 5 The US calls China a «currency manipulator» after the Central Bank of China allowed the yuan to depreciate to levels not seen since 2008.
- 23 China announces the introduction of tariffs on 75 billion dollars of US imports.

## Agenda

### FEBRUARY 2020

- 4 Spain: registration with Social Security and registered unemployment (January).
- 5 Portugal: employment and unemployment (Q4).
- 10 Portugal: turnover in industry (December).
- 14 Portugal: GDP flash estimate (Q4).
- 17 Japan: GDP (Q4).
- 20 Spain: foreign trade (December).
- 21 Spain: loans, deposits and NPL ratio (December).
- 27 Spain: CPI flash estimate (February).  
Euro area: economic sentiment index (February).  
Portugal: housing prices (January).
- 28 Spain: balance of payments (December).  
Portugal: CPI flash estimate (February).

### MARCH 2020

- 3 Spain: registration with Social Security and registered unemployment (February).
- 11 Portugal: international trade (January).
- 12 Governing Council of the European Central Bank meeting.
- 13 Portugal: S&P rating.
- 16 Portugal: tourism activity (January).
- 17 Spain: quarterly labour cost survey (Q4).
- 17-18 Federal Open Market Committee meeting.
- 20 Spain: Moody's and S&P ratings.
- 23 Spain: loans, deposits and NPL ratio (Q4).
- 25 Spain: balance of payments (Q4).  
Spain: net international investment position (Q4).  
Portugal: state budget execution (2019).  
Portugal: household savings rate (Q4).
- 26-27 European Council meeting.
- 30 Spain: CPI flash estimate (March).  
Euro area: economic sentiment index (March).
- 31 Spain: GDP breakdown (Q4).  
Spain: household savings rate (Q4).  
Spain: state budget execution (February).

## Dissatisfaction with the business cycle

Every 10 years, we ask ourselves the same question. Has a new decade begun? Many new year celebrations marked its beginning on 1 January 2020. However, in contrast with this popular spontaneity, a technically correct reading of the calendar tells us we should wait until 1 January 2021. Whatever the case may be, with the change of digit it is natural to look back and ask ourselves whether we have finally overcome a decade that was particularly turbulent for the economy. Similarly, it is natural to wonder where we are heading in the following 10 years.

As set out in this *Monthly Report*, **economic activity has kicked-off the new decade with cautious optimism**. Two of the major sources of uncertainty that gripped 2019, namely the tensions between the US and China and the fear that the UK would leave the EU without a deal, have eased with the signing of a basic trade agreement between the US and China and the confirmation of an orderly Brexit, which was made official 31 January. In addition, some indicators suggest, timidly, that the global industrial sector is leaving behind the worst of the weakness suffered in 2019, while services and domestic demand continue to follow the path of the economic expansion.

Yet, January ended with unease in financial markets and a rebound in risk aversion in the face of the coronavirus health emergency. As economists, we cannot shed much light on the medical element, but we can draw lessons from the economic impact of previous episodes. First, such phenomena can have a considerable economic cost. Second, their impact tends to be contained both in time (in the case of the coronavirus of 2003, the macroeconomic figures suffered for no more than one or two quarters) and in their geographical scope (probably concentrated in China and its neighbours). Third, they tend to be followed by a rebound in economic activity in the following quarters.

This agitation of the markets highlights a more general risk: that of another shift in economic sentiment. Just as uncertainty set the tone for 2019, the optimism or pessimism of the coming quarters will also determine the performance of the global economy. This prism helps us to analyse the modest pace of growth in the euro area in Q4 2019. The figure (0.1% quarter-on-quarter) was in line with expectations, but that does not mean it is not disappointing. Moreover, at these low levels, it is easy for minor disruptions (or statistical volatility itself) to trigger fears of recession. A prime example is France, where GDP unexpectedly contracted by 0.1% due to a decline in stocks, a somewhat erratic component. It will only take one more unexpected scare in Q1 2020 for there to be a slurry of headlines talking of recession.

There is no shortage of data to counter this pessimistic reading of the current business cycle. The world's leading economy, the US, is currently in the longest period of expansion in its modern history (a record of more than

150 years!), and it is doing so with very low unemployment and contained inflation. In Europe, unemployment (7.4%) is virtually at its pre-crisis lows (7.3% in 2007). Furthermore, if we focus on the Iberian Peninsula, in Spain the last labour force survey shows that today there are 400,000 more people with jobs than a year ago, while in Portugal unemployment has fallen below 7% (something not seen not only since before the financial crisis, but since 2002).

Yet, in spite of all these figures, **it does not seem that we are going to remember the past 10 years with such evocative names as «the roaring twenties» (1920s) or «Les Trente Glorieuses» (the thirty glorious years of 1946-1975):** in fact, a decade on, it is still common to hear people talk of the «economic crisis» in the present tense. Sometimes we are unrighteous: according to a survey by IPSOS, in 2018, the average Spaniard thought that 41% of people of working age were unemployed (actual figure: 11%; unemployment rate: 15%), in a widespread misperception (US citizens: 22%, *versus* the actual figure of 3%). But perhaps we are also less complacent and more critical with the world in which we live due to the harshness of the recession that irrupted in 2007. We cannot speak about a growth in employment of 400,000 people without noting that in Spain the rate of temporary employment is above 25%. The same goes for the euro area, where unemployment is at the same low point as it was 2007, yet broader measures of unemployment place it at twice the conventional rate.

This dissatisfaction with the current business cycle is compounded by the disquiet that is generated by underlying transformations, such as technological change. It is no coincidence that concern over inequality has resonated more in recent years, even though the phenomenon is anything but new (the increase in the income share of the top 1% began in 1980 in the US, and was much more intense between 1980 and 2000 than between 2000 and the present). In 2020, we change the digit with the challenge of embracing the opportunities offered by new technologies to shore up growth, but also to make it more inclusive and sustainable.

This brings us back to the question of when a decade begins. By the way, the origin of the disagreement is the number 0, which was not yet known in Europe when the *anno Domini* was defined in the 6<sup>th</sup> century. This is the system under which we count the years in our Gregorian calendar beginning from the birth of Christ. Thus, the beginning – point 0 – was named using the number 1, and the year 1 BC was immediately followed by the year 1 AD. Even knowing this history, in 2030 it is very likely that we will pick up the discussion again. We hope to do so with less dissatisfaction with the business cycle.

**Adrià Morron Salmeron**  
Coordinator of the *Monthly Report*

Average for the last month in the period, unless otherwise specified

## Financial markets

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
<b>INTEREST RATES</b>							
<b>Dollar</b>							
Fed funds (upper limit)	3.43	0.48	1.50	2.50	1.75	1.75	2.00
3-month Libor	3.62	0.70	1.61	2.79	1.91	1.95	2.22
12-month Libor	3.86	1.20	2.05	3.08	1.97	2.10	2.68
2-year government bonds	3.70	0.73	1.84	2.68	1.63	1.60	2.11
10-year government bonds	4.70	2.61	2.41	2.83	1.86	1.90	2.36
<b>Euro</b>							
ECB depo	2.05	0.40	-0.40	-0.40	-0.50	-0.50	-0.50
ECB refi	3.05	1.00	0.00	0.00	0.00	0.00	0.00
Eonia	3.12	0.65	-0.34	-0.36	-0.46	-0.45	-0.45
1-month Euribor	3.18	0.79	-0.37	-0.37	-0.45	-0.43	-0.41
3-month Euribor	3.24	0.98	-0.33	-0.31	-0.40	-0.40	-0.36
6-month Euribor	3.29	1.14	-0.27	-0.24	-0.34	-0.33	-0.25
12-month Euribor	3.40	1.34	-0.19	-0.13	-0.26	-0.25	-0.13
<b>Germany</b>							
2-year government bonds	3.41	0.69	-0.69	-0.60	-0.63	-0.55	-0.35
10-year government bonds	4.30	1.98	0.35	0.25	-0.27	0.00	0.30
<b>Spain</b>							
3-year government bonds	3.62	2.30	-0.04	-0.02	-0.36	0.14	0.55
5-year government bonds	3.91	2.85	0.31	0.36	-0.09	0.32	0.76
10-year government bonds	4.42	3.82	1.46	1.42	0.44	0.70	1.00
Risk premium	11	184	110	117	71	70	70
<b>Portugal</b>							
3-year government bonds	3.68	4.42	-0.05	-0.18	-0.34	0.31	0.85
5-year government bonds	3.96	5.03	0.46	0.47	-0.12	0.55	1.01
10-year government bonds	4.49	5.60	1.84	1.72	0.40	0.75	1.05
Risk premium	19	362	149	147	67	75	75
<b>EXCHANGE RATES</b>							
EUR/USD (dollars per euro)	1.13	1.31	1.18	1.14	1.11	1.11	1.15
EUR/JPY (yen per euro)	129.50	126.36	133.70	127.89	121.40	117.66	121.90
USD/JPY (yen per dollar)	115.34	97.50	113.02	112.38	109.25	106.00	106.00
EUR/GBP (pounds per euro)	0.66	0.83	0.88	0.90	0.85	0.84	0.82
USD/GBP (pounds per dollar)	0.59	0.63	0.75	0.79	0.76	0.75	0.72
<b>OIL PRICE</b>							
Brent (\$/barrel)	42.3	85.6	64.1	57.7	65.2	61.5	63.0
Brent (euros/barrel)	36.4	64.8	54.2	50.7	58.6	55.4	54.8

 Forecasts

Percentage change versus the same period of the previous year, unless otherwise indicated

### International economy

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
<b>GDP GROWTH</b>							
<b>Global</b>	4.5	3.3	3.8	3.6	2.9	3.2	3.4
<b>Developed countries</b>	2.7	1.2	2.5	2.2	1.7	1.5	1.6
United States	2.7	1.4	2.4	2.9	2.3	1.8	1.8
Euro area	2.2	0.4	2.7	1.9	1.2	1.1	1.3
Germany	1.6	1.1	2.8	1.6	0.6	0.7	1.5
France	2.0	0.6	2.4	1.7	1.4	1.4	1.5
Italy	1.5	-0.7	1.8	0.7	0.2	0.5	0.7
Portugal	1.5	-0.3	3.5	2.4	1.9	1.7	1.6
Spain	3.7	0.0	2.9	2.4	2.0	1.5	1.5
Japan	1.5	0.4	2.2	0.3	1.1	0.7	1.1
United Kingdom	2.9	1.1	1.9	1.3	1.3	1.2	1.4
<b>Emerging countries</b>	6.6	5.1	4.8	4.5	3.8	4.4	4.5
China	11.7	8.4	6.9	6.6	6.1	5.9	5.7
India	9.7	6.9	6.9	7.4	5.3	6.1	6.5
Indonesia	5.5	5.7	5.1	5.2	5.0	4.8	4.7
Brazil	3.6	1.7	1.3	1.3	1.1	2.0	2.2
Mexico	2.4	2.1	2.1	2.1	-0.1	1.1	2.0
Chile	5.0	3.2	1.3	4.0	2.3	2.8	2.8
Russia	7.2	1.0	1.6	2.5	1.3	1.9	1.8
Turkey	5.4	4.8	7.4	3.1	0.1	2.1	2.6
Poland	4.0	3.2	4.9	5.2	3.8	2.9	2.4
South Africa	4.4	1.8	1.5	0.7	0.4	1.4	1.9
<b>INFLATION</b>							
<b>Global</b>	4.2	3.8	3.2	3.6	3.5	3.7	3.4
<b>Developed countries</b>	2.1	1.5	1.7	2.0	1.4	1.6	1.6
United States	2.8	1.6	2.1	2.4	1.8	2.0	1.9
Euro area	2.1	1.4	1.5	1.8	1.2	1.2	1.4
Germany	1.7	1.3	1.7	1.9	1.4	1.3	1.5
France	1.8	1.2	1.2	2.1	1.3	1.4	1.4
Italy	1.9	1.5	1.3	1.2	0.6	0.9	1.2
Portugal	3.0	1.2	1.4	1.0	0.3	0.7	1.0
Spain	3.2	1.3	2.0	1.7	0.7	1.0	1.4
Japan	-0.3	0.3	0.5	1.0	0.5	1.1	1.2
United Kingdom	1.9	2.3	2.7	2.5	1.8	2.0	1.7
<b>Emerging countries</b>	6.8	5.8	4.3	4.8	4.9	5.2	4.6
China	1.7	2.6	1.6	2.1	2.9	2.8	2.6
India	4.5	8.5	3.3	3.9	3.7	5.8	5.1
Indonesia	8.4	5.7	3.8	3.2	3.0	3.0	3.1
Brazil	7.3	6.4	3.5	3.7	3.7	3.8	3.9
Mexico	5.2	3.9	6.0	4.9	3.6	3.7	3.5
Chile	3.1	3.5	2.2	2.7	2.3	2.8	3.1
Russia	14.2	9.3	3.7	2.9	4.5	3.7	4.0
Turkey	27.2	8.1	11.1	16.2	15.5	12.3	10.0
Poland	3.5	2.1	1.6	1.2	2.1	2.5	2.5
South Africa	5.3	6.2	5.3	4.6	4.2	4.5	4.9

Forecasts

Percentage change versus the same period of the previous year, unless otherwise indicated

### Spanish economy

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
<b>Macroeconomic aggregates</b>							
Household consumption	3.6	-0.6	3.0	1.8	1.1	1.5	1.3
Government consumption	5.0	0.9	1.0	1.9	2.2	1.5	1.3
Gross fixed capital formation	5.6	-3.8	5.9	5.3	1.9	2.8	2.3
Capital goods	5.0	-1.5	8.5	5.7	2.7	1.6	2.3
Construction	5.7	-6.5	5.9	6.6	0.9	1.9	2.3
Domestic demand (vs. GDP Δ)	4.5	-1.2	3.0	2.6	1.5	1.8	1.5
Exports of goods and services	4.8	2.8	5.6	2.2	2.3	2.4	2.4
Imports of goods and services	7.0	-1.0	6.6	3.3	1.2	3.5	2.6
<b>Gross domestic product</b>	<b>3.7</b>	<b>0.0</b>	<b>2.9</b>	<b>2.4</b>	<b>2.0</b>	<b>1.5</b>	<b>1.5</b>
<b>Other variables</b>							
Employment	3.2	-1.5	2.8	2.5	2.3	1.7	1.1
Unemployment rate (% of labour force)	10.5	20.8	17.2	15.3	14.1	13.6	13.2
Consumer price index	3.2	1.3	2.0	1.7	0.7	1.0	1.4
Unit labour costs	3.0	0.1	0.7	1.2	2.4	2.8	2.3
Current account balance (% GDP)	-5.9	-1.1	2.7	1.9	1.8	1.3	1.4
External funding capacity/needs (% GDP)	-5.2	-0.7	2.9	2.4	2.0	1.5	1.6
Fiscal balance (% GDP) <sup>1</sup>	0.4	-7.1	-3.0	-2.5	-2.3	-2.0	-1.7

Note: 1. Excludes losses for assistance provided to financial institutions.

■ Forecasts

### Portuguese economy

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
<b>Macroeconomic aggregates</b>							
Household consumption	1.7	-0.2	2.1	3.1	2.2	1.9	1.7
Government consumption	2.3	-0.7	0.2	0.9	0.5	0.2	0.2
Gross fixed capital formation	-0.3	-3.5	11.5	5.8	7.4	4.4	4.4
Capital goods	1.2	-0.1	12.5	7.5	4.8	2.5	2.5
Construction	-1.5	-6.2	12.2	4.6	10.5	4.3	2.5
Domestic demand (vs. GDP Δ)	1.3	-1.0	3.3	3.2	3.1	2.3	2.0
Exports of goods and services	5.2	3.5	8.4	3.9	2.5	2.3	2.6
Imports of goods and services	3.6	1.6	8.1	5.9	5.2	3.7	3.3
<b>Gross domestic product</b>	<b>1.5</b>	<b>-0.3</b>	<b>3.5</b>	<b>2.4</b>	<b>1.9</b>	<b>1.7</b>	<b>1.6</b>
<b>Other variables</b>							
Employment	0.4	-1.1	3.3	2.3	1.0	0.5	0.2
Unemployment rate (% of labour force)	6.1	12.2	8.9	7.0	6.6	6.4	6.3
Consumer price index	3.0	1.2	1.4	1.0	0.3	0.7	1.0
Current account balance (% GDP)	-9.2	-4.1	1.2	0.4	-0.6	-0.6	-0.3
External funding capacity/needs (% GDP)	-7.7	-2.7	2.1	1.4	0.2	0.2	0.5
Fiscal balance (% GDP)	-4.6	-6.4	-3.0	-0.4	-0.1	-0.1	0.2

■ Forecasts

## Volatility returns

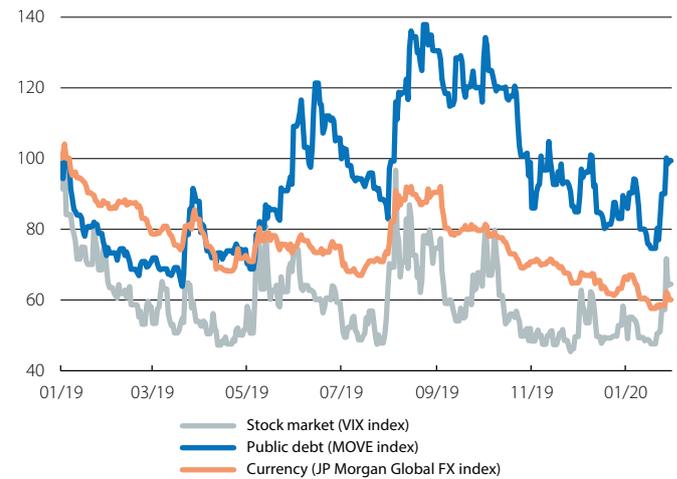
### Risk aversion sets the tone for the beginning of the year.

The cooling of tensions between the US and China, reflected in the signing of the first phase of the trade agreement, the stabilisation of the outlook for economic growth and the confirmation of an agreed Brexit on 31 January gave continuity, in the first sessions of 2020, to the cautiously optimistic sentiment with which investors had faced the end of 2019. Furthermore, the spike in political tensions between the US and Iran was noted only briefly in the financial markets, while investors also benefited from the commitment on the part of the major central banks to a dovish monetary policy, which they reiterated in their first meetings of the year. However, market sentiment was shaken by the health emergency of the coronavirus originating in China, which triggered a surge in risk aversion due to fears that it could restrict economic activity over the coming months (especially in China and its major trading partners). Thus, January ended with setbacks in the prices of securities closely linked to the business cycle, such as stocks and commodities, and gains in the prices of safe-haven assets, such as US and German sovereign debt, gold and the yen.

**The central banks reiterated their commitment to accommodative financial conditions.** On the one hand, in its January meeting the ECB was slightly more optimistic about the economic scenario, but kept a downward bias in the risk map (due to geopolitical factors, protectionism and vulnerabilities in emerging economies). In this way, it reiterated its commitment to the asset purchases amounting to 20,000 million euros a month which it began in November, as well as its intention to leave interest rates unchanged (keeping the depo rate at -0.50%, the refi rate at 0.00% and the marginal lending rate at 0.25%) until there is a robust recovery in inflation. Thus, having reinforced its stance of not altering monetary policy in the coming quarters, the ECB focused its January meeting on the formal announcement of a review of its monetary policy strategy. This will include an assessment of possible changes to its inflation target, the effectiveness of its monetary policy tools and the role it can play in combating transformations such as climate change (we analyse this in the article «[The ECB and the Fed: two mandates, one target](#)» in this same *Monthly Report*). The US Federal Reserve, meanwhile, also kept interest rates unchanged in the 1.50%-1.75% range. The decision was unanimous and was supported by a «cautiously optimistic» assessment of the macroeconomic scenario, in the words of Chair Jerome Powell, which reflects the alleviation of the sources of geopolitical risk (the trade agreement between the US and China, and an agreed Brexit on 31 January) and some signs of improvement in the global industrial cycle. Looking ahead to the forthcoming meetings, the Fed showed little willingness to alter its interest rates and Powell stressed that this would require a significant change in the US' economic outlook. Finally, the Fed indicated that it expects to begin to cut back

### Implicit volatility in the financial markets

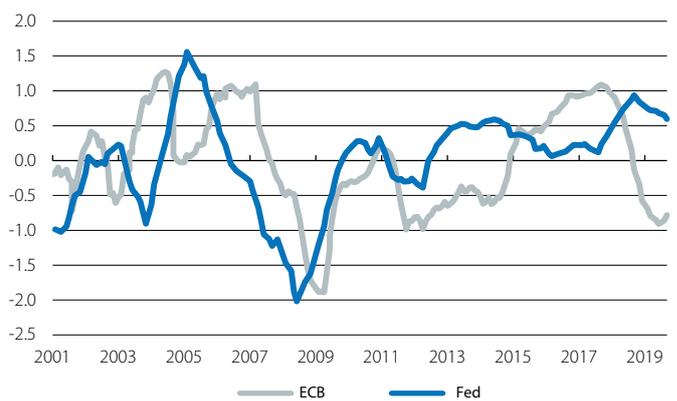
Index (100 = January 2019)



Source: CaixaBank Research, based on data from Bloomberg.

