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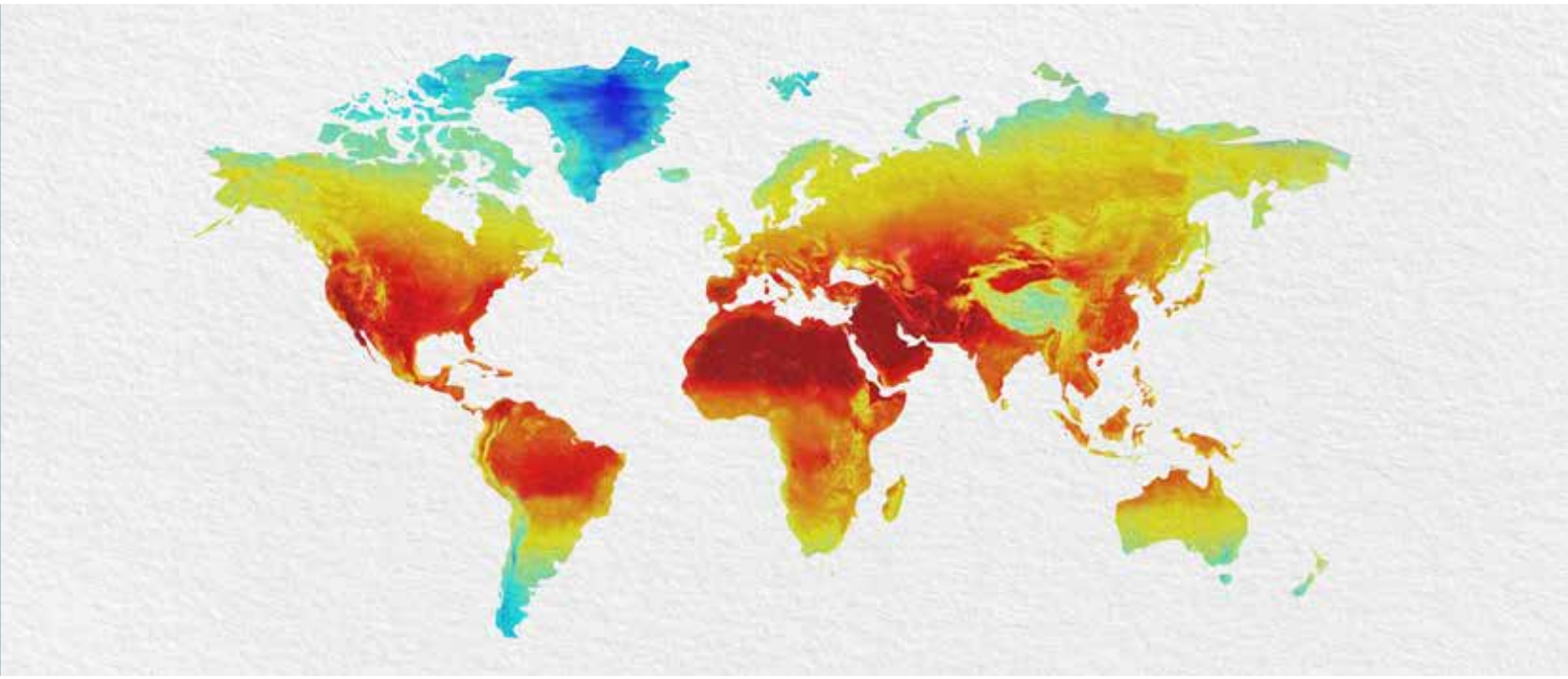

ECONOMIC & FINANCIAL ENVIRONMENT

FINANCIAL MARKETS
The «sense and sensibility» of the ECB's communication

SPANISH ECONOMY
Quo vadis, *consumption?*

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How to act in the face of climate change? Actions and policies to mitigate it

Climate change, the green transition and the financial sector

CaixaBank Research

MONTHLY REPORT - ECONOMIC AND FINANCIAL MARKET OUTLOOK
November 2019

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

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Climate change: the challenge of our century

Climate change represents an enormous challenge. Failing to curb it would lead to costs, both economic and social, that would be insurmountable in the long term. Furthermore, it is a global problem that requires unprecedented coordinated action at a planetary level. Depending on how it is addressed, it could be either a restriction for growth or an impetus, a catalyst for multilateralism or a source of conflict between countries.

At least we have already taken a very important first step: a shared diagnosis at the global level. There may be some degree of uncertainty about the speed and magnitude of climate change, but few now deny its existence and that its main cause is the accumulation of greenhouse gases produced by human activity. The technical work by the Intergovernmental Panel on Climate Change has played a key role in achieving this consensus. In line with its conclusions, the international community has committed to avoiding a rise in the global average temperature of more than 2°C compared to pre-industrial levels, which requires cutting global greenhouse gas emissions by around 30% from current levels by 2030.