### Central bank economic sentiment index

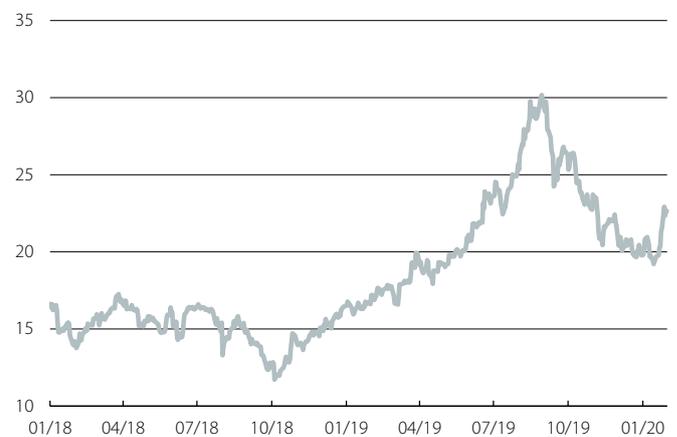
Index



Note: The central bank economic sentiment index measures the pessimism or optimism conveyed in the Fed's press release and in the ECB's press conference that follow their respective meetings. For further details, see the «The "sense and sensibility" of the ECB's communication» in the MR11/2019.  
Source: CaixaBank Research.

### Debt securities with a negative yield

(% of the total investment-grade debt)



Note: Data collated by the Barclays Global Aggregate Index. The index includes public and private debt securities with an investment-grade rating.  
Source: CaixaBank Research, based on data from Bloomberg.

its Treasury Bill purchases and its injections of liquidity into the repo market in Q2 2020, as it believes the system is close to having a sufficiently abundant reserves.

**Sovereign yields cede ground.** The good tone of investor sentiment in the first sessions of the year and the prospect of a dovish monetary policy throughout 2020 sustained an environment of relatively stable interest rates in the early weeks of January. However, this was interrupted by the surge in uncertainty linked to the coronavirus, which triggered a sharp decline in sovereign debt yields (of around -40 bps in the US and -25 bps in Germany) due to the traditional value of government debt as a safe-haven asset. In the euro area periphery, meanwhile, risk premiums remained stable in Portugal (with Moody's keeping the country's sovereign rating at Baa3 with a positive outlook) and in Spain, while Italy's risk premium fell by more than 20 bps after the regional election results alleviated investors' fears of a breakdown of the national coalition government.

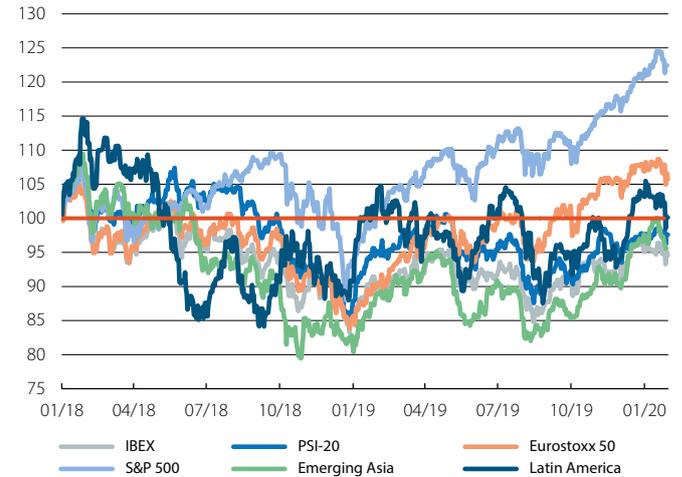
**Business profits show their friendlier side.** In the context of risk aversion with which January came to an end, the major stock market indices were adversely affected by the rise in volatility and concluded the month showing mixed signals. On the one hand, the European and Emerging market indices registered losses (EuroStoxx 50: -2.8%, MSCI Emerging Markets: -4.7%), driven by the fall in the stock prices of those sectors most exposed to the economic impact of the coronavirus, such as tourism, energy and luxury. On the other, the North American stock markets closed with hardly any changes (S&P 500: -0.2%), favoured by a good start to the business profits campaign of Q4 2019. Up to the time of this publication, 40% of the companies of the S&P 500 had published their results, with better performance on the whole than that expected by the consensus of analysts, mainly in the financial and technology sectors.

**The oil price falls in the face of uncertainty over demand.** In the commodity markets, the price of a barrel of Brent was also subjected to an environment of volatility. At the beginning of the month, the political tensions between the US and Iran and the interruptions of supply in Libya and Iraq drove the price up, briefly surpassing the 70-dollar mark. However, the episode of risk aversion triggered by the coronavirus ended up pushing the price of crude oil below 60 dollars.

**Emerging currencies continue to depreciate.** Among the currencies of the advanced economies, the flows of capital towards safe-haven assets strengthened the Japanese yen, the Swiss franc and the US dollar, while the euro continued to fluctuate around 1.10 dollars. On the other side of the coin, there were depreciations of most emerging economy currencies (the set of currencies of the emerging bloc depreciated by more than 2% against the dollar). This was also the case for currencies of economies that are highly dependent on commodity exports (such as the Australian dollar and the Brazilian real), as they were weakened by the fear that a new blip in global economic activity could weigh down the value of their exports.

**Main international stock markets**

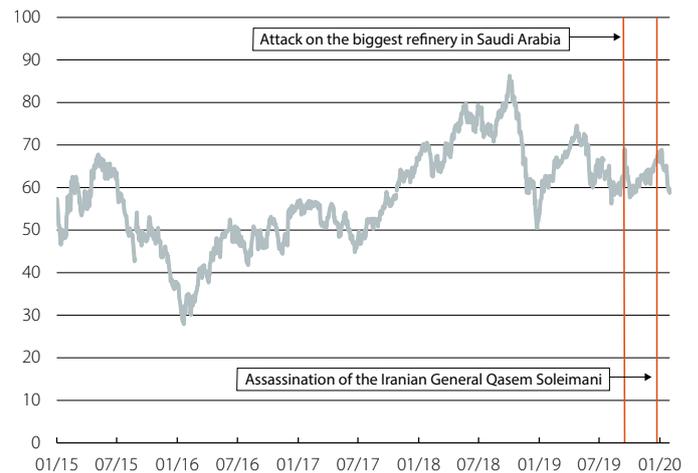
Index (100 = January 2018)



Source: CaixaBank Research, based on data from Bloomberg.

**Brent oil price**

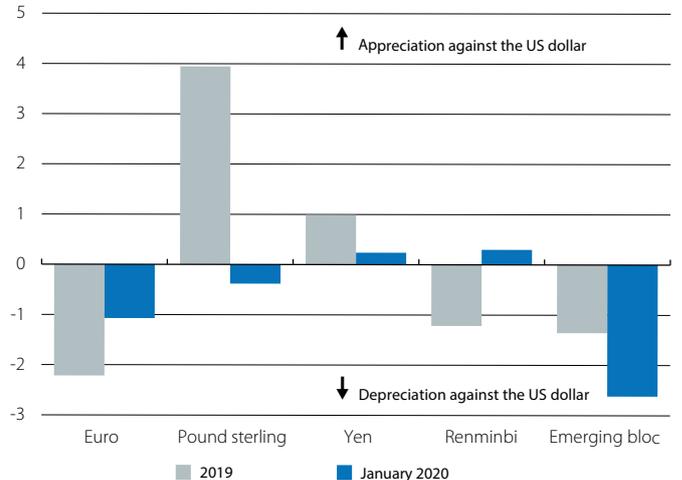
(Dollars per barrel)



Source: CaixaBank Research, based on data from Bloomberg.

**International currencies against the US dollar**

Change (%)



Source: CaixaBank Research, based on data from Bloomberg.

## The ECB and the Fed: two mandates, one target

- The ECB and the Fed have initiated a process to review their strategy, the results of which will be published during the course of 2020. This review has been driven by certain structural changes in advanced economies, such as the decline in the equilibrium interest rate and the flattening of the Phillips curve.
- While we do not anticipate disruptive changes, it is likely that the Fed will reinforce the symmetry of its inflation target and that the ECB will adopt a similar model in order to shore up inflation expectations.

In January, Christine Lagarde formally announced a strategic review of the ECB's monetary policy. In the US, the Fed began this same process in early 2019, and both institutions are planning to publish their conclusions in mid to late 2020.<sup>1</sup> Could they raise their inflation targets (for example, up to 4%)? What about incorporating new monetary policy tools (such as extending asset purchases)?

### What might change in this review... and what will not

To analyse the strategic reviews of the Fed and the ECB, we must distinguish between the central banks' mandate and their objective. On the one hand, **their mandates are determined by the US Congress and the EU Treaty, respectively - something that neither the Fed nor the ECB can modify.**<sup>2</sup> For instance, in the case of the ECB, article 105 of the Treaty assigns it the primary task of ensuring price stability, while in the case of the Fed, Congress entrusts it with ensuring price stability, maximum employment and moderate interest rates in the long term.

On the other hand, the objective of a central bank requires a quantitative interpretation of this mandate, and here the monetary institution does have some room for manoeuvre. For instance, following a first strategic review in 2003, the ECB went from defining its price stability objective as «inflation below 2%» to «inflation below, but close to, 2% in the medium term».

### Why are both central banks now reviewing their strategy?

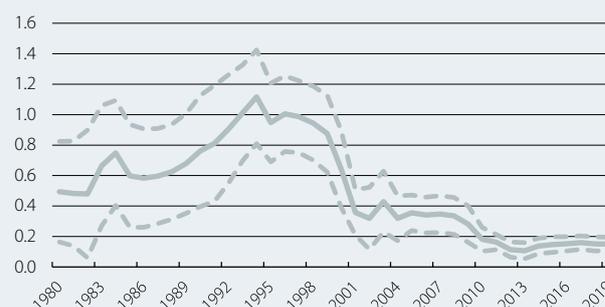
Various structural transformations have altered the environment and central banks' capacity to act. Firstly, **the fall in the equilibrium interest rate in major advanced economies**<sup>3</sup> increases the likelihood of reaching the minimum feasible rate (effective lower bound) and reduces central banks' margin for manoeuvre to stimulate the economy in future recessions.

Secondly, **the link between the performance of economic activity and inflation has weakened**, as illustrated by the first chart for the case of the US. There are many reasons for this,<sup>4</sup> most notably the decline in

1. The Bank of England and the Bank of Canada have also begun a review of their strategies.
2. In this regard, the process is unlikely to involve financial stability being added to their mandate.
3. This fall is due to factors such as population ageing, lower productivity growth and greater risk aversion. See the Dossier «[The future of financial conditions: a paradigm shift?](#)» in the MR02/2019.
4. M. Draghi (2018). «Monetary policy in the euro area». Speech given in Sintra.

### US: sensitivity of inflation to the unemployment rate

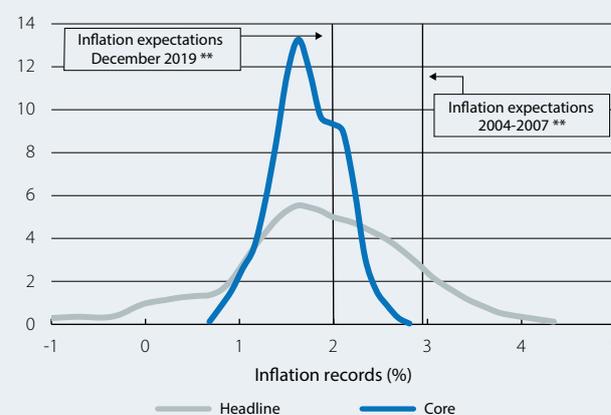
Coefficient



**Note:** We show the evolution of the coefficient  $\beta_t$  of the equation  $\pi_t = \beta_0 - \beta_1 * \text{slack}_t + \beta_2 * \pi_{t-1} + u_t$ , where slack is the difference between the unemployment rate and the natural unemployment rate according to the Congressional Budget Office,  $\pi$  is CPI inflation and  $u$  is an error term. The data are annual and each point is the estimate according to the equation using data from the 20 years prior to the year shown. The dashed lines show a standard deviation of the estimate for  $\beta_t$ .  
**Source:** CaixaBank Research, based on data from Bloomberg and the Federal Reserve Bank of St. Louis.

### US: distribution of inflation records \*

Frequency (%)



**Notes:** \* Inflation according to the Personal Consumption Expenditure (PCE) price index and with data for the period between 2000 and 2019. \*\* Expectations according to 5y5y inflation swaps.  
**Source:** CaixaBank Research, based on data from the US Bureau of Economic Analysis and Bloomberg.

business margins, the impact of globalisation (which increases the proportion of goods and services that are imported) and uncertainty over the degree of slack of the labour market. In fact, on this last point various studies show that inflation dynamics in the euro area are best explained when we consider broader unemployment measures.<sup>5</sup> Furthermore, in this context, **inflation expectations have become much more important for determining inflation.**

5. See the Focus «[Inflation and its determinants: a measure of our ignorance](#)» in the MR02/2018.

These transformations help to explain the **Fed and the ECB's repeated failure to comply with their inflation targets in recent years** (in the euro area, the target has not been met since 2012) and they have led to a decline in inflation expectations (see second and third charts). This, in turn, reinforces the need to review the monetary policy strategies once the economic turbulence of the last decade has been overcome.

### The questions they will answer

First of all, **should the inflation target be redefined?** In the face of the low levels recorded in recent years, a case has been made both for an increase of the target rates (in order to raise inflation expectations) and for a decrease (accepting that inflation is structurally lower). However, the central banks are unlikely to want to assume the loss of credibility that modifying the target when they are unable to reach it would entail. Thus, they are likely to maintain the 2% inflation targets and incorporate some small recalibration. On the one hand, the Fed has announced that it will maintain the 2% PCE target but will consider whether it is possible to refine it with rules that seek to compensate for the previous deviations around the 2% mark (for example, setting the target in terms of the price level or an average inflation rate of 2% over a given period).

Meanwhile, the ECB's definition (below, but close to, 2%) has been criticised for being unclear (how close to 2%?) and for having a hawkish bias (in fact, since the year 2000, more than 60% of the inflation data have fallen below 2%). As such, **the ECB could recalibrate the inflation target to clarify that it is a symmetrical target around the 2% mark.** Moreover, keeping the 2% benchmark (rather than specifying it by a decimal point, for example, at 1.9%) would maintain a certain vagueness in the target, giving the ECB some flexibility.<sup>6</sup>

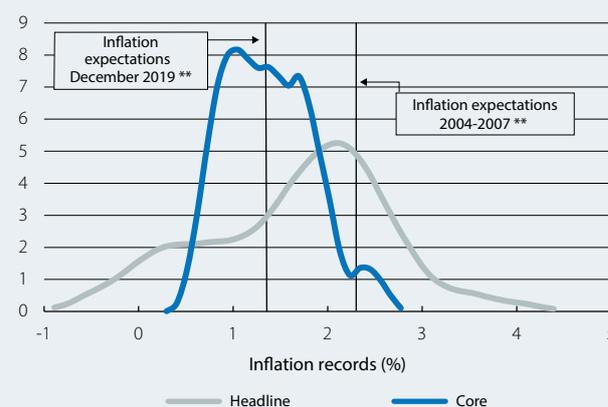
It may also be necessary for **both banks to consider whether their reference indices measure inflation correctly.** Problems such as the influence of globalisation on price formation and the degree to which the set of consumer price categories used in the indices is representative (for instance, the HICP captures the price of housing, essentially, through rentals and with a relative weight of just 6.5%) are challenges that the central bank must take into account.

Secondly, **should they modify the tools they use to implement monetary policy?** Both central banks used unconventional measures following the Great Recession (asset purchases and forward guidance) and could use these reviews as an opportunity to formalise their incorporation into the set of instruments available to them (which would make it easier to anticipate their reaction functions). They can also assess ways to

6. See B. Cœuré (2019). «Monetary policy: lifting the veil of effectiveness». Speech given in Frankfurt.

7. See the Focus «[Does the Fed control interest rates?](#)» in the MR09/2018.

### Euro area: distribution of inflation records\* Frequency (%)



Notes: \* Inflation according to the harmonised index of consumer prices and with data for the period between 2000 and 2019. \*\* Expectations according to 5y5y inflation swaps.

Source: CaixaBank Research, based on data from Eurostat and Bloomberg.

implement monetary policy more efficiently. As an example, in 2008 the ECB decided to change the way in which it offered short-term liquidity, and since then it does so with a system that satisfies all requests (full allotment). In the case of the Fed, meanwhile, having decided in January 2019 that it would operate in an environment of abundant reserves, it could adjust the way it uses its official interest rates in order to better influence the target interest rate.<sup>7</sup>

Thirdly, **is there a need to improve the communication of monetary policy?** Communication is one aspect in which the Fed is, perhaps, ahead of the rest of the central banks. For this reason, we can expect this issue to be more present in the ECB's review, with proposals to bring it more in line with its US counterpart. These could include the introduction of regular votes to approve monetary policy decisions or the publication of the ECB members' expectations regarding long-term interest rates (particularly relevant for reducing uncertainty when embarking on a cycle of rate hikes).

All in all, **the most likely outcome is that neither the Fed nor the ECB will be particularly disruptive.** In the case of the ECB, the most significant change could be a revision of the definition of the inflation target to a symmetrical range around 2.0% (perhaps 1.5%-2.5%). Similarly, it is unlikely that the Fed will abandon its current inflation target, potentially opting to further emphasise the symmetry of the 2% target. In any case, **both will have taken a first step in adjusting to changes in the economic environment** which are generating much uncertainty. Therefore, it is possible that as their understanding of these structural changes improves further down the line, they will once again adjust their strategies accordingly.

Adrià Morron Salmeron and  
Ricard Murillo Gili

**Interest rates (%)**

	31-Jan.	31-Dec.	Monthly change (bp)	Year-to-date (bp)	Year-on-year change (bp)
<b>Euro area</b>					
ECB Refi	0.00	0.00	0	0.0	0.0
3-month Euribor	-0.39	-0.38	-1	-1.0	-8.5
1-year Euribor	-0.28	-0.25	-4	-3.5	-17.4
1-year government bonds (Germany)	-0.60	-0.64	4	3.5	-7.8
2-year government bonds (Germany)	-0.67	-0.60	-7	-6.9	-8.9
10-year government bonds (Germany)	-0.43	-0.19	-25	-24.9	-60.0
10-year government bonds (Spain)	0.24	0.47	-23	-23.3	-98.8
10-year government bonds (Portugal)	0.27	0.44	-18	-17.6	-137.5
<b>US</b>					
Fed funds	1.75	1.75	0	0.0	-75.0
3-month Libor	1.75	1.91	-16	-15.7	-98.2
12-month Libor	1.81	2.00	-19	-19.0	-115.5
1-year government bonds	1.42	1.57	-14	-14.3	-113.4
2-year government bonds	1.31	1.57	-26	-25.6	-118.9
10-year government bonds	1.51	1.92	-41	-41.1	-117.7

**Spreads corporate bonds (bps)**

	31-Jan.	31-Dec.	Monthly change (bp)	Year-to-date (bp)	Year-on-year change (bp)
Itraxx Corporate	46	44	2	2.2	-24.5
Itraxx Financials Senior	54	52	3	2.6	-32.2
Itraxx Subordinated Financials	115	114	1	1.2	-63.5

**Exchange rates**

	31-Jan.	31-Dec.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
EUR/USD (dollars per euro)	1.109	1.121	-1.1	-1.1	-3.2
EUR/JPY (yen per euro)	120.170	121.770	-1.3	-1.3	-4.2
EUR/GBP (pounds per euro)	0.840	0.846	-0.7	-0.7	-4.1
USD/JPY (yen per dollar)	108.350	108.610	-0.2	-0.2	-1.1

**Commodities**

	31-Jan.	31-Dec.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
CRB Commodity Index	404.2	401.6	0.6	0.6	-2.1
Brent (\$/barrel)	58.2	66.0	-11.9	-11.9	-7.3
Gold (\$/ounce)	1,589.2	1,517.3	4.7	4.7	20.6

**Equity**

	31-Jan.	31-Dec.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
S&P 500 (USA)	3,225.5	3,230.8	-0.2	-0.2	19.2
Eurostoxx 50 (euro area)	3,640.9	3,745.2	-2.8	-2.8	14.8
Ibex 35 (Spain)	9,367.9	9,549.2	-1.9	-1.9	3.9
PSI 20 (Portugal)	5,252.0	5,214.1	0.7	0.7	2.7
Nikkei 225 (Japan)	23,205.2	23,656.6	-1.9	-1.9	11.6
MSCI Emerging	1,062.3	1,114.7	-4.7	-4.7	1.2

## The outlook for global growth stabilises

**The first indicators of the year give reason for cautious optimism.** After months of decline, the global economic indicators stabilised in the last quarter of 2019. This was reflected in the global composite Purchasing Managers' Index (PMI), which improved in the final two months of last year (reaching 51.7 points in December), although it still remains rather contained. Furthermore, the GDP growth data for Q4 already available (such as those of the US, China, the euro area and Mexico) indicate that global economic growth stood at around 2.9% year-on-year in the final quarter of last year, equalling the figure for Q3. The slowdown in global growth in 2019 (it is estimated that global GDP will have grown by 2.9% in 2019, compared to 3.6% in 2018) was the result of a combination of factors: the weakening of global trade after the trade tensions between the US and China, uncertainty surrounding Brexit and the widespread cooling of the manufacturing sector, as well as specific difficulties experienced in certain emerging countries such as India, Brazil and Russia. For 2020, a recovery of growth in these countries is expected, which will drive the improvement in global economic activity (bringing it to 3.2% according to CaixaBank Research's forecasts).

**The balance of risks in 2020 is less negative, but remains significant.** In particular, both the cooling of the trade tensions between the US and China (who signed a minimal trade agreement in January) and the formalisation of Brexit on 31 January should result in a reduction in the uncertainty that has restricted investment and international trade. In addition, the major economies will continue to enjoy the support of monetary policy, which took a dovish turn in 2019. Even so, there remain significant risks. These include the possibility of a renewed escalation of tensions between the US and China, which cannot be ruled out, the worsening of geopolitical friction relating to Iran, risks related to the high stock market valuations in various segments of the financial markets and the vulnerabilities of several emerging economies.

### US

**The US economy grew by a solid 2.3% in 2019.** While lower than the figure for 2018 (2.9%, with an economy heavily supported by the fiscal stimulus approved at the end of 2017), this figure also stood above the country's potential (which we estimate at around 1.9%). Such a growth rate is significant, in spite of the country's protectionist measures and trade tensions with China. In Q4 2019, growth stood at 0.5% in quarter-on-quarter terms, and 2.3% year-on-year, supported by private consumption, public consumption and residential investment. In contrast, business investment contracted once again in quarter-on-quarter terms. Moreover, despite the fact that improving this component was the explicit goal of the 2017 tax reform, its contribution to growth during the last two years has been moderate and below the expectations of most analysts. Public and private consumption, meanwhile, have continued to make significant contributions to growth

### GDP: global growth

Year-on-year change (%)



Source: CaixaBank Research, based on data from Refinitiv.

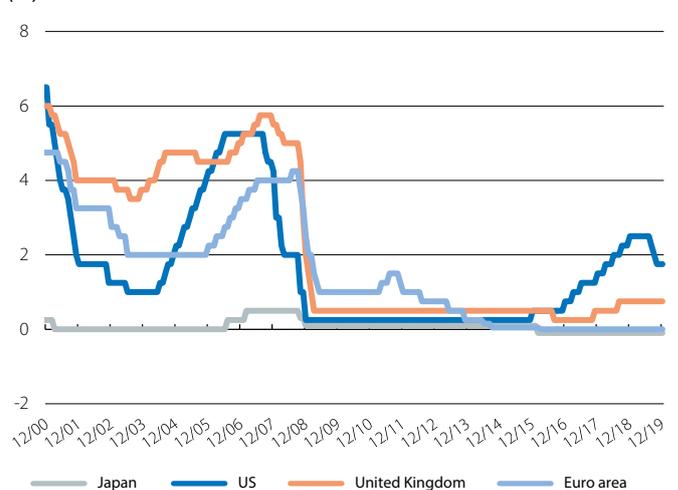
### Global economic activity indicators: composite PMI Index



Source: CaixaBank Research, based on data from Markit.

### Central bank interest rates

(%)



Source: CaixaBank Research, based on data from the ECB, the BoJ, the BoE and the Fed.

(see the Focus «[Good outlook for the US economy, with the permission of investment](#)» in the MR12/2019). Looking ahead into 2020, we expect growth to experience a gentle slowdown to levels more in line with potential growth, although the economy will continue to count on the support of a favourable monetary policy (after the Fed’s three rate cuts in 2019) and will maintain solid growth rates. This view is supported by the initial data available for the first quarter, such as the consumer confidence index developed by the Conference Board, which rose to 131.6 in January (its highest level in the past 5 months).

**EUROPE**

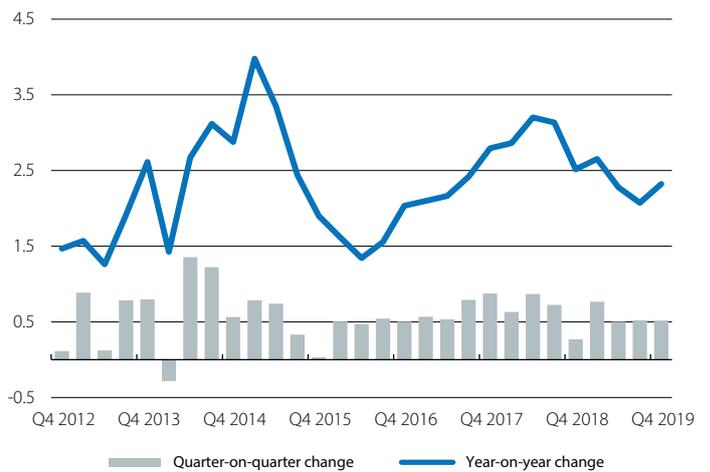
**Brexit is official as of 31 January** following the ratification of the agreement in the House of Commons and its approval in the European Parliament. The United Kingdom and the EU have now begun an 11-month transition period with a countdown to reach an agreement on the new relationship, during which time the UK will continue to be part of the single market and the customs union. As explained in the Focus «[The new unknowns of Brexit in 2020](#)» in this same *Monthly Report*, the number of topics on which the EU and the United Kingdom will have to reach an agreement (relating to trade, finance, customs, fishing and the movement of people, etc.) is very high, and time is short. For this reason, while the uncertainty related to Brexit has reduced, it will not disappear, and it could continue to affect both the UK economy and that of European countries.

**2019, a challenging year for the euro area.** The euro area economy has disappointed analysts, who were expecting a recovery at the end of the year, with GDP growth of 0.1% quarter-on-quarter in Q4 2019 (1.0% year-on-year). This first estimate implies annual growth for 2019 as a whole at 1.2%, significantly below the 1.9% of 2018. Europe is thus confirmed as the main victim of the deterioration of the global environment in 2019, partly due to its high degree of openness to trade and integration into the global economy. In addition, the manufacturing sector has been particularly hard hit by both global uncertainty and a shock to the automotive industry. However, manufacturing firms have begun to show small signs of improvement. In particular, the manufacturing PMI for the euro area improved in January, from 46.3 points in December to 47.8, although it remains below the 50-point threshold (which separates expansive and contractionary territory). In 2020, the euro area economy will continue to be supported by the ECB’s dovish monetary policy, as well as by a moderately expansive fiscal policy. Furthermore, as the reduction in global uncertainties discussed above translates into a gradual recovery in confidence, the economy could display more traction. Among the risks that could jeopardise this recovery, of particular note is the possibility of a rebound in trade tensions with the US, which still has to decide whether to increase tariffs on imports of European cars, as well as the fear of contagion affecting services and domestic demand, which have so far resisted the difficulties experienced in the rest of the economy.

**Germany, Europe’s biggest economy and the main focus of various shocks in 2019** ended the year with annual growth

**US: GDP**

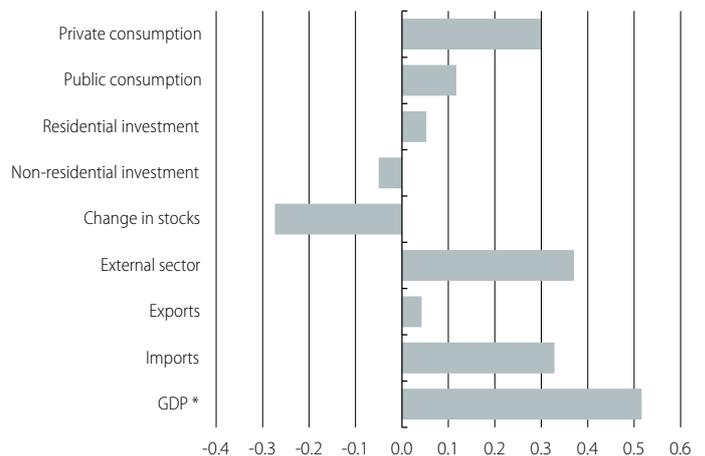
Change (%)



Source: CaixaBank Research, based on data from the Bureau of Economic Analysis.

**US: components of GDP**

Contribution to quarter-on-quarter growth in Q4 2019 (pps)



Note: \* Quarter-on-quarter change (%). Source: CaixaBank Research, based on data from the Bureau of Economic Analysis.

**Euro area: GDP**

Change (%)



Source: CaixaBank Research, based on data from Eurostat.

of 0.6%. This represents a marked slowdown compared to 2017 and 2018, when the economy grew by 2.8% and 1.6%, respectively. However, the business sentiment data of recent months suggest that the German economy is beginning to recover from a very difficult year. Both the manufacturing PMI and that of services have increased sharply since September, which was the worst month of the year in terms of business sentiment. These figures should alleviate fears of contagion from the recession in the manufacturing sector reaching the services sector. On the other hand, among the GDP data for Q4 that have been published, the figures for France and Italy proved lower than expected. In France, GDP fell 0.1% quarter-on-quarter, hampered by a sharp drop in inventories in a quarter in which consumption continued to grow at a rate of 0.2% despite the strikes of recent months against President Macron's pension reform. In Italy, GDP fell 0.3% quarter-on-quarter, the sharpest drop since 2013. Although the breakdown by component is not yet available, this decline is also expected to reflect a negative impact from inventories.

**EMERGING MARKETS**

**In China, the economic slowdown continues and remains gradual... with the permission of the coronavirus.** GDP grew 6.0% year-on-year in Q4 2019 (6.0% in Q3), bringing the figure for the year as a whole to 6.1%, 5 decimal points less than in 2018. Although this is the lowest figure since 1990, it remains in line with the government's growth target (between 6.0% and 6.5%) and is consistent with the transition towards a more tertiary-based economy. Furthermore, economic activity data for December showed a more dynamic tone than in October and November. In particular, industrial production rose by 6.9% year-on-year (6.2% in November) and retail sales by 8.0% (8.0% in November). For the coming quarters, these indicators suggest that the Chinese economy should continue to experience a gradual slowdown. Nevertheless, the emergence of the coronavirus in recent weeks, with its epicentre in the Chinese region of Wuhan, has resulted in quarantines of entire cities and the closure of several airports. Its economic cost is uncertain, although the experience from other episodes (such as SARS in 2002-2003, also originating in China) suggests that this type of phenomena has an impact on economic performance that is significant, but at the same time limited in time and geographical scope. Furthermore, such episodes are usually followed by an economic rebound (due to the realisation of the consumption and investment decisions postponed during the health emergency). However, the greater importance of China's economy and, crucially, its greater integration into global value chains compared to 2003 could result in a larger impact from the coronavirus.

**Mexico's economic activity proved disappointing in 2019.** GDP fell by 0.1% in 2019 as a whole, after the figure for Q4 once again proved disappointing (0.0% quarter-on-quarter and -0.3% year-on-year). This figure suggests that the difficulties of recent quarters, accentuated by the poor performance of industry and by global uncertainty, are still very present. In this regard, here at CaixaBank Research we expect to see a very gradual recovery of the Mexican economy, with 1.1% GDP growth forecast in 2020.

**Germany: GDP**

Annual change (%)

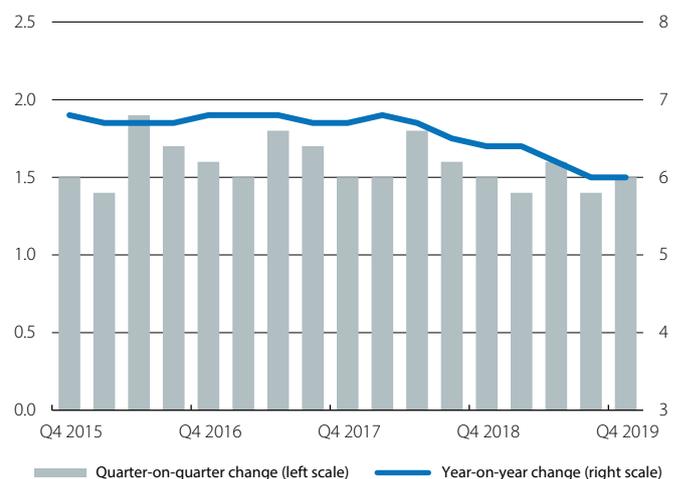


Source: CaixaBank Research, based on data from the National Statistics Office of Germany.

**China: GDP**

Quarter-on-quarter change (%)

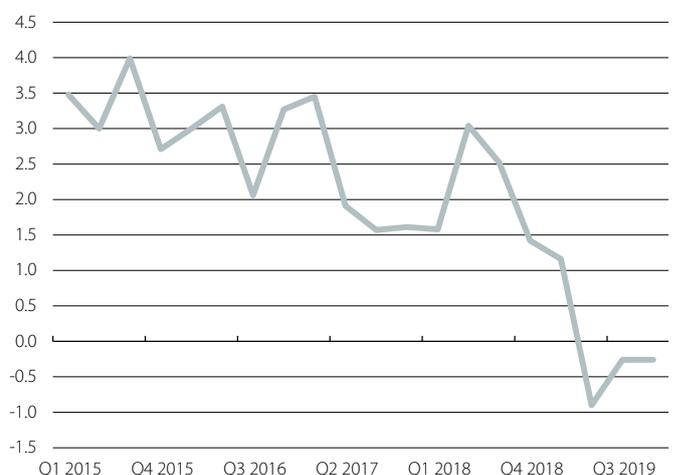
Year-on-year change (%)



Source: CaixaBank Research, based on data from the National Statistics Office of China.

**Mexico: GDP**

Year-on-year change (%)



Source: CaixaBank Research, based on data from the National Institute of Statistics and Geography.

## The new unknowns of Brexit in 2020

- After Brexit, the United Kingdom and the EU will have just 11 months to reach some sort of agreement before the transition phase expires. All the indicators point towards a free trade agreement that leaves aspects such as services and the movement of people to be determined later.

### Negotiations to reach a new framework for relations: a race against the clock

One might be forgiven for thinking that after the United Kingdom's departure from the EU at the end of January, the uncertainty that has surrounded Brexit in recent years is going to dissipate in 2020. However, as we shall see in this article, the formalisation of Brexit on 31 January will open up new questions.

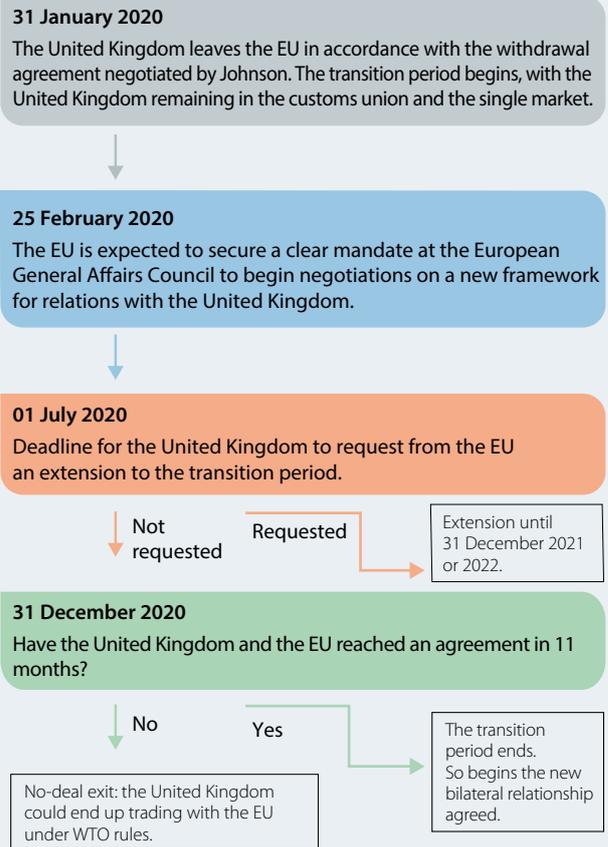
2020 will be a year in which the United Kingdom will be in a transitional phase, since it will begin to negotiate the new framework for future relations with the EU, although it will still remain in the single market and the customs union. This negotiation will take place with an extremely tight schedule (see first chart): once Brexit is consummated on 31 January, the transition phase will begin, which is due to end on 31 December 2020. Thus, the United Kingdom and the EU will have just 11 months to reach and ratify some sort of agreement. Furthermore, the United Kingdom can only request an extension to the transition phase up until 1 July 2020, although Johnson's government has already announced that it has no intention of doing so (in fact, the draft bill approved in December 2019 to seal the withdrawal agreement included a new clause prohibiting the government from extending the transition phase).

Therefore, a no-deal exit at the end of 2020 cannot yet be ruled out (the United Kingdom could end up trading with the EU under WTO rules). This would occur if the two parties fail to reach an agreement during the year and the transition phase has not been extended beforehand. Nevertheless, the likelihood of this scenario playing out appears relatively low given the negative consequences it would entail, especially for the United Kingdom.

In any case, what we must surely do is adjust our expectations regarding the type of agreement that is going to be reached. While it is not realistic to achieve an ambitious and comprehensive framework for relations in only 11 months (10 if we take into account that the EU will receive a mandate to negotiate at the end of February), it is feasible to reach agreements on more limited but important aspects. An agreement of some sort, even a shallow one, would allow a no-deal exit to be avoided and would begin to pave the way for more comprehensive agreements in the following years.

What type of agreement seems most likely? One element to take into consideration is that an agreement that does not affect the competences of the Member States would allow for a quick approval in the European Council and Parliament, whereas one that affects national competences would need to be approved in each of the parliaments of the EU's Member States. The latter would involve a demanding process, unlikely to be completed in 2020.

### Brexit milestones: agenda for 2020 (and beyond)



Source: CaixaBank Research.

As such, it appears likely that the EU and the United Kingdom could focus on reaching a free trade agreement of goods similar to that which the EU has with Canada. This would involve establishing zero tariffs and quotas for the United Kingdom's access to the goods market of the 27 Member States in exchange for the country's regulatory alignment on goods (such an alignment would not require the deal to be approved in the national parliaments, since it would fall under EU law and would be very similar to existing agreements that the EU has with other countries).