With this commitment, each country must now define its action plans. Given that over 60% of greenhouse gas emissions are carbon dioxide derived from the use of fossil fuels, there is no doubt that at the heart of these plans there must be a strategy for a transition towards a more efficient and less polluting energy model. But we must also not forget the importance of policies in the agricultural, livestock and forestry sectors for influencing greenhouse gas emissions (fertilisers and cows also contribute significantly to these emissions, while forests reduce them by capturing carbon dioxide).

All these plans must be defined without delay in order to provide certainty and to allow for a gradual approach. The more we delay in defining them, the more aggressive they will need to be, because we will be obliged to reduce emissions by more, in less time. Besides being inefficient, this could jeopardise the political sustainability of such plans.

As the case of France and the yellow vests movement demonstrates, measures designed to combat climate change can lead to a strong social response that puts them in jeopardy. To try to prevent this, any government's plans should preferably have a broad consensus among the main political parties. Social support can also be strengthened through consultation processes - particularly involving those groups that might be affected -, clear communication of the policies to be implemented and the reasoning behind them, and the introduction of support for the most vulnerable families, businesses and workers.

It is also important that the revenues derived from increased carbon taxes - an unavoidable measure - are used in a transparent, productive and equitable manner. A portion of these resources should be dedicated to promoting investment in technologies to combat climate change. The public sector can play an important role in basic research in areas such as carbon capture and storage technology, the development of batteries for the storage of energy from renewable sources and the deployment of smart electrical grids. With a boost from public investment, the EU can aspire to achieve technological leadership in this field.

Clear rules are also necessary to promote private investment by firms and households, and to attract funding to carry it out. Many of the investments that can facilitate the energy transition require long amortisation periods. For this reason, certainty and the guarantee of stability in the regulations are essential. As we have seen recently in Europe, declaring the end of one era (for instance, that of the diesel car or even that of the combustion engine) without laying the foundations for the next only generates confusion and paralyses investments.

Enric Fernández
Chief Economist
31 October 2019

Chronology

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.

JUNE 2019

7 Theresa May resigns as leader of the Conservative Party in the United Kingdom and remains as interim prime minister until a new leader is chosen at the end of July.
30 Donald Trump and Xi Jinping agree to resume trade negotiations between the US and China following their meeting at the G-20 summit.

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.

JULY 2019

16 As proposed by the European Council, the European Parliament elects Ursula von der Leyen as President of the European Commission.
24 Boris Johnson takes over from Theresa May as the British Prime Minister.
31 The Fed cuts its reference interest rates by 25 bps to 2%-2.5%.

MAY 2019

10 The US implements the tariff hike from 10% to 25% on 200 billion dollars of imports from China (previously suspended in late February). In response, China announced that it will raise tariffs on 60 billion dollars of imports from the US.
23-26 European Parliament elections are held.

Agenda

NOVEMBER 2019

5 Spain: registration with Social Security and registered unemployment (October).
6 Portugal: employment (Q3).
8 Portugal: international trade (September).
14 Spain: CPI (October).
Portugal: GDP flash estimate (Q3).
Japan: GDP (Q3).
21 Portugal: loans and deposits (September).
22 Spain: loans, deposits and NPL ratio (September).
28 Spain: state budget execution (October).
Spain: CPI flash estimate (November).
Euro area: economic sentiment index (November).
29 Portugal: CPI flash estimate (November).

DECEMBER 2019

2 Portugal: public debt (October).
3 Spain: registration with Social Security and registered unemployment (November).
10-11 Federal Open Market Committee meeting.
12 Governing Council of the European Central Bank meeting.
12-13 European Council meeting.
13 Portugal: tourism activity (October).
17 Spain: quarterly labour cost survey (Q3).
20 Portugal: coincident indicators (November).
23 Spain: loans, deposits and NPL ratio (October and Q3).
State budget execution (November).
26 Spain: balance of payments and NIIP (Q3).
27 Portugal: state budget execution (November).
30 Spain: quarterly national accounts (Q3).
Spain: household savings rate (Q3).
Spain: CPI flash estimate (December).
31 Portugal: CPI flash estimate (December).

The economists' bench

There is a coach within all of us. Think, for instance, about how you felt the last time you saw your team lose. *They should have sold him years ago! We need a shake-up on the bench!* These are expressions we have all heard, if not shouted out ourselves at some point.

For years, the same was the case with the economy, albeit usually with a little less passion. *It's all because of the budget cuts! Of course the ECB should lower interest rates!* Who hasn't stepped into the role of Minister for Economy to give their friends a recipe for fixing their country, or the entire world, in a couple of days?

However, while we continue to play the coach with enthusiasm, there are ever fewer people brave enough – or foolhardy enough – to want to play the Minister for Economy in the current context.