Otherwise, there would be insufficient time to reach an agreement in 2020 that covers aspects such as services, intellectual property, the movement of people, energy, domestic defence and foreign policy. In areas such as services, the United Kingdom is unlikely to accept alignment with EU legislation, as it seeks greater regulatory autonomy (alignment would give its booming financial services reasonable access to the EU market, albeit less than the level of access it enjoys at present,

since by leaving the EU the UK's financial sector will lose the European passport that allows it to offer its services without restriction throughout the EU). As for mobility, controlling the free movement of people is one of the objectives being pursued by Brexit. In other areas (such as energy and intellectual property), the negotiations affect Member States' powers. In all such areas, entering into far more complex and laborious negotiations, for which 2020 offers little margin, seems inevitable. Therefore, one likely outcome is that the free trade agreement could refer to future negotiations in these other areas and that the transition phase could be extended only for those aspects on which it has not been possible to reach an agreement.

In the end, the key factor will be what negotiating tactic is adopted by the British cabinet. Its dilemma lies in whether to reach a quick agreement with the EU in 2020, which could imply granting significant concessions to the EU on regulatory alignment, or to try to delay the negotiations and continue negotiating on more advantageous terms in subsequent years at the expense of prolonging the uncertainty affecting British businesses and consumers. What stance will Johnson adopt? The only certainty is that the path will be complex and, precisely, fraught with uncertainty.

**The economic impact of Brexit negotiations: a quantitative exploration**

The unknowns set out in the previous section, added to the fact that a somewhat unambitious agreement seems likely in 2020, highlight that uncertainty will continue to affect the behaviour of businesses and consumers.

In order to shed some light on the potential impact of Brexit in 2020, we have used the Brexit barometer created by Bloomberg, which measures multiple aspects of the performance of the British economy.<sup>1</sup> This indicator has two major advantages: it has a strong correlation with the United Kingdom's GDP growth and it is published in real time, which allows trend changes to be easily captured.

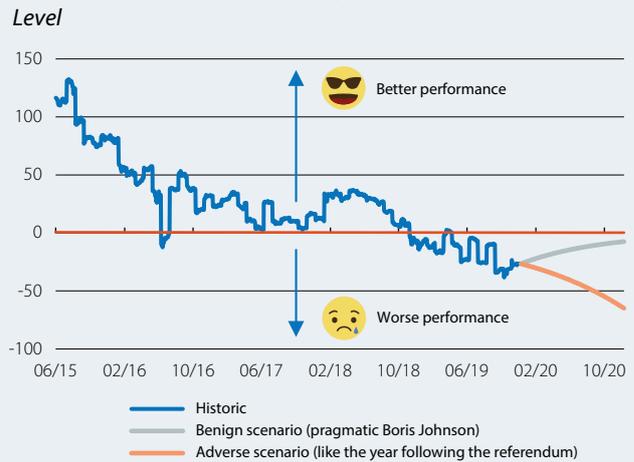
We have worked with two very different scenarios. On the one hand, the scenario with a «pragmatic Boris Johnson» would be similar to the period between 17 October 2019 (when the withdrawal agreement between Johnson and the EU was announced) and 20 December 2019 (when the House of Commons approved the agreement). In particular, we have projected the trend of gradual improvement in the barometer in that period and we have assumed that it will continue in 2020.

On the other hand, the «adverse» scenario forecasts that in 2020 the barometer will follow the same trend as it did in the year following the referendum in June 2016. This was the period in which fears over the outcome of Brexit were particularly acute, resulting in a significant decline in the barometer.

In this way, we predict what the economic growth of the United Kingdom's GDP would be in 2020 on the basis of these two trajectories of the Brexit barometer in order to get an idea of what the impact on growth could be. The

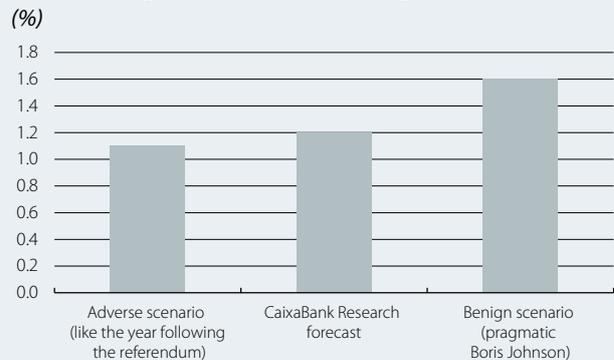
1. Specifically, these aspects are: inflation, economic activity, employment and uncertainty.

**Brexit barometer: two very different scenarios**



**Note:** The Brexit barometer is an index created based on four indicators: employment, inflation, economic activity and uncertainty.  
**Source:** CaixaBank Research, based on data from Bloomberg.

**United Kingdom: scenarios for growth in 2020**



**Note:** We predict GDP growth in 2020 based on two projections of the Brexit barometer. The adverse scenario corresponds to a trajectory of the barometer like that which it followed in the year following the 2016 referendum, while the benign scenario corresponds to a path like the one followed between the announcement of the withdrawal agreement on 17 October 2019 and its approval in the House of Commons on 20 December 2019.  
**Source:** CaixaBank Research.

difference between the two scenarios is by no means negligible: GDP growth would be 1.6% in the case of a scenario with a pragmatic Boris Johnson, and only 1.1% in the case of an adverse scenario. As for the impact on the euro area, we estimate that the difference in GDP growth between the two scenarios could be approximately 0.2-0.3 pps.<sup>2</sup>

In short, this small quantitative incursion appears to predict the damage, albeit not of excessive proportions, that a scenario of uncertainty persisting in 2020 would entail for the British economy. One possible explanation for this is that the British have learned to deal with uncertainty. Nevertheless, the medium-term consequences of failing to reach a sensible, balanced and mutually beneficial agreement with the EU (not to mention a hard Brexit at the end of 2020) would clearly be detrimental to the outlook for both the British and the European economies.

Javier Garcia-Arenas

2. According to some studies, the impact on the euro area of the uncertainty caused by Brexit is 50%-60% of the impact on the United Kingdom itself. The impact is somewhat higher in economies such as Germany.

Year-on-year (%) change, unless otherwise specified

## UNITED STATES

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	10/19	11/19	12/19
<b>Activity</b>									
Real GDP	2.4	2.9	2.7	2.3	2.1	2.3	–	–	–
Retail sales (excluding cars and petrol)	4.5	4.7	3.4	3.6	4.2	3.9	3.4	2.7	5.7
Consumer confidence (value)	120.5	130.1	125.8	128.3	132.1	127.0	126.1	126.8	128.2
Industrial production	2.3	3.9	2.9	1.2	0.2	–0.9	–1.0	–0.7	–1.0
Manufacturing activity index (ISM) (value)	57.4	58.8	55.4	52.2	49.4	47.9	48.3	48.1	47.2
Housing starts (thousands)	1,209	1,250	1,213	1,256	1,282	1,441	1,340	1,375	1,608
Case-Shiller home price index (value)	200	211	215	216	216	...	218	219	...
Unemployment rate (% lab. force)	4.4	3.9	3.9	3.6	3.6	3.5	3.6	3.5	3.5
Employment-population ratio (% pop. > 16 years)	60.1	60.4	60.7	60.6	60.9	61.0	61.0	61.0	61.0
Trade balance <sup>1</sup> (% GDP)	–2.8	–2.4	–3.0	–3.1	–3.0	...	–3.0	–2.9	...
<b>Prices</b>									
Headline inflation	2.1	2.4	1.6	1.8	1.8	2.0	1.8	2.1	2.3
Core inflation	1.8	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3

## JAPAN

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	10/19	11/19	12/19
<b>Activity</b>									
Real GDP	2.2	0.3	0.8	0.8	1.9	...	–	...	–
Consumer confidence (value)	43.8	43.6	41.3	39.5	36.8	38.0	36.2	38.7	39.1
Industrial production	2.9	1.0	–1.1	–1.2	–1.1	...	–6.6	–6.7	...
Business activity index (Tankan) (value)	19.0	20.8	12.0	7.0	5.0	0.0	–	0.0	–
Unemployment rate (% lab. force)	2.8	2.4	2.4	2.4	2.3	...	2.4	2.2	...
Trade balance <sup>1</sup> (% GDP)	0.5	–0.1	–0.3	–0.5	–0.4	–0.4	–0.5	–0.4	–0.4
<b>Prices</b>									
Headline inflation	0.5	1.0	0.3	0.8	0.3	0.5	0.2	0.5	0.8
Core inflation	0.1	0.3	0.4	0.6	0.6	0.7	0.6	0.8	0.8

## CHINA

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	10/19	11/19	12/19
<b>Activity</b>									
Real GDP	6.9	6.7	6.4	6.2	6.0	6.0	–	–	–
Retail sales	10.3	9.0	8.5	8.5	7.6	7.7	7.2	8.0	8.0
Industrial production	6.6	6.2	6.4	5.6	5.0	5.9	4.7	6.2	6.9
PMI manufacturing (value)	51.6	50.9	49.7	49.6	49.7	49.9	49.3	50.2	50.2
<b>Foreign sector</b>									
Trade balance <sup>1,2</sup>	420	352	381	395	428	424	438	435	424
Exports	7.9	9.9	1.3	–1.0	–0.4	1.8	–0.8	–1.2	7.4
Imports	16.3	15.8	–4.4	–3.8	–6.3	3.0	–6.2	0.3	16.2
<b>Prices</b>									
Headline inflation	1.6	2.1	1.8	2.6	2.9	4.3	3.8	4.5	4.5
Official interest rate <sup>3</sup>	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Renminbi per dollar	6.8	6.6	6.8	6.8	7.0	7.0	7.1	7.0	7.0

Notes: 1. Cumulative figure over last 12 months. 2. Billion dollars. 3. End of period.

Source: CaixaBank Research, based on data from the Department of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, Standard &amp; Poor's, ISM, National Bureau of Statistics of Japan, Bank of Japan, National Bureau of Statistics of China and Thomson Reuters Datastream.

## EURO AREA

## Activity and employment indicators

Values, unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
Retail sales (year-on-year change)	2.5	1.6	2.5	2.1	2.7	...	2.2	...	...
Industrial production (year-on-year change)	2.9	0.9	-0.5	-1.4	-2.2	...	-1.5	...	...
Consumer confidence	-5.4	-4.9	-7.0	-7.0	-6.8	-7.6	-7.2	-8.1	-8.1
Economic sentiment	110.2	111.3	106.1	104.1	102.4	101.0	101.1	101.3	102.8
Manufacturing PMI	57.4	55.0	49.1	47.7	46.4	46.4	46.9	46.3	47.8
Services PMI	55.6	54.5	52.4	53.1	52.8	52.3	51.9	52.8	52.2
<b>Labour market</b>									
Employment (people) (year-on-year change)	1.6	1.5	1.4	1.2	1.0	...	...	-	-
<b>Unemployment rate (% labour force)</b>	9.1	8.2	7.8	7.6	7.5	7.5	7.5	7.4	...
Germany (% labour force)	3.8	3.4	3.2	3.1	3.1	3.2	3.2	3.2	...
France (% labour force)	9.4	9.1	8.7	8.5	8.5	8.4	8.4	8.4	...
Italy (% labour force)	11.3	10.6	10.3	10.0	9.8	9.8	9.8	9.8	...
<b>Real GDP (year-on-year change)</b>	2.7	1.9	1.4	1.2	1.2	1.0	...	-	-
Germany (year-on-year change)	2.8	1.6	1.0	0.3	0.5	...	...	-	-
France (year-on-year change)	2.4	1.7	1.3	1.5	1.4	0.8	...	-	-
Italy (year-on-year change)	1.8	0.7	0.1	0.2	0.5	0.0	...	-	-

## Prices

Year-on-year change (%), unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
General	1.5	1.8	1.4	1.4	1.0	1.0	1.0	1.3	1.4
Core	1.0	1.0	1.0	1.1	0.9	1.2	1.3	1.3	1.1

## Foreign sector

Cumulative balance over the last 12 months as % of GDP of the last 4 quarters, unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Current balance</b>	3.2	3.2	3.1	2.8	3.0	...	3.1	...	...
Germany	8.1	7.3	7.2	7.1	7.5	...	7.6	...	...
France	-0.7	-0.6	-0.5	-0.7	-0.8	...	-0.7	...	...
Italy	2.7	2.6	2.6	2.7	2.7	...	2.9	...	...
<b>Nominal effective exchange rate<sup>1</sup> (value)</b>	96.5	98.9	97.3	97.3	97.7	96.9	96.7	96.7	...

## Credit and deposits of non-financial sectors

Year-on-year change (%), unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Private sector financing</b>									
Credit to non-financial firms <sup>2</sup>	2.5	3.8	3.7	3.9	3.9	...	...	...	...
Credit to households <sup>2,3</sup>	2.6	3.0	3.3	3.3	3.4	...	...	...	...
Interest rate on loans to non-financial firms <sup>4</sup> (%)	1.3	1.2	1.2	1.1	1.1	...	...	...	...
Interest rate on loans to households for house purchases <sup>5</sup> (%)	1.7	1.6	1.6	1.6	1.5	...	...	...	...
<b>Deposits</b>									
On demand deposits	10.2	7.9	7.1	7.6	8.6	...	...	...	...
Other short-term deposits	-2.7	-1.5	-0.4	0.4	0.7	...	...	...	...
Marketable instruments	1.6	-4.2	-3.4	-4.9	-1.7	...	...	...	...
Interest rate on deposits up to 1 year from households (%)	0.4	0.3	0.3	0.3	0.3	...	...	...	...

**Notes:** 1. Weighted by flow of foreign trade. Higher figures indicate the currency has appreciated. 2. Data adjusted for sales and securitization. 3. Including NPISH. 4. Loans of more than one million euros with a floating rate and an initial rate fixation period of up to one year. 5. Loans with a floating rate and an initial rate fixation period of up to one year.

**Source:** CaixaBank Research, based on data from the Eurostat, European Central Bank, European Commission, national statistics institutes and Markit.

## Spain exhibits a gentle moderation of growth

**Economic activity ended 2019 on a good note.** The growth of the Spanish economy stood at 2.0% in 2019, a lower rate than that of 2018 (2.4%) but nonetheless buoyant and higher than that of the euro area (1.2%). This result is slightly better than expected (1.9%), driven by the strong GDP figure for Q4 2019, which marked a rise of 0.5% quarter-on-quarter (1.8% year-on-year), 1 decimal point higher than the figure for the previous quarter. In year-on-year terms, domestic demand reduced its contribution to growth in Q4 2019 down to 1.2 pps, 0.6 pps less than in the previous quarter. On the one hand, this lower contribution was due to investment, which fell (-3.5% quarter-on-quarter) following a sharp rise in Q3. On the other hand, consumption remained stable at the levels of the previous quarter. However, given the good outlook for revenue growth (thanks to the strength of employment and the recovery of wages), coupled with the perspectives for the continuation of accommodative financial conditions, consumption is expected to gain traction over the coming quarters. Foreign demand, meanwhile, increased its contribution by 0.5 pps up to 0.6 pps, with a rebound in exports (+1.5% quarter-on-quarter) and a decline in imports (-1.2% quarter-on-quarter). For 2020, we expect the growth of the Spanish economy to continue to gradually decelerate towards levels more in line with its potential. Moreover, as it does so it will continue to correct many of the macroeconomic imbalances it was beset with prior to the financial crisis. In particular, the current account has gone into surplus (1.9% of GDP in November 2019), while household and non-financial corporate debt as a percentage of GDP now lies below the euro area average, and the government has a small primary surplus (although the fiscal deficit exceeds 2% of GDP).

**The economic activity indicators suggest there is no let up in the pace of growth.** The Purchasing Managers' Index (PMI) for the services sector increased to 54.9 points in December (53.2 in November). This is the highest it has been in the past nine months and considerably above the threshold that separates expansive and contractionary territory (50 points). On the other hand, the manufacturing sector continues to feel the impact of uncertainties abroad (the PMI for the manufacturing sector has been in contractionary territory for several months now). That said, in November industrial production registered a 2.1% year-on-year growth (corrected for seasonal and calendar effects), an encouraging figure which stands above the average of the past few quarters. In addition, vehicle registrations rose for the third consecutive month in December (+6.6% year-on-year). The business confidence index for Q1 2020, meanwhile, yielded 0.5 points compared to the previous quarter, falling to 130.6 points. This is still a favourable level, albeit somewhat lower than the average for 2019 (132.9 points).

**The slowdown in economic activity is reflected in the labour market.** 2019 closed with significant job creation and a reduction in unemployment, albeit more moderate than in previous years. According to the Labour Force Survey, 402,000 jobs were created (+2.0% year-on-year), below the average for

### Spain: GDP

Contribution to year-on-year growth (pps)

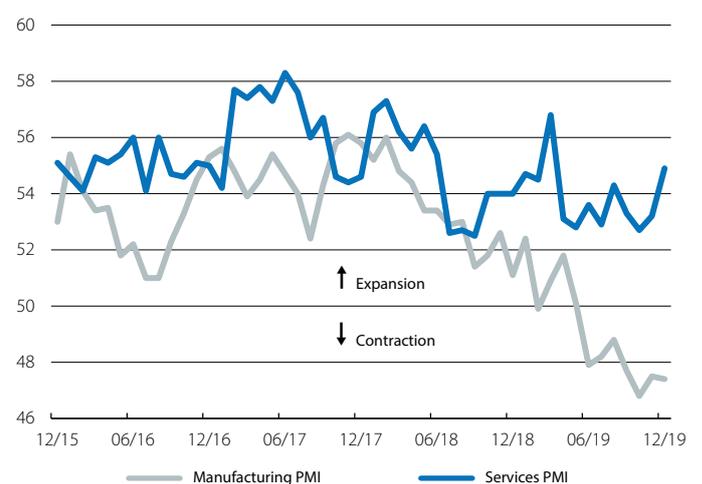


Note: \* Year-on-year change (%).

Source: CaixaBank Research, based on data from the National Statistics Institute.

### Spain: economic activity indicators

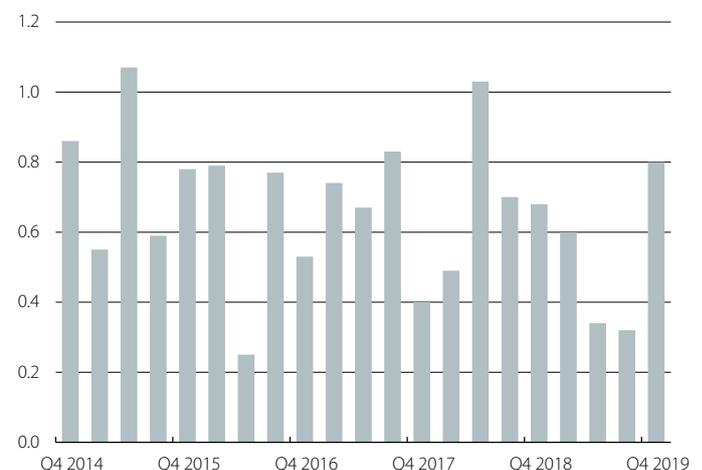
Level



Source: CaixaBank Research, based on data from Markit.

### Spain: employment \*

Quarter-on-quarter change (%)



Note: \* Seasonally adjusted series.

Source: CaixaBank Research, based on data from the National Statistics Institute (Labour Force Survey).

2016-2018 (+490,000). In addition, the reduction in the number of unemployed people in 2019 (-112,000 people) was lower than in the last few years (-492,000 on average in 2016-2018). All in all, the labour market ended 2019 with a good Q4, increasing the pace of job creation to 0.8% quarter-on-quarter (based on seasonally adjusted data), well above the 0.3% registered in Q3. The rate of reduction of the unemployment rate continued its slowdown, reaching -3.4% year-on-year (-12.3% in Q4 2018), affected by the increase in the labour force (+1.3% year-on-year in Q4 2019). Thus, the unemployment rate stood at 13.8%, a figure similar to that of the previous quarter (13.9%) but 0.7 pps lower than that of Q4 2018. For 2020, we expect this slowdown in the labour market to continue, in line with the Spanish economy's slower pace of growth.

**Inflation rises in January to 1.1%.** In the absence of the breakdown by component, the increase compared to the 0.8% registered in December appears to reflect the price increases of non-core components (electricity, food and non-alcoholic beverages). In particular, electricity prices have risen in month-on-month terms, in contrast with the 0.3% reduction last year, although in year-on-year terms they remain below the level of January 2019. Thus, headline inflation appears to be closing the gap with core inflation, which remains at around a modest 1%.

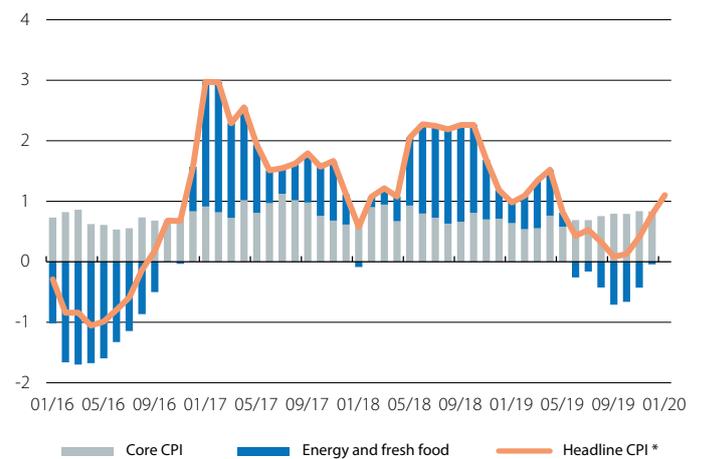
**Household and corporate indebtedness lies below the euro area average.** In Q3 2019, household debt declined 1.3 pps to 57.4% of GDP, placing it below the euro area average (57.9%) for the first time since 2002. The debt of non-financial firms, meanwhile, stood at 95.0% of GDP. This is slightly above the figure for the last quarter (94.6%), but 2.5 pps below that of the same quarter of the previous year and well below the euro area average (108.5%).

**The current account surplus recovers to 1.9% of GDP in November,** a figure very similar to that of a year earlier, while the deficit in the balance of goods remained at 2.7% of GDP in November (12-month cumulative balance). This stability was possible thanks to the substantial improvement in the trade balance of energy, which offset the deterioration of the non-energy balance. The surplus in the balance of services, meanwhile, remained at 5.4%, propped up by tourism exports (+5.7% of GDP).

**Activity in the real estate sector continued to moderate in 2019 in a context of economic slowdown.** According to data from the National Statistics Institute, home sales fell by 3.6% year-on-year between January and November 2019. While this is due, in part, to the temporary impact of the implementation of the new mortgage law that came into force last June (sales fell 9.6% year-on-year between July and September), the slowdown is much more pronounced than expected a few months ago. In line with more contained demand, the rise in the price of housing has also slowed down in 2019. The appraisal price of housing rose 3.2% year-on-year in Q2 and Q3 2019, slightly below the 4.4% registered in the first quarter of the year. All in all, the factors supporting housing demand remain strong and there does not appear to be any surplus on the supply side. Furthermore, the slowdown in the growth of the price of housing, more in line with household income, should help the current cycle to be more sustainable.

**Spain: CPI**

Contribution to year-on-year growth (pps)



Note: \* Year-on-year change.  
Source: CaixaBank Research, based on data from the National Statistics Institute.

**Spain: current account balance**

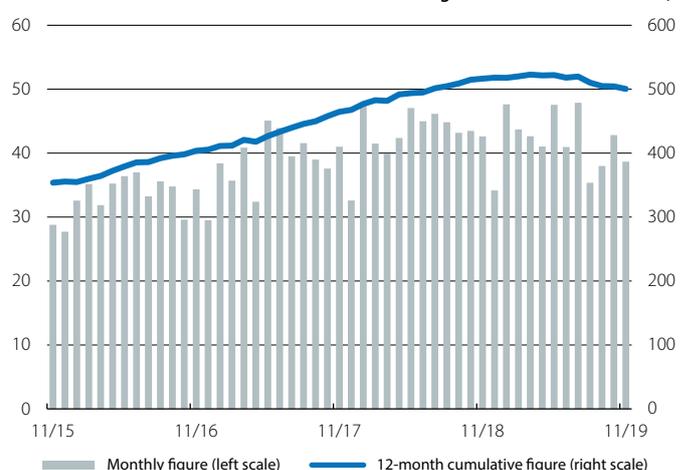
12-month cumulative balance (% of GDP)



Source: CaixaBank Research, based on data from the National Statistics Institute.

**Spain: home sales**

(Thousands of homes) 12-month cumulative figure (thousands of homes)



Source: CaixaBank Research, based on data from the National Statistics Institute.

## The return of immigration to Spain

- Spain has once again become a net recipient of immigrants since 2015 and the flows show an upward trend.
- Immigration has allowed the population in Spain to rise once again and makes a significant contribution to its labour market.

Immigration is back in Spain after years of crisis in which there were many more immigrants departing than arriving (between 2010 and 2014). More specifically, Spain has once again become a net recipient of foreign immigration since 2015 and the trend has intensified in recent years: net inflows of foreign nationals reached 330,000 people in 2018 according to the migration statistics of the National Statistics Institute. In 2019, entries may have reached around half a million, following the arrival of more than 200,000 individuals in the first half of the year alone (see first chart).<sup>1</sup> On the other hand, and although it is on a much smaller scale, in 2018 the number of Spaniards returning from abroad exceeded those departing for the first time in a decade (net entries of Spaniards totalled 4,400), and this trend seems set to have continued in 2019.

This shift in the migration flows of foreigners seems to be more related to the improvement in the economic outlook in Spain than to other reasons, such as the refugee crisis.<sup>2</sup> In 2017, the last year for which information is available by type of immigrant, only 1% of them came to Spain for humanitarian reasons. Most of the inflows were people with the right to free movement (44%) and with immigration permits for family reasons (36%) or work-related reasons (9%), according to data from the OECD.<sup>3</sup> The variety in the entry categories is also reflected in the diversity of the immigrants' countries of origin, since the top five countries were as geographically and economically diverse as Morocco (8.8% of entries), Colombia (7.5%), Venezuela (6.9%), Romania (6.9%) and Italy (6.3%).

These entries of immigrants have allowed the population in Spain to increase again after several years of negative or stagnant growth in a context of an ageing population. In particular, the population in Spain rose by 0.5% in 2018 and by 0.8% in the first half of 2019, due entirely to the rise in immigration (see second chart). As such, the population in Spain reached 47.1 million inhabitants

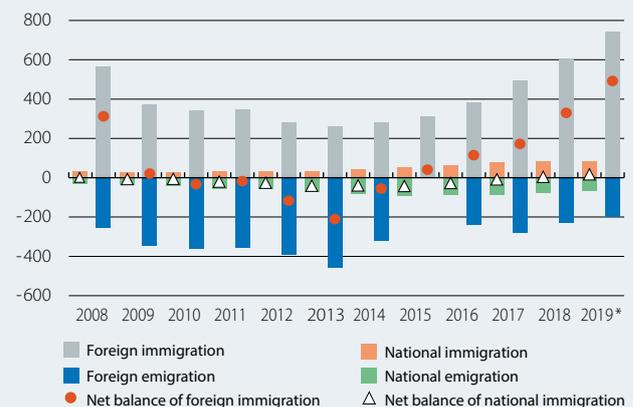
1. Estimate by CaixaBank Research assuming that the flows of entries and departures follow the same relative trend in the second half of the year as they did in the first half of 2019. This trend is calculated for the period 2015-2018.

2. Starting in 2015, the refugee crisis did not lead to entries into Spain for humanitarian reasons on the scale seen in other countries such as Germany. All in all, asylum applications increased and reached 53,000 in 2018, in particular those from Venezuela (19,000), Colombia (8,500) and Syria (2,700). Approximately 1 out of every 4 asylum applications were accepted in 2018 in Spain.

3. See OECD (2019). «International Migration Outlook 2019».

### Foreign migration flows to/from Spain by nationality

(Thousands)

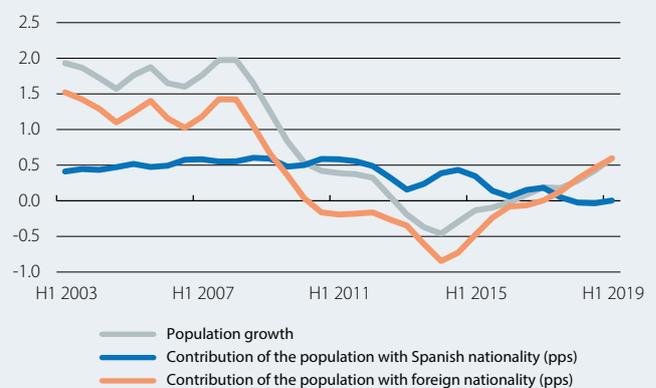


Note: \* Estimate for 2019 based on data from the first half of the year.

Source: CaixaBank Research, based on data from the National Statistics Institute and our own estimates.

### Spain: population growth and contribution by nationality

Year-on-year change (%)



Source: CaixaBank Research, based on data from the National Statistics Institute (population statistics).

at 1 July 2019, according to data from the National Statistics Institute, of which 10.7% had foreign nationality.

### The role of immigration in the labour market

Immigration is also playing a significant role in the labour market, since it is the main driver behind the return of growth in the labour force since 2018, a year in which it increased by 0.5% (22.8 million economically active people). Similarly, in 2019 the labour force increased by +1.3% (+290,000 individuals, of which 69% were foreign nationals). What is more, immigrants are not only

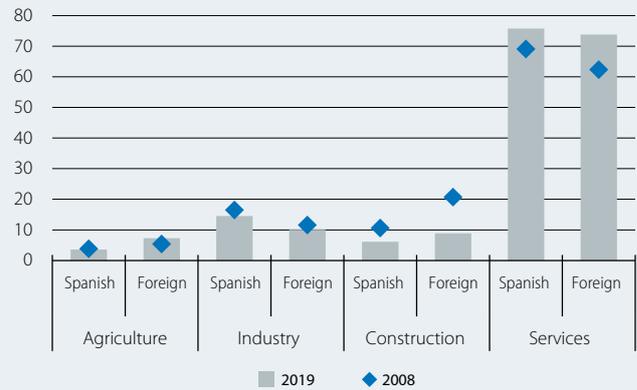
entering the labour market, but they are finding work: 45% of the 402,000 individuals who found employment in 2019 were immigrants.

The level of education of immigrants who are in work is similar to prior to the financial crisis. 14% of them have a low level of educational (primary education or less), which is higher than the figure of 4% among workers with Spanish nationality in 2019. On the other hand, a notable percentage (30%) have a university education, which shows how a significant portion of the immigration into Spain consists of qualified people.<sup>4</sup> However, there has been a change between before and after the financial crisis in the type of productive sectors in which immigrants are working (see third chart). Construction no longer employs 21% of foreigner workers (11% of native workers) like it did in 2008, with the figure for 2019 standing at 9% (6% for natives). In agriculture, there remains a high level of participation of immigrants (7% of foreigners work in the sector, compared with 4% of natives). But it is the services sector that tops the leader board in the hiring of foreigners: 74% of foreigners who are in work do so in this sector (76% in the case of natives). This is 12 pps more than in 2008, and they are employed in a wide variety of occupations, ranging from healthcare and domestic work to tourism, research and financial services.

All these figures show that immigration has returned to Spain and all the indicators suggest that it will continue to be needed, given its contribution to countering the ageing of the population<sup>5</sup> and its role in supporting the economic transformation brought about by technological change.<sup>6</sup> It is for this reason that migration policies should facilitate an orderly management of migration flows and the integration of immigrants who have entered the country.

*Josep Mestres Domènech*

**Spain: sectoral distribution of occupation by nationality**  
(% of the total)



Source: CaixaBank Research, based on data from the National Statistics Institute (Labour Force Survey).

4. Immigrants have a higher risk of being overqualified than natives (i.e. having a level of education that is higher than necessary for carrying out their work), although the gap between the two groups has reduced substantially in the past decade in Spain (OECD, «International Migration Outlook 2019»).

5. Immigration is one of the key factors for reducing the ageing of the population. For further details, see the article «Population ageing and its macroeconomic impact» in the Dossier of the MR11/2018.

6. For further details, see the Dossier «Technological change and productivity» in the MR02/2018.

**Activity and employment indicators**

Year-on-year change (%), unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Industry</b>									
Industrial production index	3.2	0.3	-0.1	1.5	1.0	...	2.1	...	...
Indicator of confidence in industry (value)	1.0	-0.1	-3.8	-4.6	-2.0	-5.2	-5.1	-2.6	-5.2
Manufacturing PMI (value)	54.7	53.3	51.1	49.9	48.2	47.2	47.5	47.4	...
<b>Construction</b>									
Building permits (cumulative over 12 months)	22.9	25.7	25.8	21.9	13.0	...	6.6	...	...
House sales (cumulative over 12 months)	14.1	14.2	8.3	5.5	1.3	...	-3.1	...	...
House prices	6.2	6.7	6.8	5.3	4.7	...	-	-	-
<b>Services</b>									
Foreign tourists (cumulative over 12 months)	10.0	4.0	1.0	1.5	2.1	1.4	1.6	1.1	...
Services PMI (value)	56.4	54.8	55.3	53.2	53.5	53.6	53.2	54.9	...
<b>Consumption</b>									
Retail sales	1.0	0.7	1.4	2.2	3.3	2.3	2.5	1.7	...
Car registrations	7.9	7.8	-7.0	-4.4	-7.9	5.1	2.3	6.6	...
Consumer confidence index (value)	-3.4	-4.2	-4.8	-4.0	-5.8	-10.5	-10.3	-12.1	-11.5
<b>Labour market</b>									
Employment <sup>1</sup>	2.6	2.7	3.2	2.4	1.8	2.1	-	-	-
Unemployment rate (% labour force)	17.2	15.3	14.7	14.0	13.9	13.8	-	-	-
Registered as employed with Social Security <sup>2</sup>	3.6	3.1	2.9	2.8	2.5	2.2	2.3	2.0	...
<b>GDP</b>	<b>2.9</b>	<b>2.4</b>	<b>2.2</b>	<b>2.0</b>	<b>1.9</b>	<b>1.8</b>	-	-	-

**Prices**

Year-on-year change (%), unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
General	2.0	1.7	1.1	0.9	0.3	0.4	0.4	0.8	1.1
Core	1.1	0.9	0.7	0.8	0.9	1.0	1.0	1.0	...

**Foreign sector**

Cumulative balance over the last 12 months in billions of euros, unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Trade of goods</b>									
Exports (year-on-year change, cumulative over 12 months)	8.9	2.9	2.4	2.3	1.7	...	1.0	...	...
Imports (year-on-year change, cumulative over 12 months)	10.5	5.6	6.1	3.9	3.0	...	1.1	...	...
<b>Current balance</b>	<b>31.1</b>	<b>23.3</b>	<b>19.6</b>	<b>20.6</b>	<b>21.0</b>	<b>...</b>	<b>23.6</b>	<b>...</b>	<b>...</b>
Goods and services	41.6	32.6	30.2	31.5	31.4	...	33.6	...	...
Primary and secondary income	-10.5	-9.3	-10.6	-10.9	-10.4	...	-10.0	...	...
<b>Net lending (+) / borrowing (-) capacity</b>	<b>33.9</b>	<b>29.1</b>	<b>25.5</b>	<b>26.6</b>	<b>26.3</b>	<b>...</b>	<b>28.8</b>	<b>...</b>	<b>...</b>

**Credit and deposits in non-financial sectors<sup>3</sup>**

Year-on-year change (%), unless otherwise specified

	2017	2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Deposits</b>									
Household and company deposits	2.8	3.2	5.2	5.8	5.4	5.4	6.1	4.9	...
Sight and savings	17.6	10.9	11.3	10.9	10.3	10.3	11.2	9.8	...
Term and notice	-24.2	-19.9	-13.7	-12.8	-13.2	-14.1	-13.9	-15.0	...
General government deposits	-8.7	15.4	17.8	15.7	3.7	-2.1	-4.4	-3.3	...
<b>TOTAL</b>	<b>1.9</b>	<b>3.9</b>	<b>5.9</b>	<b>6.3</b>	<b>5.3</b>	<b>4.9</b>	<b>5.3</b>	<b>4.4</b>	<b>...</b>
<b>Outstanding balance of credit</b>									
Private sector	-2.2	-2.4	-2.1	-1.1	-1.1	-1.5	-1.4	-1.2	...
Non-financial firms	-3.6	-5.5	-5.5	-3.0	-2.3	-2.9	-2.9	-2.3	...
Households - housing	-2.8	-1.9	-1.1	-1.2	-1.6	-1.3	-1.6	-0.8	...
Households - other purposes	3.7	5.1	4.2	3.8	3.1	1.5	2.7	0.2	...
General government	-9.7	-10.6	-10.4	-7.2	-5.4	-1.2	-1.4	-2.9	...
<b>TOTAL</b>	<b>-2.8</b>	<b>-2.9</b>	<b>-2.6</b>	<b>-1.5</b>	<b>-1.4</b>	<b>-1.5</b>	<b>-1.4</b>	<b>-1.3</b>	<b>...</b>
<b>NPL ratio (%)<sup>4</sup></b>	<b>7.8</b>	<b>5.8</b>	<b>5.7</b>	<b>5.4</b>	<b>5.1</b>	<b>4.9</b>	<b>5.0</b>	<b>...</b>	<b>...</b>

Notes: 1. Estimate based on the Active Population Survey. 2. Average monthly figures. 3. Aggregate figures for the Spanish banking sector and residents in Spain. 4. Period-end figure.

Source: CaixaBank Research, based on data from the Ministry of Economy, the Ministry of Public Works, the Ministry of Employment and Social Security, the National Statistics Institute, the State Employment Service, Markit, the European Commission, the Department of Customs and Special Taxes and the Bank of Spain.

## Portugal begins 2020 on a good note

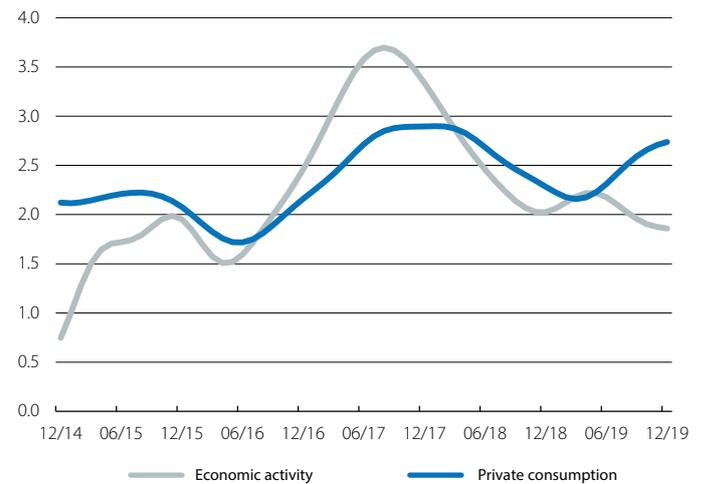
**The economy keeps the good performance.** While we await the publication of GDP for the last quarter of 2019, the available indicators suggest that economic activity will have maintained a similar growth to the year-on-year rate of 1.9% registered in Q3 2019. Thus, it is estimated that Portugal's GDP will have advanced by around 2% in 2019 as a whole, with the buoyancy of private consumption playing a prominent role and in spite of a demanding external environment. Specifically, in Q4 2019 the coincident economic activity indicator (which exhibits a strong correlation with GDP growth) remained at around 1.9%, while the coincident indicator for private consumption accelerated to 2.7%. For 2020, domestic demand is expected to remain resilient in the face of the still challenging external context (which might also improve if the sources of global uncertainty of recent months finally subside). In fact, the first data relating to 2020 remain favourable. In particular, in January the economic climate indicator, which synthesises sentiment in the various sectors of activity, improved by 1 decimal point to 2.2% year-on-year, favoured by improved sentiment in the manufacturing and construction sectors. However, the first figures of the year have been less positive for consumer confidence, which worsened slightly in January (-7.8 points, versus the -7.2 registered in December), although it is still at comfortable levels.