The data published over the past few weeks has confirmed that the slowdown in global growth, while not a recession, continues as expected. In the US, GDP grew by 2.0% year-on-year in Q3; in China, by 6.0%, while in the euro area, the pace of growth stood at a modest 1.1%. All these figures are in line with expectations, but they paint a clearly deteriorating picture that gives rise to concern. The trepidation only increases when we ask ourselves: what should be the economic policy response in this context? Therein lies the fateful question, since the options offered by traditional economic policy do not seem appropriate at the current juncture.

The most commonly used tool in recent years has been monetary policy, but this is a resource that has already been squeezed to its limit and the support it can offer now is somewhat limited.

For instance, at its October meeting, the ECB limited itself to reinforcing the expectation that interest rates will remain very low for a long time. After all, the economic stimulus generated by any new rate cuts would be minimal. Note, however, that if interest rates are kept so low for a long time, bubbles could end up appearing in financial assets or real estate prices, raising concerns about financial stability issues. Indeed, the Bank for International Settlements has already given this warning on numerous occasions.

Classical fiscal policy, which seeks to stimulate demand through tax cuts or an increase in current spending, also appears to have limited scope to offer support. Public debt remains at levels not seen in decades in most developed countries (Germany is the major exception). It is true that the financial effort required from the public sector to pay off the debt remains contained, thanks to such low interest rates. But we must proceed with the utmost caution, since any changes in the environment that cause a country's risk to be reassessed, as occurred in the case of Italy, could put a strain on the public finances. Furthermore, as we have seen in the US with the fiscal stimulus implemented by the Trump administration in 2018, measures of this kind can spur GDP growth, but the effect is temporary. When it is diluted, the economy slows back down and ends up with higher levels of public debt.

Not even so-called supply-side policies, such as giving the markets greater flexibility, seem easy to implement in the current context. In general, measures of this k ind can increase an economy's growth potential in the medium term, but usually result in economic and social costs in the short term. The fact is that the boost to economic efficiency they provide can translate, at least temporarily, into an increase in unemployment and difficulties for less competitive companies. There are, of course, areas that need to be explored further, such as reducing impediments to business growth or measures that promote recruitment on permanent contracts. However, at a time of significant social polarisation and a surge in so-called populist parties, the widespread implementation of supply-side policies is highly risky.

So what can we do to stimulate the economy in the short term? *An investment stimulus!* There are three areas in which there is broad consensus that implementing a major investment stimulus is both necessary and possible: infrastructure (especially in the US and Germany), digitisation and the circular economy (please, read the Dossier of this *Monthly Report* if you are not yet convinced). The role of the public sector is crucial in helping to ensure that the resources available to us are allocated to these areas. Furthermore, doing so does not necessarily require a significant increase in public spending. We need to be creative, to think of a combination of taxes and tax incentives that better fits the new priorities and to design a regulatory framework that facilitates the mobilisation of resources towards these objectives. These may seem like grand words with little substance, but if you read the articles we have been writing on these topics in the pages of the *Monthly Report*, you will find concrete measures. **There is still a game-changer on the economists' bench.**

Oriol Aspachs
Head of Research

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

Financial markets

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
INTEREST RATES							
Dollar							
Fed funds (upper limit)	3.43	0.48	1.50	2.50	1.75	1.50	1.75
3-month Libor	3.62	0.70	1.61	2.79	1.65	1.68	1.90
12-month Libor	3.86	1.20	2.05	3.08	1.70	1.83	2.20
2-year government bonds	3.70	0.73	1.84	2.68	1.65	1.85	2.00
10-year government bonds	4.70	2.61	2.41	2.83	1.80	2.00	2.20
Euro							
ECB depo	2.05	0.40	–0.40	–0.40	–0.50	–0.50	–0.25
ECB refi	3.05	1.00	0.00	0.00	0.00	0.00	0.25
Eonia	3.12	0.65	–0.34	–0.36	–0.45	–0.45	–0.25
1-month Euribor	3.18	0.79	–0.37	–0.37	–0.43	–0.43	–0.20
3-month Euribor	3.24	0.98	–0.33	–0.31	–0.40	–0.40	–0.15
6-month Euribor	3.29	1.14	–0.27	–0.24	–0.35	–0.35	–0.05
12-month Euribor	3.40	1.34	–0.19	–0.13	–0.30	–0.30	0.05
Germany							
2-year government bonds	3.41	0.69	–0.69	–0.60	–0.80	–0.40	–0.10
10-year government bonds	4.30	1.98	0.35	0.25	–0.35	0.30	0.67
Spain							
3-year government bonds	3.62	2.30	–0.04	–0.02	–0.05	0.48	0.81
5-year government bonds	3.91	2.85	0.31	0.36	0.13	0.71	1.05
10-year government bonds	4.42	3.82	1.46	1.42	0.45	1.10	1.37
Risk premium	11	184	110	117	80	80	70
Portugal							
3-year government bonds	3.68	4.42	–0.05	–0.18	0.06	0.79	1.25
5-year government bonds	3.96	5.03	0.46	0.47	0.32	1.03	1.42
10-year government bonds	4.49	5.60	1.84	1.72	0.55	1.20	1.52
Risk premium	19	362	149	147	90	90	85
EXCHANGE RATES							
EUR/USD (dollars per euro)	1.13	1.30	1.18	1.14	1.10	1.15	1.21
EUR/JPY (yen per euro)	129.50	126.36	133.70	127.89	117.93	121.90	128.26
USD/JPY (yen per dollar)	115.34	97.50	113.02	112.38	107.21	106.00	106.00
EUR/GBP (pounds per euro)	0.66	0.83	0.88	0.90	0.91	0.90	0.89
USD/GBP (pounds per dollar)	0.59	0.63	0.75	0.79	0.83	0.78	0.73
OIL PRICE							
Brent ($/barrel)	42.3	85.6	64.1	57.7	60.0	61.5	63.0
Brent (euros/barrel)	36.4	64.8	54.2	50.7	54.5	53.5	52.1