**The labour market is in a phase of maturity.** After years of recovery, in recent quarters the maturity of the labour market, the gradual deceleration of the economy and a higher influx of a foreign working-age population have resulted in somewhat less buoyant data in the labour market. The unemployment rate stood at 6.6% on average in 2019 (preliminary estimate), with an annual improvement (-0.4 pps) that is well below that of the previous years (between 2017 and 2018 it decreased from 8.9% to 7.0%). In addition, in December the unemployment rate rose to 6.9% (+0.2 pps compared to the previous month and +0.3 pps compared to December 2018), a reflection of the usual end-of-year seasonality (for instance, between 2000 and 2015 the unemployment rate increased by 0.4 pps on average in Q4 of each year). Furthermore, the working population fell by 3,400 people in year-on-year terms, reversing the path of continuous growth registered since the end of 2013.

**The external balance improved in November.** The current account deficit decreased to 1,128 million euros (12-month cumulative balance), which is equivalent to 0.5% of GDP and represents an improvement of 0.4 pps of GDP compared to October. This improvement reflects the disappearance of a base effect at the end of 2018: the port strike, which had a significant impact on exports of goods in the last two months

### Portugal: coincident economic activity indicators

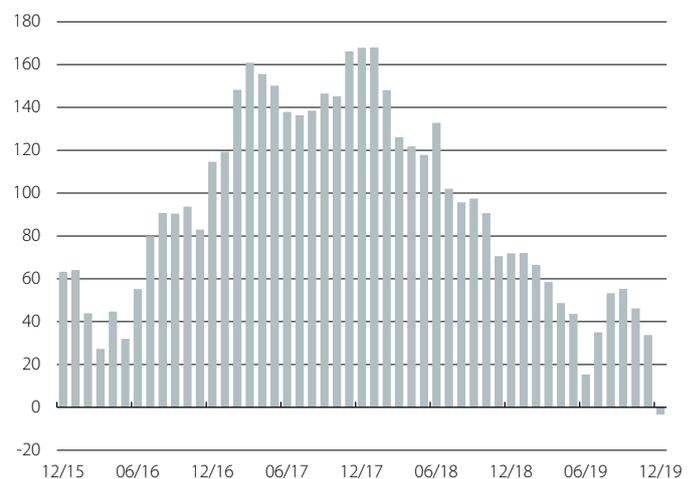
Year-on-year change (%)



Source: CaixaBank Research, based on data from the Bank of Portugal.

### Portugal: employment

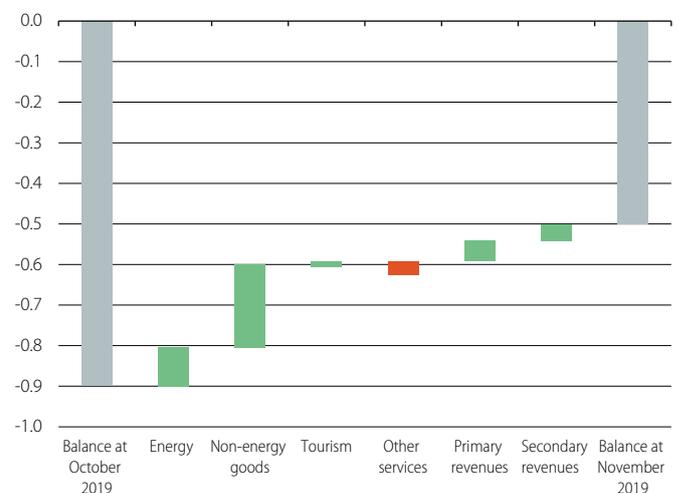
Year-on-year change (thousands of people)



Source: CaixaBank Research, based on data from the National Statistics Institute of Portugal.

### Portugal: current account balance

Contribution (pps of GDP)



Source: CaixaBank Research, based on data from the Bank of Portugal.

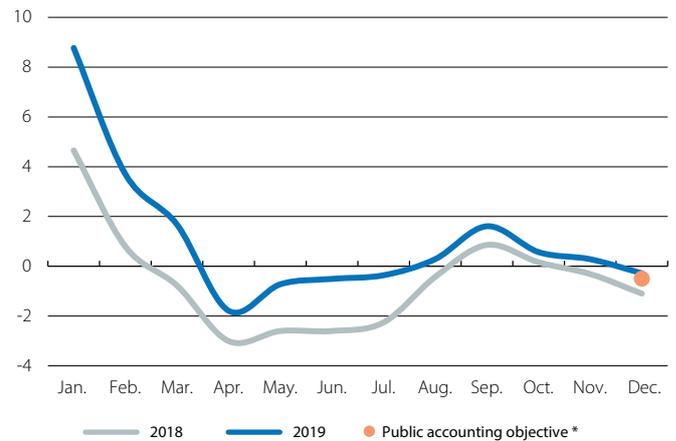
of 2018. Specifically, in November 2019 the deficit in the balance of trade in goods registered an improvement, reaching -8.0% of GDP (-0.3 pps compared to October), with exports accelerating up to 3.2% (1.9% in October) and with a slowdown in imports down to 4.9% (5.9% in October). Furthermore, the improvement in the current account, coupled with the high surplus in the capital account, allowed the Portuguese economy's foreign financing capacity to reach +0.3% of GDP in November (0.0% in October).

**The government balance proved better than expected in 2019.** The overall fiscal deficit (in cash terms) stood at 0.3% of GDP, an improvement on the 0.5% predicted by the government for the year as a whole, as well as compared to the figure for 2018 (-1.1%). This positive trend was supported by revenue growth far outweighing that of expenditure (4.3% and 2.3%, respectively). In fact, the performance of tax and contributory revenues significantly offset the substantial increase in staff costs and current account transfers. For 2020, the consolidation of the public accounts is expected to continue, albeit at a somewhat more gradual pace than that seen in this past year (we analyse the outlook for the public accounts in 2020 in the Focus «[A favourable context facilitates the surplus of the Portuguese public accounts](#)» in this same *Monthly Report*).

**The price of housing continues to rise.** In Q3 2019, the housing price index rose by 1.2% quarter-on-quarter and by 10.3% year-on-year, while property sales remained stable (-0.2% year-on-year). The appraisal value of housing, meanwhile, reached 1,321 euros per square metre in December 2019, representing an all-time high. In particular, in 2019 as a whole the price of housing according to appraisals rose by 7.5%, exceeding the 5.8% registered in 2018. However, over the coming quarters, the growth in the construction of new housing (+17.2% year-on-year) and the signs of deceleration emerging from the sector's confidence index point towards a moderation in the growth rate of house prices.

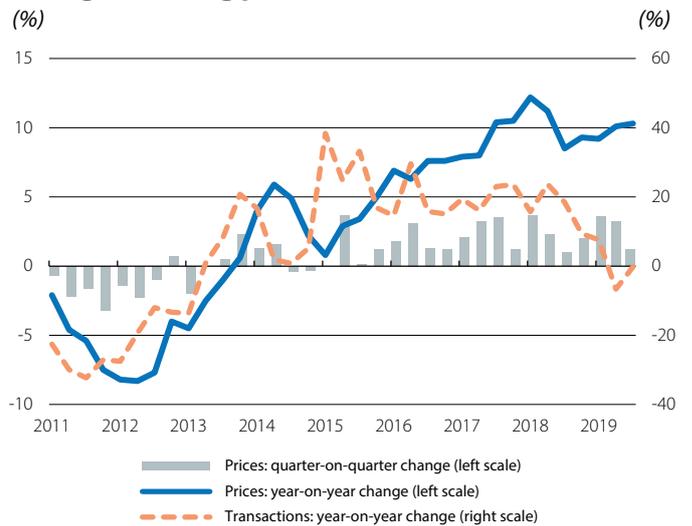
**Banks keep improving the quality of its balance sheets.** In Q3 2019, the NPL ratio of the non-financial private sector fell to 8.5%, 0.7 pps less than in Q2 and 10 pps less than the high-point registered in 2016. This reduction can be explained by sales of portfolios of doubtful loans, discounts on assets and the strong performance of the Portuguese economy. Specifically, doubtful loans fell by 1,690 million euros compared to the previous quarter, mainly driven by the non-financial corporations segment (-1,094 million euros). Nevertheless, the default rate of this segment remains high (15.7%). On the other hand, the stock of private sector credit continued to contract in November (-0.8% year-on-year) as a result of the contraction of the stock of loans to non-financial corporations (-3.8%). The stock of credit to households, meanwhile, grew 1.0% year-on-year, driven by the acceleration in consumer credit (9.5% year-on-year).

**Portugal: central government balance**  
(% of GDP)



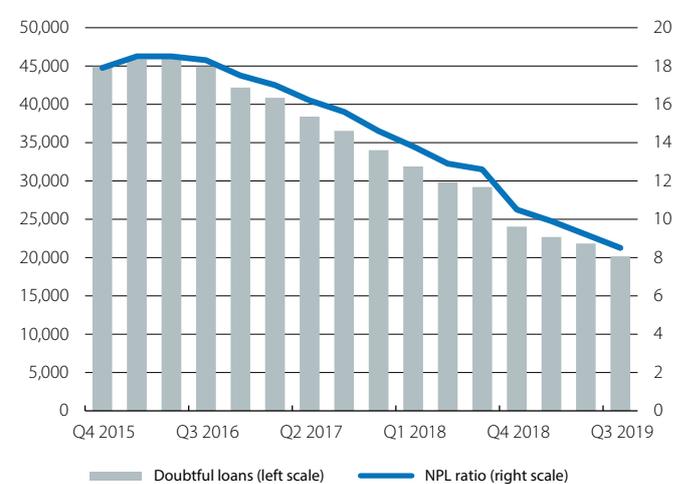
**Note:** \* The official objective (in national accounting terms) is -0.1% of GDP in 2019.  
**Source:** CaixaBank Research, based on data from the DGO and Portugal's 2020 General State Budget Proposal.

**Portugal: housing prices and transactions**



**Source:** CaixaBank Research, based on data from the National Statistics Institute of Portugal.

**Portugal: doubtful loans and NPL ratio**  
(EUR millions)



**Source:** CaixaBank Research, based on data from the Bank of Portugal.

## A favourable context facilitates the surplus of the Portuguese public accounts

- The Portuguese public accounts performed better than expected in 2019 and are looking healthy for 2020, a year in which the government hopes to achieve a slight surplus.
- Although our forecasts are somewhat less optimistic than the government’s, the government balance is expected to continue to improve thanks to revenues growing more than expenditure, with tax and contributory revenues offsetting the increase in staff costs and social benefits.
- All in all, public debt is still high and is expected to remain above 115% of GDP in 2020.

Now that we have fully entered into 2020, it is a good opportunity to take stock of how the public accounts are performing. The budgetary execution for 2019 as a whole is not yet known, but the available data suggest that the government balance will have improved from -0.4% in 2018 to -0.1% of GDP in 2019,<sup>1</sup> as shown in the first chart. This is a more positive figure than previously anticipated (a year ago, we expected an overall balance of -0.6% in 2019). This improvement reflects two trends: on the one hand, the increase in tax and contributory revenues and, on the other hand, the fall in interest charges and a lower than expected execution of public investment.

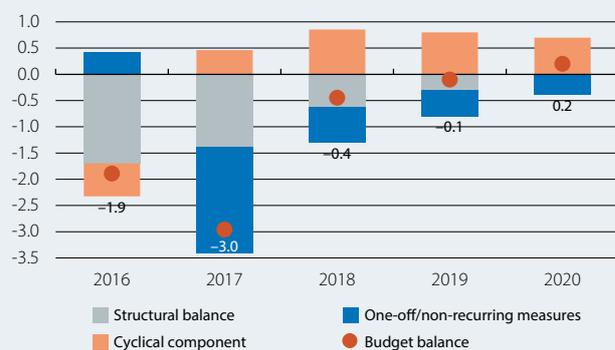
What can we expect for 2020? The draft of the 2020 State Budget, which is due to be put to a final vote on 7 February, helps us to shed some light on the outlook for the new year. The budget forecasts a surplus of +0.2% for 2020 as a whole, with revenues growing more than expenditure (see table), based on a reasonable macroeconomic scenario. However, some of the forecasts are rather more optimistic than those we have developed at CaixaBank Research. For instance, GDP growth is projected to remain stable at the levels of 2019 (1.9%, compared to our forecast of 1.7%), with an acceleration in the rate of export growth that seems somewhat unlikely. In this regard, as we shall see below, the budget includes more favourable growth rate projections for revenues and expenditure than those suggested by the macroeconomic scenario projected by CaixaBank Research, which means that our forecast for the overall fiscal balance in 2020 is somewhat less optimistic.

Before diving into the details of revenues and expenditure, it should be noted that the government estimates that the structural balance<sup>2</sup> will improve by +0.3 pps in 2020, to 0%, thus reaching the medium-term target set by the European Commission. In addition, excluding interest, which is projected to reduce in a context of accommodative financial conditions, the budget suggests that the primary structural surplus will reach 2.9%.

1. Government forecasts.  
2. i.e. the balance after adjusting for the effect of the business cycle and excluding one-off and temporary measures.

### Portuguese government forecasts: breakdown of the budget balance

(% of GDP)



Note: The figures for 2016 to 2018 correspond to data from the European Commission, while those for 2019 and 2020 refer to the government’s estimates.

Source: CaixaBank Research, based on data from the European Commission and the Portuguese government.

### Portugal: forecast for revenues and expenditure according to the 2020 Draft Budgetary Plan

	% of GDP		Change (%)	
	2019	2020	2019	2020
<b>Total revenues</b>	43.3	43.7	4.0	4.5
Tax revenues	25.1	25.1	2.5	3.4
Taxes on income and wealth	9.9	9.9	1.3	3.3
Taxes on production and imports	15.2	15.2	3.3	3.4
Social contributions	12.0	12.1	6.0	4.4
<b>Total expenditure</b>	43.3	43.5	3.1	3.7
Staff costs	10.8	10.8	4.0	3.6
Social benefits	18.4	18.3	4.4	3.1
Interest charges	3.1	2.9	-5.4	-2.5
Investment	2.0	2.3	9.0	18.1
<b>Total balance</b>	-0.1	0.2	-	-
<b>Primary balance</b>	3.0	3.2	-	-

Source: CaixaBank Research, based on the draft of Portugal’s 2020 State Budget.

Entering into the detail of the 2020 draft budget, it includes an increase in revenues which predominantly comes from tax and contributory revenues (with a projected growth of +3.7% and accounting for over 70%

of the total increase in revenues). The increase in employment (which the government estimates at 0.6%) and in economic activity will favour the growth of revenues from direct taxes and Social Security contributions, while the buoyancy of private consumption (with an increase of 2.0% estimated by the government) will support the growth of VAT revenues, the main source of indirect taxes. However, the sensitivity analysis between the economic growth and fiscal revenues suggests that the government’s projections for tax and contributory revenues in 2020 are slightly optimistic.<sup>3</sup> Our forecasts, which are based on the latest elasticity data and a slightly lower estimate for economic growth, point towards a somewhat lower increase in total revenues than that projected by the government (3.2%, versus the 4.5% projected by the government).

On the expenditure side, the third chart shows that three items will be responsible for more than 80% of the projected increase included in the State Budget Proposal: (i) staff costs, (ii) social benefits, and (iii) investment. First of all, the budget foresees an increase of 827 million euros in staff costs, mainly due to measures related to the unfreezing and revisions of careers, as well as the salary review (715 million euros). In this regard, our estimates suggest that these measures, coupled with the increase of the public sector workforce, should contribute to an increase of staff costs of closer to 4% (as opposed to the 3.6% estimated in the budget proposal).

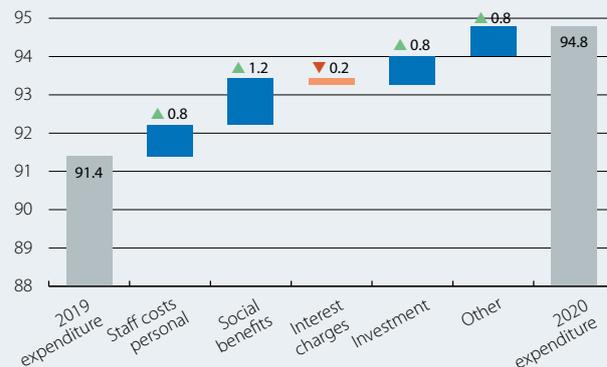
Regarding to social benefits, the government estimates an increase of 1,203 million euros, with the implementation of some additional measures, whose impact will be around 227 million euros. This increase will be driven by pensions, through both the increase in the number of retirees and the update of their pension, while unemployment benefits will continue to decrease (-2.4%, according to the government’s projections) in line with the reduction in the unemployment rate. However, in a scenario of stabilisation in the number of unemployment benefit recipients, the expenditure related to social benefits could increase by 3.8%.

The analysis of these first two items of expenditure suggests that the future trend anticipated by the government could be somewhat optimistic. However, public investment can be used as a source of budgetary leeway. In fact, the expected increase in investment could also be optimistic, given that this item has been constantly revised downwards and has always ended up

3. Despite the fact that the historical elasticities (1996-2019) between tax and contributory revenues and nominal GDP would suggest a growth of 4.6% in the tax and contributory revenues, according to the elasticities of the past six years (which better represent the current relationship between economic growth and fiscal revenues) the increase would be around 3.4%.

**Portugal: general government expenditure (2020 Budget)**

(EUR billions)

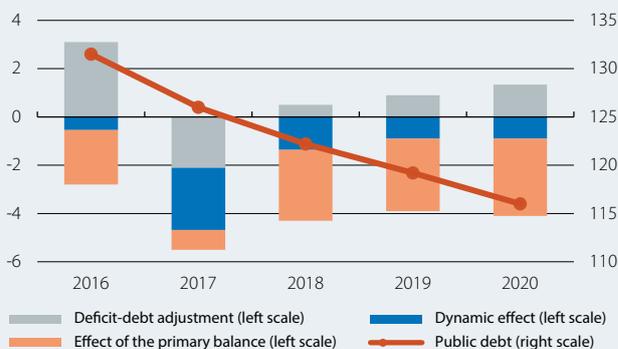


Source: CaixaBank Research, based on data from the draft of Portugal's 2020 State Budget.

**Portugal: factors behind the reduction in public debt**

(% of GDP)

(% of GDP)



Note: The estimates for 2019 and 2020 correspond to the Ministry of Finance.

Source: CaixaBank Research, based on data from the National Statistics Institute of Portugal, the Bank of Portugal and the draft of Portugal's 2020 State Budget.

being significantly lower than anticipated in the initial budget.<sup>4</sup> If we assume an execution rate similar to that of 2019 and keeping everything else constant, this would increase the overall fiscal balance by +0.3 pps of GDP, which means that the surplus would reach 0.5% of GDP, instead of the current projection (+0.2%).

What are the implications of these forecasts for public debt? The government foresees a reduction in the public debt ratio to 116.2% of GDP in 2020, which represents a 2.7–pp decrease in relation to the forecast for 2019 (see fourth chart). All in all, in nominal terms debt will continue to increase. As such, the central government’s net funding needs were revised upward to 9,500 million euros, versus the 5,200 million estimated in October.<sup>5</sup>

Vânia Duarte

4. In 2019, considering the government’s estimates, investment will fall short of what was set out in the 2019 State Budget by 685 million euros (0.3% of GDP).