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
GDP GROWTH							
Global	4.5	3.3	3.8	3.6	2.9	3.2	3.4
Developed countries	*2.7*	*1.2*	*2.5*	*2.3*	*1.6*	*1.4*	*1.6*
United States	2.7	1.4	2.4	2.9	2.2	1.6	1.8
Euro area	2.2	0.4	2.7	1.9	1.0	1.1	1.3
Germany	1.6	1.1	2.5	1.6	0.4	0.7	1.6
France	2.0	0.6	2.3	1.7	1.3	1.4	1.5
Italy	1.5	–0.7	1.8	0.7	0.2	0.6	0.7
Portugal	1.5	–0.3	3.5	2.4	1.8	1.6	1.6
Spain	3.7	0.0	2.9	2.4	1.9	1.5	1.5
Japan	1.5	0.4	1.9	0.8	1.1	0.5	0.8
United Kingdom	2.8	1.1	1.9	1.4	1.2	1.1	1.4
Emerging countries	*6.6*	*5.1*	*4.8*	*4.5*	*3.8*	*4.4*	*4.6*
China	11.7	8.4	6.9	6.6	6.0	5.8	5.7
India	9.7	6.9	6.9	7.4	5.7	6.3	6.5
Indonesia	5.5	5.7	5.1	5.2	5.0	4.8	4.7
Brazil	3.6	1.7	1.1	1.1	1.0	1.8	2.1
Mexico	2.4	2.1	2.1	2.0	0.5	1.3	2.1
Chile	5.0	3.2	1.3	4.0	2.2	2.8	2.8
Russia	7.2	1.0	1.6	2.2	1.1	1.9	1.8
Turkey	5.4	4.8	7.4	3.1	–1.3	2.5	3.1
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	0.7	1.6	1.9
INFLATION							
Global	4.2	3.8	3.2	3.6	3.4	3.5	3.5
Developed countries	*2.1*	*1.5*	*1.7*	*2.0*	*1.4*	*1.6*	*1.8*
United States	2.8	1.6	2.1	2.4	1.8	2.0	2.0
Euro area	2.1	1.4	1.5	1.8	1.1	1.3	1.7
Germany	1.7	1.3	1.7	1.9	1.3	1.3	1.8
France	1.8	1.2	1.2	2.1	1.3	1.4	1.8
Italy	1.9	1.5	1.3	1.2	0.7	1.0	1.5
Portugal	3.0	1.2	1.4	1.0	0.5	0.8	1.1
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	1.9	1.9	2.1
Emerging countries	*6.8*	*5.8*	*4.3*	*4.8*	*4.8*	*4.8*	*4.6*
China	1.7	2.6	1.6	2.1	2.5	2.4	2.6
India	4.5	8.5	3.3	3.9	3.6	4.5	5.1
Indonesia	8.4	5.7	3.8	3.2	3.0	2.8	2.9
Brazil	7.3	6.4	3.5	3.7	3.8	3.6	3.8
Mexico	5.2	3.9	6.0	4.9	3.7	3.7	3.5
Chile	3.1	3.5	2.2	2.7	2.2	2.8	3.1
Russia	14.2	9.3	3.7	2.9	4.6	3.7	4.0
Turkey	27.2	8.1	11.1	16.2	16.1	13.1	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	4.3	4.8	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
Macroeconomic aggregates							
Household consumption	3.6	–0.6	3.0	1.8	0.8	1.2	1.3
Government consumption	5.0	0.9	1.0	1.9	2.0	1.5	1.2
Gross fixed capital formation	5.6	–3.8	5.9	5.3	2.6	2.7	2.4
Capital goods	5.0	–1.5	8.5	5.7	2.4	2.7	2.6
Construction	5.7	–6.5	5.9	6.6	3.1	2.6	2.4
Domestic demand (vs. GDP Δ)	4.5	–1.2	3.0	2.6	1.3	1.5	1.5
Exports of goods and services	4.8	2.8	5.6	2.2	2.4	2.6	3.1
Imports of goods and services	7.0	–1.0	6.6	3.3	0.8	3.1	3.3
Gross domestic product	**3.7**	**0.0**	**2.9**	**2.4**	**1.9**	**1.5**	**1.5**
Other variables							
Employment	3.2	–1.5	2.8	2.5	2.2	1.6	1.5
Unemployment rate (% of labour force)	10.5	20.8	17.2	15.3	13.9	12.6	11.5
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	2.3	2.5	2.6
Current account balance (% GDP)	–5.9	–1.1	2.7	1.9	1.7	1.5	1.5
External funding capacity/needs (% GDP)	–5.2	–0.7	2.9	2.4	1.9	1.7	1.7
Fiscal balance (% GDP)[1]	0.4	–7.0	–3.0	–2.5	–2.3	–2.0	–1.5