5. Data from the Portuguese Treasury and Debt Management Agency (IGCP).

## Activity and employment indicators

Year-on-year change (%), unless otherwise specified

	2018	2019	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
Coincident economic activity index	2.5	2.1	2.1	2.2	2.0	1.9	1.9	1.9	...
<b>Industry</b>									
Industrial production index	0.1	-2.4	-3.7	-2.2	-4.1	0.5	0.4	3.3	...
Confidence indicator in industry ( <i>value</i> )	0.8	-3.2	-1.4	-3.3	-3.7	-4.3	-4.4	-4.3	-3.4
<b>Construction</b>									
Building permits ( <i>cumulative over 12 months</i> )	19.1	...	21.0	16.1	12.7	...	...	...	...
House sales	16.8	...	7.6	-6.6	-0.2	...	...	...	...
House prices ( <i>euro / m<sup>2</sup> - valuation</i> )	5.8	7.5	6.7	7.5	7.9	8.0	8.0	8.3	...
<b>Services</b>									
Foreign tourists ( <i>cumulative over 12 months</i> )	4.8	...	4.5	4.9	5.8	...	6.8	...	...
Confidence indicator in services ( <i>value</i> )	14.1	12.9	15.3	14.2	11.5	10.6	11.4	10.1	8.2
<b>Consumption</b>									
Retail sales	4.2	4.6	4.3	5.9	4.5	3.6	4.4	2.6	...
Coincident indicator for private consumption	2.6	2.4	2.2	2.2	2.5	2.7	2.7	2.7	...
Consumer confidence index ( <i>value</i> )	-4.6	-8.0	-8.3	-8.9	-7.6	-7.1	-6.9	-7.2	-7.8
<b>Labour market</b>									
Employment	2.3	...	1.5	0.9	0.9	...	0.7	-0.1	...
Unemployment rate ( <i>% labour force</i> )	7.0	...	6.8	6.3	6.1	...	6.7	6.9	...
<b>GDP</b>	<b>2.4</b>	<b>...</b>	<b>2.1</b>	<b>1.9</b>	<b>1.9</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

## Prices

Year-on-year change (%), unless otherwise specified

	2018	2019	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
General	1.0	0.3	0.8	0.5	-0.2	0.3	0.3	0.4	0.8
Core	0.7	0.5	0.8	0.6	0.1	0.4	0.6	0.4	0.4

## Foreign sector

Cumulative balance over the last 12 months in billions of euros, unless otherwise specified

	2018	2019	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Trade of goods</b>									
Exports ( <i>year-on-year change, cumulative over 12 months</i> )	5.1	...	5.8	3.3	2.1	...	3.8	...	...
Imports ( <i>year-on-year change, cumulative over 12 months</i> )	8.2	...	9.2	8.3	7.9	...	7.0	...	...
<b>Current balance</b>	<b>0.8</b>	<b>...</b>	<b>-1.1</b>	<b>-1.2</b>	<b>-1.6</b>	<b>...</b>	<b>-1.1</b>	<b>...</b>	<b>...</b>
Goods and services	1.6	...	0.1	-0.5	-1.1	...	-0.6	...	...
Primary and secondary income	-0.8	...	-1.2	-0.7	-0.5	...	-0.6	...	...
<b>Net lending (+) / borrowing (-) capacity</b>	<b>2.8</b>	<b>...</b>	<b>1.0</b>	<b>0.8</b>	<b>0.4</b>	<b>...</b>	<b>0.6</b>	<b>...</b>	<b>...</b>

## Credit and deposits in non-financial sectors

Year-on-year change (%), unless otherwise specified

	2018	2019	Q1 2019	Q2 2019	Q3 2019	Q4 2019	11/19	12/19	01/20
<b>Deposits<sup>1</sup></b>									
Household and company deposits	3.8	...	4.9	4.5	5.3	...	5.1	...	...
Sight and savings	14.3	...	14.2	13.3	15.1	...	14.6	...	...
Term and notice	-3.0	...	-1.9	-2.3	-2.5	...	-2.8	...	...
General government deposits	-1.9	...	-11.6	-11.9	-17.1	...	-23.7	...	...
<b>TOTAL</b>	<b>3.5</b>	<b>...</b>	<b>4.1</b>	<b>3.6</b>	<b>4.1</b>	<b>...</b>	<b>3.6</b>	<b>...</b>	<b>...</b>
<b>Outstanding balance of credit<sup>1</sup></b>									
Private sector	-1.5	...	-2.0	-1.3	-0.7	...	-0.8	...	...
Non-financial firms	-4.0	...	-6.0	-4.1	-3.3	...	-3.8	...	...
Households - housing	-0.8	...	0.0	0.1	0.1	...	-0.2	...	...
Households - other purposes	4.2	...	2.8	2.3	3.8	...	5.7	...	...
General government	2.4	...	-12.5	-8.2	-6.4	...	-8.5	...	...
<b>TOTAL</b>	<b>-1.4</b>	<b>...</b>	<b>-2.5</b>	<b>-1.6</b>	<b>-1.0</b>	<b>...</b>	<b>-1.2</b>	<b>...</b>	<b>...</b>
<b>NPL ratio (%)<sup>2</sup></b>	<b>9.4</b>	<b>...</b>	<b>8.9</b>	<b>8.3</b>	<b>7.7</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

Notes: 1. Residents in Portugal. The credit variables exclude securitisations. 2. Period-end figure.

Source: CaixaBank Research, based on data from the National Statistics Institute of Portugal, Bank of Portugal and Datastream.

## New technologies: what are they and how do they affect the economy?

To date, technological change has been key to the economic and social development of the human race. Despite this, the technological revolution that we are currently experiencing, with artificial intelligence (AI) at the helm, is a source of not only wonder but also some misgivings. These misgivings may be due to the new nature of the technologies of the future and the disruptive effects they could have on our economy and society. At the same time, these new technologies could be key to the revival of economic growth that is faltering so much in our European environment.

In this first article of the Dossier, we will go over the different channels through which technology can affect the economic environment.

### What is artificial intelligence?

Before discussing the channels through which new technologies affect the economy, it is worthwhile clarifying what we mean by AI, one of the pillars of the technology of the future.

AI has come leaps and bounds since its conception in the 1950s at the University of Dartmouth. The 1990s marked the beginning of a very important stage in the development of AI. However, the real explosion in research into the different techniques used in AI took place in the early 2000s, and a decade later we began to see significant growth in the number of associated patents (see first chart). As an example, 53% of all AI-related patents are subsequent to 2012.<sup>1</sup> Some of the most memorable milestones in the development of AI since the 1990s include the moment when, in 1997, the then chess champion Gary Kasparov was defeated by IBM's supercomputer Deep Blue; when, in 2011, Apple introduced us to its now ubiquitous virtual assistant Siri, and when, in 2012, Google surprised us with the first driverless car.

According to Brookings, «AI consists of machines that respond to stimulation in the same way as humans would, given the human capacity for contemplation, judgement and intention».<sup>2</sup> In other words, AI is a software system that reflects human intelligence. More specifically, Brookings talks about its three essential qualities: intentionality, intelligence and the capacity to adapt. Intentionality refers to the faculty of new machines to make decisions in real time using their ability to «feel». This is possible, for instance, thanks to the use of sensors. With regard to intelligence, machine learning (one of the main techniques used in AI), together with data analysis, allows machines to make decisions that we can define as «intelligent». Finally, the capacity to adapt is the ability of new machines to learn as they acquire more information, and to adapt their responses based on what they have learned (they can even learn from the successes and mistakes of other machines, since they are usually interconnected and share experiences between one another).

### Effects on the economy

It is well known that technological progress is key to stimulating productivity growth and, therefore, economic growth.<sup>3</sup> Even so, technological progress can be a disruptive force in the economy: almost 100 years ago, Keynes coined the term «technological unemployment» to refer to the unemployment caused by workers being replaced by machines. Nevertheless, technological advances also expand our productive capacities, which means that they lead to the creation of new jobs.

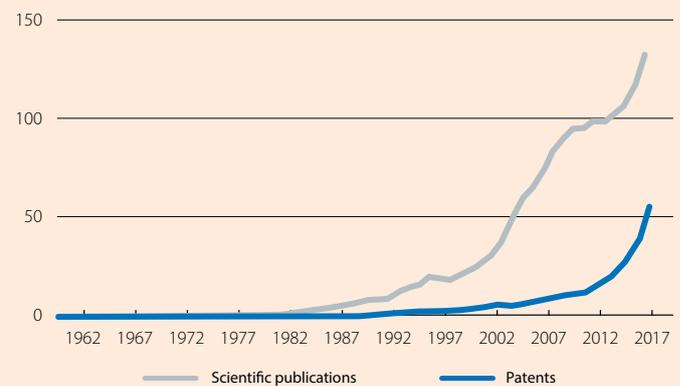
In this regard, in a world in which machines not only execute tasks and think, but are also beginning to learn, the possibilities for the automation of jobs can reach unimaginable heights.<sup>4</sup>

In today's technological age, experts have focused on four channels through which new technologies can affect the economic environment (see summary table):

**1. Technological unemployment.** Without a doubt, this is one of the channels that has been most explored in the past and which is also gaining strength today. In general, those who fear the most that machines could replace us as workers do so based on the well-known «substitution effect». In fact, automation has been, is and will be a clear substitute for numerous jobs, which means a destruction of employment in certain sectors and occupations.

### Artificial intelligence: scientific publications and patents

(Thousands)



Source: WIPO (2019). «Technology Trends 2019: Artificial Intelligence».

1. See WIPO (2019). «Technology Trends 2019: Artificial Intelligence». Geneva: World Intellectual Property Organization.

2. See D.M. West (2018). «What is artificial intelligence?». Brookings Report (4 October 2018).

3. Institutions have also been an important ingredient in the pursuit of economic growth. For further details, see D. Acemoglu and J. Robinson (2012). «Why Nations Fail: The Origins of Power, Prosperity, and Poverty, 2». And also A.G. Haldane (2018). «Ideas and Institutions – A Growth Story».

4. See E. Brynjolfsson and A. McAfee (2014). «The second machine age: Work, progress, and prosperity in a time of brilliant technologies». WW Norton & Company.

The Oxford professors Carl B. Frey and Michael A. Osborne are the authors of one of the works on job destruction that has aroused the most interest, since it suggested that 47% of all jobs in the US were at a high risk of being automated.<sup>5</sup> Following their line of thought, at CaixaBank Research we estimated some time ago that, in the case of Spain, this percentage stood at 43%.<sup>6</sup>

However, three economists from the OECD (Arntz, Gregory and Zhieran) were quick to replicate the study by Frey and Osborne, coming up with a substantially lower percentage taking into consideration that jobs comprise multiple tasks and that only some of them are susceptible to being automated. Under this alternative approach, and with data for 21 OECD countries, the percentage of jobs at risk of being replaced by automation would fall to 9%.<sup>7</sup>

**2. Productivity.** Contrasting with the substitution effect is what is known as the complementarity effect. There are jobs in which automation complements the worker. In these cases, machines actually increase workers' productivity.

In an article that covers numerous classical studies relating technology with productivity, Kevin J. Stiroh, vice president of the Federal Reserve Bank of New York, concluded that information and communication technologies (ICTs) were a significant driver behind the improvements in the US' productivity at the end of the 1990s.<sup>8</sup>

More recently, various analyses forecast a significant increase in labour productivity thanks to AI in the medium term. Accenture, for instance, talks about global economic growth rates that could double the current ones by the middle of the next decade, thanks in part to significant increases in labour productivity (of up to 40%) as a result of the use of AI: the new forms of technology complement the labour force, thus increasing its efficiency.<sup>9</sup>

The link between AI and labour productivity is precisely what we explore in the next two articles of this same Dossier for the case of Spain. Like Stiroh, we conclude that new technologies have been an important factor in the improvements seen in labour productivity in Spain, although not uniformly across all sectors (see the article «[The role of new technologies in Spain's productivity](#)» in this same Dossier for the main results).

**3. New products-new jobs.** AI also makes it possible to improve the quality of existing goods and services, as well as facilitating the appearance of new products. Again, this effect has a positive impact on employment, in contrast with so-called «technological unemployment».

The production of these new goods and services will be linked to the creation of new jobs. These are jobs that may well belong to the booming technology sectors, as they grow hand in hand with the importance of AI. However, they could also be linked to new needs or business models that may arise thanks to new technologies.

This more positive view of technology, with its beneficial impact for productivity and for new products and services, is defended by economists such as David H. Autor from MIT. In some of his articles, he looks back to point out how the past two centuries of automation and technological progress have not made the worker obsolete.<sup>10</sup>

**4. Supercompanies-competition.** Finally, digital technology favours network economies and, therefore, the emergence of supercompanies (the winner-takes-all effect), and this could potentially have clearly negative impacts on the degree of competition. The regulation of such competition in this new environment will need to find a balance between consumer welfare and promoting innovation, ensuring a level playing field, and encouraging greater international coordination in the field of taxation. We discussed all of these elements in the Dossier «[Supercompanies: a global phenomenon](#)» in the *Monthly Report* of March 2019.

In short, it is difficult to predict what path AI will take in the future: the machines of tomorrow can help us by amplifying our capabilities and facilitating the emergence of new goods and services, while at the same time replacing us entirely in some of our tasks. In any case, what is clear is that technology will be a key player in our social and economic environment, with significant disruptive potential. This requires institutions that are well prepared and which encourage technological development, without forgetting that machines must always remain at the service of people.

*Clàudia Canals and Oriol Carreras*

### Channels through which new technologies affect the economy

Technological unemployment	Negative disruption in the labour market (substitution effect).	
Productivity	Efficiency improvements in the production of goods and services (complementarity effect).	
Job creation	Efficiency improvements have a positive impact on the labour market (increase in jobs in both technology and non-technology sectors).	
Supercompanies	Possible reduction in competition in the long term (negative impact on investment and economic growth).	

Source: CaixaBank Research.

5. See C.B. Frey and M.A. Osborne (2017). «The future of employment: How susceptible are jobs to computerisation?». *Technological Forecasting and Social Change*, 114, 254-280. The article appeared in 2013 as a working paper.

6. See A. Morron (2016). «[Will the Fourth Industrial Revolution come to Spain?](#)» in the MR02/2016.

7. See M. Arntz, T. Gregory and U. Zierahn (2016). «The risk of automation for jobs in OECD countries». Mimeo OECD.

8. See K.J. Stiroh (2001). «What drives productivity growth?». *Economic Policy Review*, 7(1).

9. See M. Purdy and P. Daugherty (2016). «Why artificial intelligence is the future of Growth». Accenture.

10. See David H. Autor. «Why are there still so many jobs? The history and future of workplace automation». *The Journal of Economic Perspectives* 29, nº 3 (2015): 3-30.

## Relevance, trends and differences of the technologies of the future

The words «Hey Siri», «Hello Cortana» or «Alexa, find me... » are becoming increasingly commonplace in our day to day lives. At the corporate level, the analysis and use of big data through artificial intelligence (AI) is now common practice to better tailor products to suit customers' tastes and needs. We are also seeing how it can prove useful in the medical field. Indeed, according to the prestigious medical journal *The Lancet Digital Health*, AI is as effective as doctors in diagnosing diseases based on images.

But to what extent will new technologies be able to drive the future growth of the Spanish economy?<sup>1</sup> To answer this question, we must first measure the degree of these technologies' penetration in our economy and characterise their trend. This is precisely the focus of this second article of the Dossier.

However, measuring and characterising new technologies in this way is no simple task. AI (one of the pillars of the technology of the future) is a relatively new phenomenon, so there are no data quantifying it in economic terms (besides anecdotal evidence). Therefore, we will seek to measure the use of the technologies of the future with different categories of capital that encompass a range of technologies which, while broader than just AI, will be essential for its development. Let us take a look below.

### From anecdote to economic quantification

In order to approximate new technologies' degree of penetration in the Spanish economy, we have used the EU KLEMS database. This contains data series on capital stock disaggregated by different types of capital, some of which are related to AI technology either directly or indirectly. Moreover, this level of disaggregation is available for several advanced countries, as well as by sector in the particular case of Spain, which will enable us not only to characterise the trend in Spain but also to compare it with what is happening in other countries.

Specifically, among the various categories into which EU KLEMS disaggregates capital stock, we use four of them to approximate the stock of new technologies: (i) software and databases, which constitute the essence of new technologies; (ii) research and development, where these technologies are invented and perfected; (iii) computers, and (iv) telecommunications equipment, essential components of capital for enabling the previous types to function.

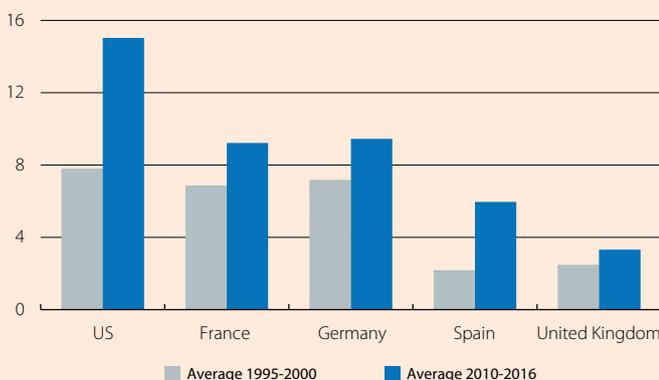
Finally, after combining these four types of capital, we build the ratio with respect to the total hours worked (in total for each country or sector). This provides us with a simple measure of the economic relevance of the capital in new technologies: the euros invested in capital stock in new technologies per hour worked.<sup>2</sup> It also allows us to compare this with other, more classic types of capital stock, such as transport equipment or other machinery.

### Trends and disparity between countries

As shown in the first chart, the differences between countries are by no means trivial, although in recent years all countries have seen an increase in the relevance of new technologies in their economic activity.

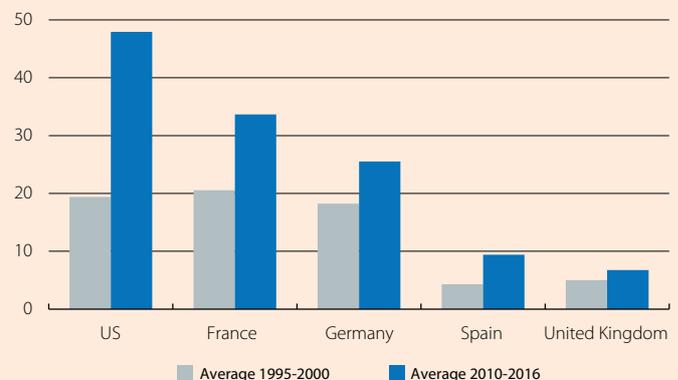
#### New technologies in the total economy

Capital stock in new technologies per hour worked \*  
(2010 constant euros)



#### New technologies in the industrial sector

Capital stock in new technologies per hour worked \*  
(2010 constant euros)



**Note:** \* The capital stock in new technologies includes the following elements: software and databases, Research and Development, computers and telecommunications equipment according to the EU KLEMS database.  
**Source:** CaixaBank Research, based on data from EU KLEMS Release 2019.

1. See the article «[The role of new technologies in Spain's productivity](#)» in this same Dossier for the analysis of the effects of new technologies on Spain's productivity.
2. Reported in constant 2010 euros.

Looking at the data in further detail, we can see how the US is at the forefront of new technologies among the group of advanced countries analysed. Then again, this should come as no surprise, since IBM and Microsoft, both US companies, are the leading holders of AI-related patents worldwide.<sup>3</sup> France and Germany are at an intermediate level in terms of stock in new technologies, while Spain, together with the United Kingdom, are at lower levels.

The similarity of the capital stock in new technologies per hour worked in France and Germany is surprising. Germany's industrial leadership does not appear to be translating into a significant investment in new technologies. However, it is the third country in terms of the number of robots per 10,000 workers, behind only South Korea and Singapore and on a par with Japan.<sup>4</sup> Furthermore, many of these robots are classified as «other machinery», an umbrella category in which it is difficult to distinguish their degree of technological development. In fact, in this type of machinery, Germany sits above France and even the US.<sup>5</sup> However, the capital that we define as being unrelated to new technologies, and in which Germany stands out, has a greater economic relevance (i.e. stock per hour worked) than the capital in new technologies (about three times higher in the case of manufacturing firms and over five times higher in all economic activities in total), although its growth has been virtually zero in recent decades.

On the other hand, the case of Spain also deserves some attention. Unlike the United Kingdom, and even Germany and France, Spain stands out for its high growth rates in new technologies. In this regard, the Spanish economy could reach the same level as Germany or France in new technologies in around 10 years if the trend of the past two decades continues.