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

Forecasts

Portuguese economy

	Average 2000-2007	Average 2008-2016	2017	2018	2019	2020	2021
Macroeconomic aggregates							
Household consumption	1.7	–0.2	2.1	3.1	2.1	1.8	1.7
Government consumption	2.3	–0.7	0.2	0.9	0.6	0.3	0.2
Gross fixed capital formation	–0.3	–3.5	11.5	5.8	7.0	4.5	4.0
Capital goods	1.2	–0.1	12.5	7.5	6.9	5.9	5.9
Construction	–1.5	–6.2	12.2	4.6	7.1	2.5	2.5
Domestic demand (vs. GDP Δ)	1.3	–1.0	3.3	3.2	2.8	2.1	1.9
Exports of goods and services	5.2	3.5	8.4	3.9	3.4	3.9	4.3
Imports of goods and services	3.6	1.6	8.1	5.9	5.6	5.1	4.8
Gross domestic product	**1.5**	**–0.3**	**3.5**	**2.4**	**1.8**	**1.6**	**1.6**
Other variables							
Employment	0.4	–1.1	3.3	2.3	0.8	0.3	0.2
Unemployment rate (% of labour force)	6.1	12.2	8.9	7.0	6.5	6.3	6.1
Consumer price index	3.0	1.2	1.4	1.0	0.5	0.8	1.1
Current account balance (% GDP)	–9.2	–4.1	1.2	0.4	–0.7	–0.7	–0.4
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	–0.3	–0.3	0.1

Forecasts

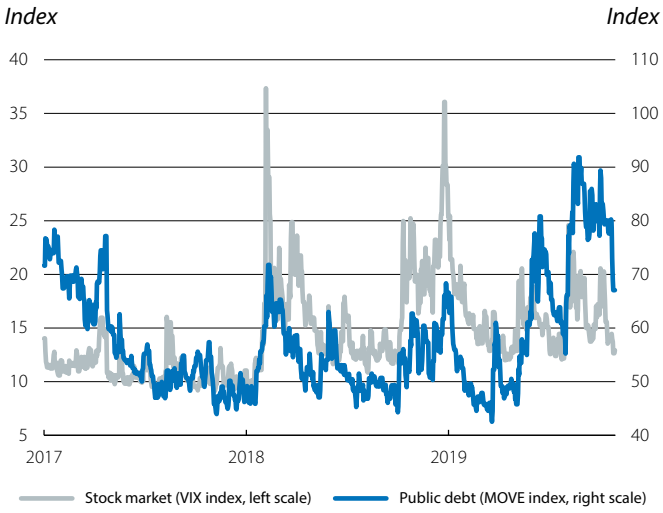
The financial markets take a respite

The risk appetite recovers. After a turbulent summer, since September the accommodative monetary stimulus adopted by the Fed and the ECB have kick-started the gradual improvement in investor sentiment. In addition, in October, the tone of the financial markets continued to gradually recover as investors welcomed the rapprochement between the US and China and the progress made on Brexit (see the section on International Economy). However, despite this improvement, the volatility of all financial assets (especially public debt securities) remained relatively high due to the absence of definitive solutions in both conflicts. All in all, in a market environment sensitive to political statements and messages from the central banks, in October the major global stock markets closed up and recovered part of the losses suffered over the summer. Furthermore, sovereign bond yields picked up on both sides of the Atlantic, while commodity prices rose.

Widespread gains in the stock markets. In addition to the recovery in sentiment, October provided the equity markets another reason to be optimistic: the start of business profit announcements for Q3 2019. Most of the profit announcements made up until the closing date of this *Monthly Report* far exceeded analysts' forecasts, especially in the US (although it should be remembered that, since the beginning of the year, analysts have lowered their forecasts due to the deterioration of the economic growth outlook). The stock market indices in developed economies registered gains in the month as a whole (the S&P 500 +2.0%, and the EuroStoxx 50 +1.0%). At the sector level, the recovery in investor sentiment was reflected in the higher valuations of financial corporations (favoured by the rise in sovereign yields), as well as of cyclical companies (those whose profits are more sensitive to the business cycle). Emerging economies stock market indices also experienced gains (MSCI Emerging Markets +4.1%), due to expectations of an improvement in the trade relations between Washington and Beijing.

Sovereign debt yields continue to recover. Despite sovereign debt yields in the US and euro area falling once again due to the publication of weak economic activity data, over the course of the month they recovered thanks to the positive developments in the trade negotiations between the US and China and on Brexit. Furthermore, in the US the sovereign yield curve normalised for the first time since June, as the 10-year rate became higher than the 3-month rate (historically, an inverted curve has anticipated the onset of a recession a few quarters later). Furthermore, in Europe the improvement in risk appetite led to an increase in the yield of the German *bund* (approximately +20 bps), as well as a reduction in risk premiums in the euro area periphery down to their lowest levels this year.

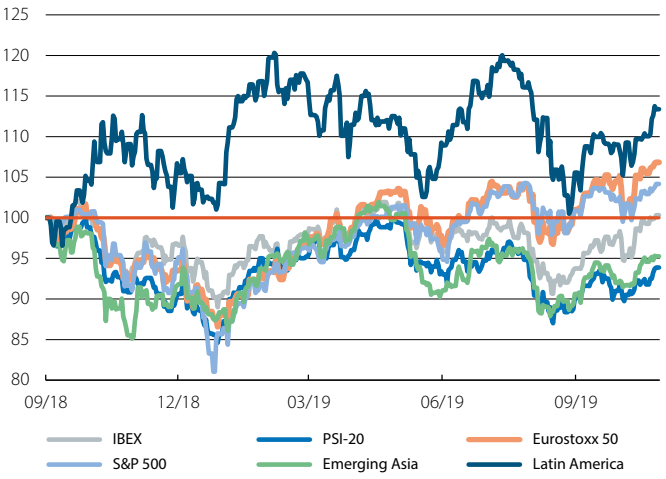
Implicit volatility in the financial markets



Source: *CaixaBank Research, based on data from Bloomberg.*

Main international stock markets

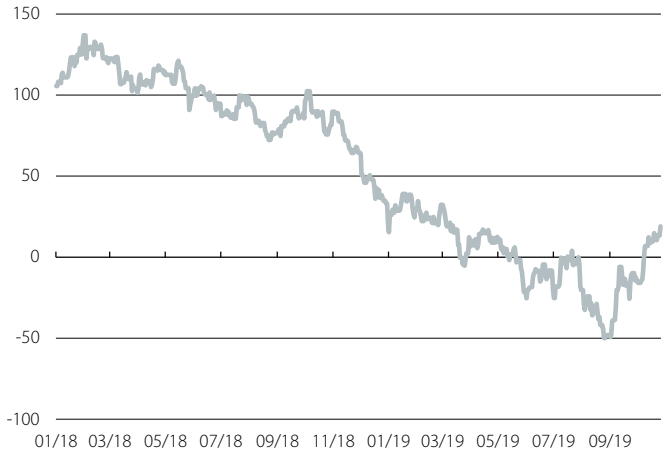
Index (100 = September 2018)



Source: *CaixaBank Research, based on data from Bloomberg.*

US: slope of the yield curve

(bps)



Note: *Spread between 10-year and 3-month sovereign yields.*
Source: *CaixaBank Research, based on data from Bloomberg.*

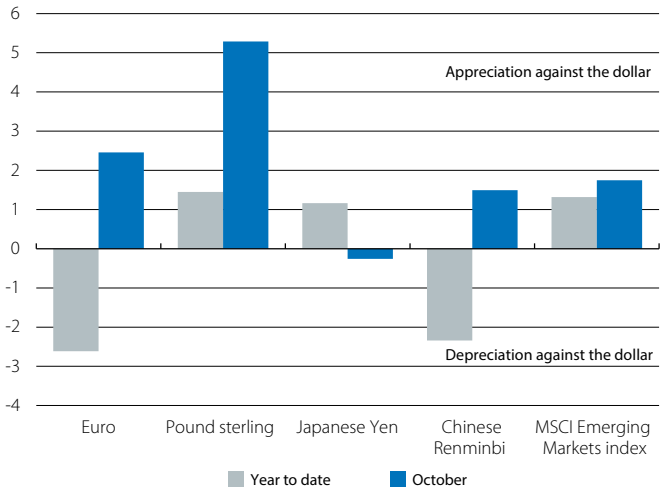
The pound sterling is strengthened by the agreements reached on Brexit. Investor optimism surrounding Brexit also extended to the currency market by affecting the exchange rate of the pound, which appreciated by more than 4% (against the dollar and the euro) following the publication of the withdrawal agreement between the United Kingdom and the EU. In addition, and reflecting lower risk aversion, the US dollar depreciated against most currencies of both advanced and emerging economies (the Argentine peso was one of the exceptions, depreciating by just over 3% at the prospect of a change of government after the general elections held on 24 October).