Catching up with the US, on the other hand, appears unlikely for European countries for now. The US economy is well ahead in terms of capital stock in new technologies per hour worked, and it also has a much higher growth rate than that observed in most European countries.

If we use other indirect measures of the importance of AI in each country, such as patent registrations, Germany tops the ranking by country in Europe, standing in fifth position worldwide. However, it is far behind the top two countries, China and the US, and even the third and fourth countries, Japan and South Korea (see second chart).<sup>6</sup>

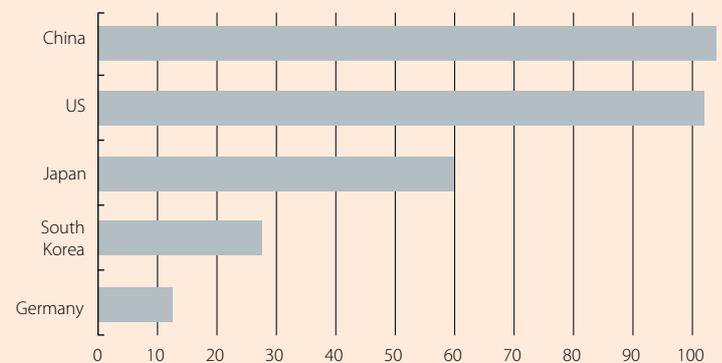
### Sectoral disparity: the case of Spain

Quantifying the economic relevance of new technologies also allows us to analyse the differences and similarities between economic sectors for the case of Spain.<sup>7</sup> In particular, a quick glance at the third chart shows us that there are two different types of sectors: industries and services with a high level of stock in new technologies, and industries and services with a medium-low level.<sup>8</sup>

In fact, those sectors with a high level of capital stock in new technologies coincide with those which, according to Eurostat, are high tech industries and knowledge-intensive services. The Eurostat classification is based on three approaches: R&D expenditure (which is also part of our measure of capital in new technologies), the technological content of the goods and services they produce, and the number of high tech patents they register. Thus, the use of new technologies as a productive factor is associated with the production of goods and services with a higher technological content.

### Registration of artificial intelligence patents

Number of first registrations (thousands)



Source: WIPO (2019). «Technology Trends 2019: Artificial Intelligence».

3. IBM and Microsoft are followed by numerous companies from Japan and South Korea. See WIPO (2019). «Technology Trends 2019: Artificial Intelligence».

4. Based on data according to the International Federation of Robotics.

5. According to data from EU KLEMS.

6. We look at where the first patent was registered by country, since after the first registration the same patent can then be registered in other jurisdictions to provide legal protection. See WIPO (2019). «Technology Trends 2019: Artificial Intelligence».

7. The analysis is performed with a breakdown of 31 economic sectors which comprise both industry and services. The breakdown of industry and services does not encompass the agricultural or mining sectors. In the analysis by country, in contrast, both of these sectors are considered in the economy's aggregate total.

8. By way of example, the group of low tech industrial sectors includes those such as textiles and construction, while the *high tech* sectors include those such as chemicals and pharmaceuticals, and optical equipment. On the services side, meanwhile, the low tech sectors include education, while the high tech sectors include information and communications, as well as financial and insurance services.

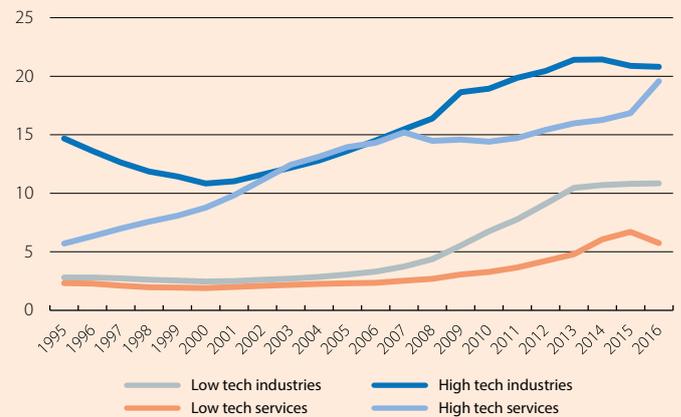
In addition to the differences we observe in the level of capital stock in new technologies depending on the sector, also of note is the fact that there is no convergence between the two types of sectors (high tech and low tech). However, we must be cautious when drawing conclusions from this, since advances in new technologies could shift in the future towards sectors that do not currently use them as intensively, and this could lead to convergence.

In short, the role of new technologies in economies is increasingly important. That said, they do not have the same degree of relevance in all countries or in all sectors, nor are they advancing at the same pace. This disparity could have an influence on both future economic growth rates and the degree to which this growth is inclusive. To better understand the economic impact in the case of the Spanish economy, we invite the reader to continue reading the third article of this Dossier, where we delve into one of the most significant channels of economic impact (the productivity effect) and propose different scenarios for the future for our economy.

*Clàudia Canals and Oriol Carreras*

### Spain: new technologies

Capital stock in new technologies per hour worked \*  
(2010 constant euros)



**Note:** \* The capital stock in new technologies includes the following elements: software and databases, R&D, computers and telecommunications equipment according to the EU KLEMS database. The high tech vs. low tech classification is based on Eurostat. The characteristics of each one are specified in the text of the article.

**Source:** CaixaBank Research, based on data from EU KLEMS Release 2019.

## The role of new technologies in Spain's productivity

Imagine a group of friends discussing current affairs in a bar. One of them exclaims: «The other day I read that computers are now able to identify pictures making fewer mistakes than a human being!» This would likely be followed by other examples about the world of possibilities offered by new technologies. It is also very likely that many of us have had a conversation like this one, which shows the extent to which we are surprised by technological advances, as well as the magnitude of their economic and social impact.

Beyond this anecdote, the question before us is whether this impact is of the magnitude it appears to be and, consequently, whether new technologies have the potential to give a boost to the future growth of the Spanish economy. In this article we will see that new technologies have indeed favoured the growth of Spain's labour productivity in the past and that they could do so again in this new technological era we are entering.

An initial analysis of the relationship between the degree of penetration of new technologies and labour productivity shows that there is a positive correlation between the growth of the two variables in the past 20 years.<sup>1</sup> In addition, this correlation appears to be more pronounced among economic activities in the services sector (see first chart).<sup>2</sup>

### A closer look at the key determining factors of productivity

Unfortunately, the chart we have seen above offers an incomplete analysis of the issue. The reason for this is that there may be other factors which are making a positive contribution to growth in productivity but, at the same time, have a positive correlation with the degree of penetration of new technologies. By way of example, imagine a world in which a sector's productivity depends solely and exclusively on the education and training of its workers, and that in sectors with more qualified workers there is a higher incidence of new technologies. In this example, the correlation between advances in new technologies and labour productivity would be positive, but this would be as a result of the level of education and training of each sector's workers.

To take this into account, we conducted a more complete statistical exercise in which, in addition to considering variables such as labour productivity and new technologies for each sector, we included in the analysis other variables that might influence the results, such as all other categories of physical capital.<sup>3</sup> The key variable of our analysis is the elasticity of growth in labour productivity relative to the growth of capital in new technologies. Put simply, this is the sensitivity of productivity growth to a 1 pp increase in the growth of capital in new technologies.<sup>4</sup>

1. We define labour productivity as the gross value added per hour worked. We define the degree of penetration of new technologies as the stock of capital per hour worked in software and databases, research and development, computers and telecommunications equipment (according to EU KLEMS). As discussed in the second article, this is a broad approximation for new technologies.

2. We classify economic sectors according to the classification used by Eurostat: low tech industry and services, and high tech industry and services. This subdivision excludes the agricultural sector (CNAE code 2009: A). See the second article of this same Dossier for further details on how Eurostat performs this classification.

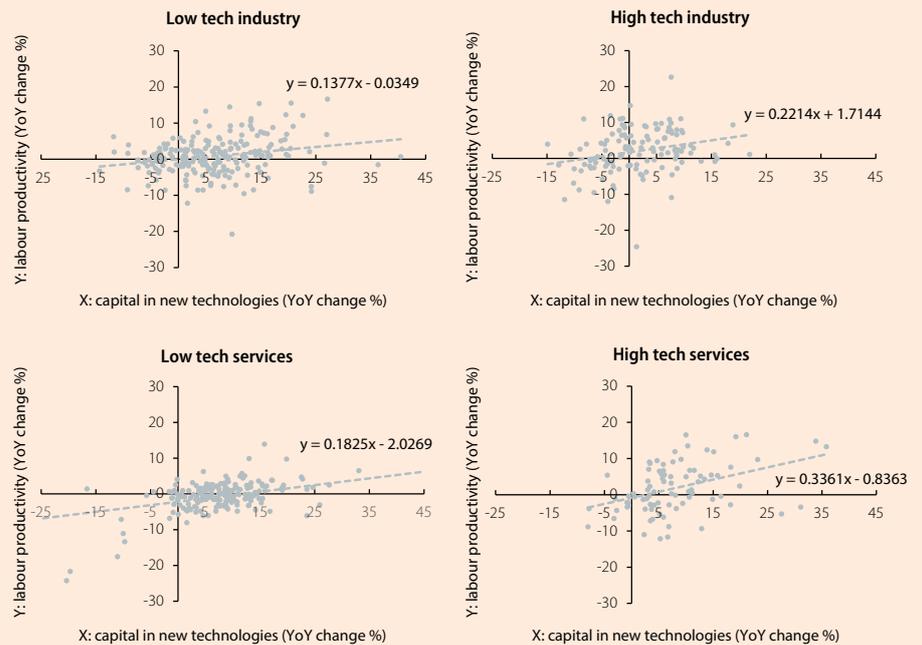
3. More specifically, we estimate the following panel regression model:

$$\Delta \ln Lprod_{i,t} = \alpha + \gamma_i + \delta_t + \beta \Delta \ln K_{i,t}^{AI} + \theta' \Delta \ln x_{i,t} + v_{i,t}$$

where the indices  $i$  and  $t$  refer, respectively, to the economic sector and year. Also, the variable  $Lprod$  refers to labour productivity,  $K^{AI}$  to the capital stock in new technologies,  $x$  to the other control variables (in particular, we include all the capital stock that is not classified as  $K^{AI}$ , the percentage of workers with at least a university degree or equivalent level of education, the degree of openness to trade and the percentage of workers with a temporary contract),  $\gamma_i$  refers to the unobserved fixed effect in each sector, and  $\delta_t$  refers to the unobserved fixed time effect. The variable of interest is  $\beta$ . These results are robust to the extent of the inclusion of a temporal trend variable at the sectoral level.

4. By way of example, if the elasticity is 0.5, this means that if the growth of capital in new technologies were to increase by 1 pp, the growth of labour productivity would rise by 0.5 pps.

### Relationship between labour productivity and capital in new technologies \*



**Note:** \* We define the capital in new technologies as the sum of the capital per hour worked in the following categories of the EU KLEMS database: software and databases, research and development, computers and telecommunications equipment.

**Source:** CaixaBank Research, based on data from EU KLEMS Release 2019.

Finally, our analysis distinguishes between aggregate elasticity and elasticity disaggregated by sector: on the one hand, we have estimated the elasticity for all sectors of the economy and, on the other, we have also estimated the elasticities based on certain characteristics of each sector. Specifically, we have estimated disaggregated elasticities for four groups: low tech industries, high tech industries, low tech services and high tech services.<sup>5</sup>

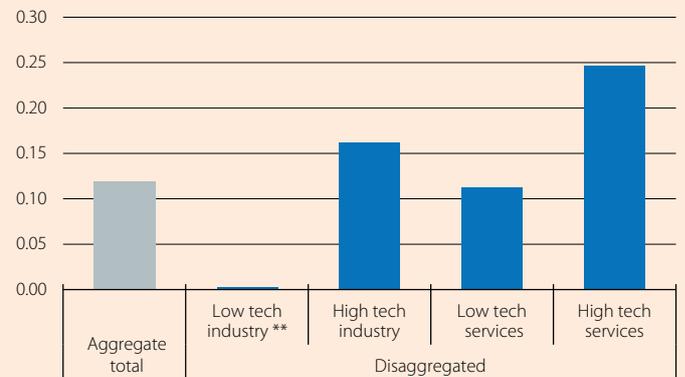
The results of the empirical analysis (see second chart) show how, in the aggregate case, we obtain an elasticity of around 0.12, which is by no means negligible. As an example, suffice to say that the estimated elasticity of the «rest of capital» factor – i.e. all categories of capital stock not classified as new technologies, which includes elements that are as important for a country’s productivity as industrial plants and all kinds of machinery – is 0.26. Nevertheless, this aggregate result hides significant disparities between sectors, with elasticity varying between 0 and 0.25. As one might expect, the highest elasticities are associated with the two groups of sectors that we classify as high tech.<sup>6</sup>

**The role of capital in new technologies in economic growth**

Having obtained an estimate of the impact new technologies have on labour productivity, we conducted an exercise that shows more clearly the importance of this form of capital for the economy. Specifically, we break down the growth of labour productivity into three factors: the contribution from capital in new technologies, that of the remaining capital – the sum of both

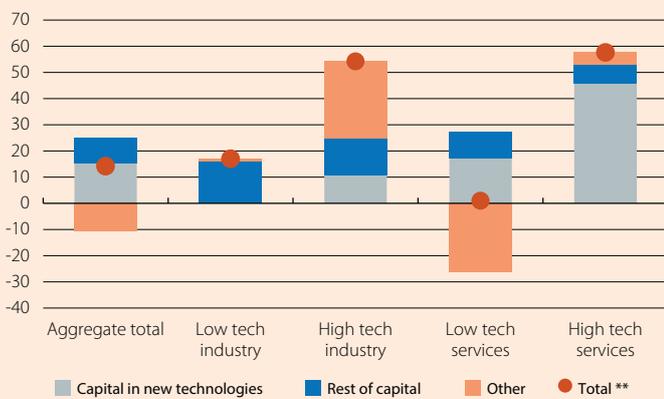
**Elasticity of labour productivity relative to the growth of capital in new technologies**

(pps) \*



Notes: \* See note 4 of the text. \*\* The estimate for this sector indicated an elasticity that statistically could not be distinguished from zero, so we have assigned it a value equal to zero. Source: CaixaBank Research, based on data from EU KLEMS Release 2019.

**Contribution to the growth of labour productivity** \* (pps)



Notes: \* Labour productivity growth between the average for 1996-1998 and the average for 2014-2016. \*\* Percentage change. Source: CaixaBank Research, based on data from EU KLEMS Release 2019.

of capital» component: 6.1% versus 1.3%, respectively. As such, although the elasticity of the capital in new technologies is lower than that of the rest of capital, its high growth explains its significant contribution to productivity growth. On the other hand, the negative contribution to the growth of labour productivity during this period from the «other» component is consistent with other estimates that show a negative contribution from the TFP.

constitutes the total stock of physical capital in the economy – and that of the residual component, which we refer to as «other». This latter category includes elements ranging from human capital to openness to trade, temporality, and other factors that fall under what is referred to as total factor productivity (TFP).<sup>7</sup> We show the results in the third chart.<sup>8</sup>

For the economy as a whole, we can see that the growth of new technologies explains slightly more than the full 14% of cumulative growth in labour productivity between the periods 1996-1998 and 2014-2016. The remaining capital explains around 10 pps, which are offset by the negative contribution from the «other» component. This result is surprising for two reasons: the first is the high contribution from technological capital, and the second is the negative contribution from the «other» component.

With regard to the first element, it should be noted that the average annual growth of this component over the aforementioned period was much higher than that of the «rest

5. See note 2.

6. A lower elasticity does not mean that the sector in question is lagging behind in terms of technological innovation. The usefulness of new technologies depends on their ability to provide value, and it may well be that these new technologies are not yet providing significant value in certain sectors, but that they may do so in the future.

7. Total factor productivity encompasses all the productivity growth that cannot be explained by the accumulation of productive factors.

8. To calculate the contributions, we multiply the elasticities of capital by its growth.

9. See, for example, C. Fu and E. Moral-Benito (2018). «The evolution of Spanish total factor productivity since the global financial crisis», Occasional papers nº 1808, Bank of Spain.

Looking at the contributions to growth by sector in greater detail, we see some very different results. If we compare the rates of labour productivity growth, the two sectors that stand out the most are those classified as high tech, both for the industrial and the services sector. However, the sources of growth have been very different between one and the other. While in high tech services the main source of growth has been the growth of capital in new technologies, in the case of high tech industry, capital in new technologies has had a more modest contribution. In contrast, the services sector classified as low tech hardly experienced any growth at all in its labour productivity during the period in question. That said, this was due to a negative contribution from the residual «other» component, which was offset by the contributions from the growth of both types of capital. Finally, the growth in the productivity of the low tech industrial sector is mainly explained by growth in the «rest of capital» category.

### Can we expect new technologies to provide a new boost to growth?

Before delving into conclusions, we want to provide the reader with a theoretical exercise aimed at answering the question we raised at the beginning of the article: to what extent can new technologies act as a spur for European economic growth, and in particular for Spain? In previous Dossiers we have explained that the global economy is facing a period of lower productivity growth than in other historical expansionary periods.<sup>10</sup> This section offers some scenarios that allow us to consider the extent to which the introduction of these new technologies can spur the growth of labour productivity in Spain.

We consider two scenarios. The first, more pessimistic one assumes that the growth of capital investment in new technologies will be half that historically observed in the period 1996-2016, while the second, more optimistic scenario assumes a growth that is 50% higher than the historical average (see table).

#### Scenarios for the growth of capital in new technologies

	Pessimistic scenario	Optimistic scenario
Growth differential of investment in new technologies relative to the baseline scenario *	-50%	+50%
Growth differential of labour productivity relative to the baseline scenario (pps per year)	-0.33	+0.33
Differential of GDP per capita in 2029 relative to the baseline scenario (euros per capita) **	-1,210	1,250
<i>Expressed as a percentage of GDP per capita</i>	-3.7%	3.5%

**Notes:** \* The baseline scenario assumes growth of capital stock in new technologies in line with the historical average. \*\* GDP per capita calculated as the ratio of GDP to the population over 16 years of age. Euros per capita at a constant value based on 2019.

**Source:** CaixaBank Research.

A 50% increase (optimistic scenario) in the growth of investment in new technologies relative to the historical average would entail a boost to productivity growth (and, therefore, to GDP) of slightly more than 0.3 pps per year. While this growth differential may seem small year on year, accumulated over a 10-year period it means that GDP would be 3.5% higher compared to a scenario where investment in new technologies evolves in line with the historical average. In terms of GDP per capita, this would be equivalent to a difference of around 1,250 euros.

This optimistic scenario we have just presented may even prove to be conservative, if we consider that the potential of new technologies may be going through a transition phase in which businesses and consumers are still learning how to use them efficiently. This means that, in the future, the

productivity growth associated with investments in new technologies could be greater than in the past, as applications are consolidated, new business models mature, workers' training improves and productive factors are reallocated. Therefore, our exercise may even be underestimating the impact of new technologies on future economic growth by taking as a benchmark a period of time that could entail a technological «transition».

In conclusion, taking into account the results presented in this article, should we continue to make advances in the use and diffusion of new technologies in order to boost economic growth? In principle, the answer is «yes», but let us remember that the first article of this Dossier pointed out that, besides its positive impact on productivity, new technologies can have disruptive effects for the labour market (in the form of job destruction) and for the productive structure (by favouring the emergence of supercompanies). A response with all the necessary nuances thus requires an analysis of these other dimensions, to which we will devote a future Dossier.

Now, if we focus on what we have learned in this empirical analysis, it is undeniable that the introduction of new technologies has had a significant impact on labour productivity in Spain over the last two decades. This impact is not homogeneous across sectors, but rather it is greater in those which produce goods and services that are considered high tech. Even so, at the aggregate level for the economy as a whole, the effect has been considerable: in the absence of investment in these technologies, labour productivity in Spain would have been practically stagnant during the period between 1996 and 2016.

*Clàudia Canals and Oriol Carreras*

10. See the Dossier «[Technological change and productivity](#)» in the MR02/2018.

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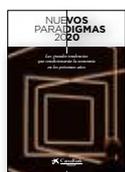
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