The ECB defends its September stimulus as Draghi bids farewell. After the significant measures announced in September (especially the repo rate cut down to –0.50% and the resumption of net asset purchases at a rate of 20 billion euros per month), there were no new developments at the ECB's October meeting. The members of the Governing Council stressed the persistence of the low-growth scenario, the weak inflation and the high uncertainty to support the decisions taken in September and to reiterate the need for a more expansive fiscal policy. They also called for unity and for the disagreement of the previous month to be left behind. On the other hand, this was Mario Draghi's last meeting as president of the ECB (Christine Lagarde will take over in November), and much of the post-meeting press conference was devoted to highlighting his legacy. Draghi defended the policy of negative interest rates and the other unconventional monetary policy measures, while he was also reminded of the words *Whatever it takes*, with which he will be remembered for putting an end to fears of a break-up of the euro area in 2012.

The Fed lowers rates for the third time this year. Once again justifying its decision with the persistence of risks affecting the economic outlook and moderate inflationary pressures, the Federal Reserve cut interest rates by 25 bps down to the 1.50%-1.75% range. At the press conference after the meeting, the chairman Jerome Powell noted that this level of interest rates was appropriate for the Fed's economic scenario, which projects modest growth, a robust labour market and a rapprochement of inflation towards its target rate. Powell also suggested that, in the absence of material alterations to the scenario, there will be no changes to interest rates over the coming months. Although this reference applies equally to potential rate hikes and cuts, Powell's comments pointed towards a lesser predisposition to raise rates, hence the Federal Reserve is likely to maintain an accommodative bias over the coming quarters. On the other hand, at the beginning of October (at an emergency meeting) the Fed decided to recommence purchases of short-term government debt at a rate of 60 billion dollars per month, in order to shore up bank reserves and boost liquidity in the interbank markets. The members of the Fed were keen to reiterate that this decision does not constitute another round of QE, since, unlike the asset purchases carried out following the Great Recession (which focused on assets with longer-term maturities), the intention this time round is not to decrease the sovereign debt term premium.

International currencies against the US dollar

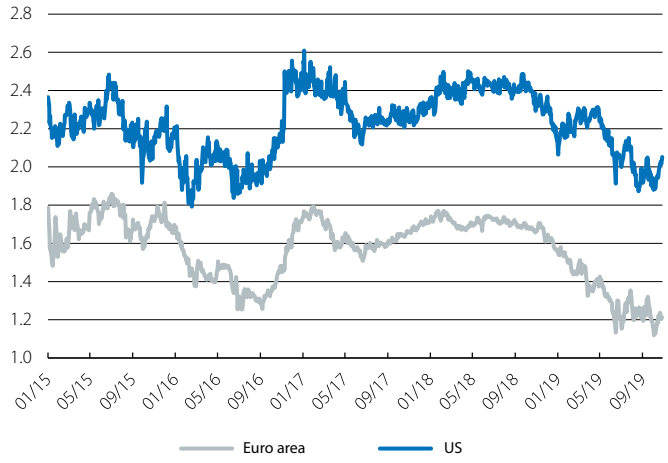
Change (%)



Source: *CaixaBank Research, based on data from Bloomberg.*

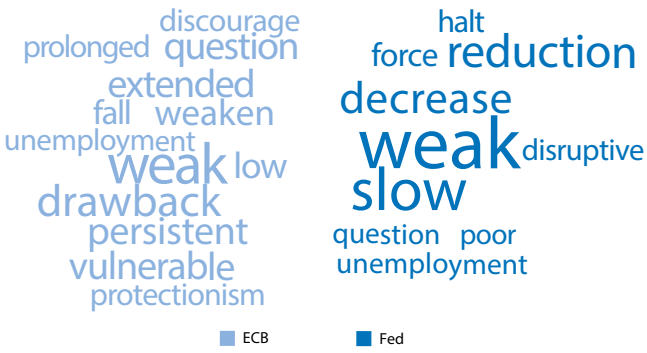
Euro area and US: market inflation expectations

5-year, 5-year forward inflation expectation rate (%)



Source: *CaixaBank Research, based on data from Bloomberg.*

October meetings: main negative words of press releases



Source: *CaixaBank Research.*

The «sense and sensibility» of the ECB's communication

- **Communication is one of the most powerful monetary policy tools. For this reason, CaixaBank Research has developed an index to measure the sentiment of the ECB's statements.**
- **Our ECB sentiment index shows a strong correlation with euro area economic activity indicators and foresees changes in the reference interest rate.**
- **The index notes a significant deterioration in ECB sentiment between late 2017 and Q3 2019 and shows how geopolitical uncertainty has affected the ECB's view of the economic outlook.**

It is an (almost) universally acknowledged truth that **communication is one of the most powerful monetary policy tools.**[1] This is illustrated by the market's reaction to the ECB's meeting last September, which showed a stark contrast between the moment when the monetary policy decisions were announced (1:45pm) and the reactions during the course of the press conference (2:30-3:30pm) in which Mario Draghi contextualised and justified the decisions with a detailed view of the economic outlook (including the new economic forecasts). Can we quantitatively analyse sentiment based on this and the other communications of the ECB?

CaixaBank Research sentiment index: a quantitative analysis of the ECB's communication

The ECB sentiment index measures the pessimism or optimism given off by the press releases read out by the president of the ECB at the press conference that follows each monetary policy meeting.[2] These statements, which are drafted to reflect the consensus view of the Governing Council,[3] provide an assessment of the latest indicators (such as the latest economic activity figures or trends in financial markets), of the main risks and of the outlook for the euro area: in other words, **they summarise the central bank's view of the economic outlook**.

To assess how optimistic or pessimistic these press releases are, as objectively as possible, we use two economic dictionaries that classify around 90,000 words into three categories: positive, neutral or negative.[4] For instance, «strong» is a positive term and «weak» is negative, but «growth» is neutral (it could be «strong» or «weak»). In this way, we calculate the sentiment of each ECB meeting as the difference between the number of positive and negative words in the press release in question, normalized according to the total number of words in the statement:[5]

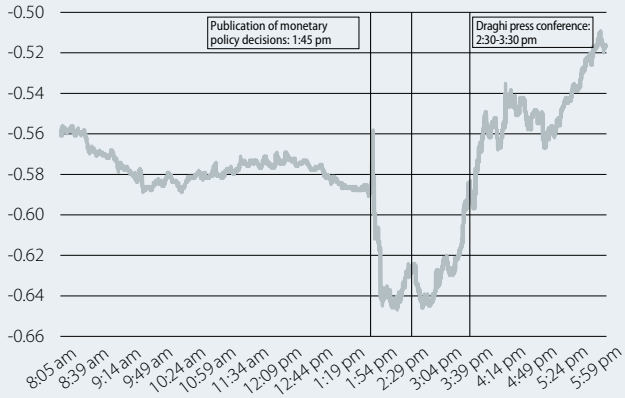
$$\text{Sentiment} = \frac{\sum \text{positive words} - \sum \text{negative words}}{\text{Total words}}$$

Despite the apparent simplicity of this computation, the second chart shows that **our ECB sentiment index shows a strong correlation with euro area economic**

1. The article «Mario Draghi and his 'parole, parole'» in the MR01/2018 analyses the power of communication as a monetary policy tool.
2. The analysis begins in January 2000 and includes a total of 217 press releases and 151,296 words.

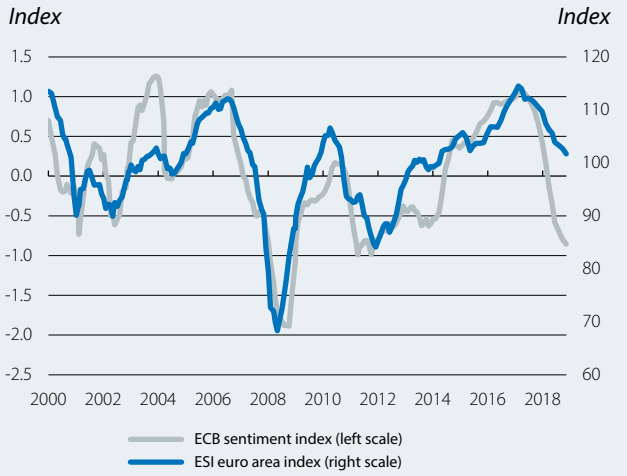
Germany: yield of 10-years government bonds

Yields as of 12 September 2019 (%)



Source: *CaixaBank Research, based on data from Bloomberg.*

Euro area: economic sentiment



Source: *CaixaBank Research and the European Commission.*

3. We exclude the section of questions from the press from the analysis.
4. The sources used are the Loughran/McDonald Dictionary (T. Loughran and B. McDonald, 2011, «When is a Liability not a Liability? Textual Analysis, Dictionaries, and 10-Ks». Journal of Finance, 66:1, 35-65) and the Federal Reserve's Dictionary for Financial Stability (R. Correa *et al.* (2017). «Sentiment in Central Banks' Financial Stability Reports». International Finance Discussion Papers 1203). It is necessary to use these specific dictionaries since, in other more general ones, words which are neutral from an economic point of view (such as «tax») are considered to be either positive or negative.
5. The ECB sentiment index is a standardised version of this indicator's 12-month moving average, with diminishing relative weight (more importance is assigned to the most recent press releases).

activity indicators (such as the Economic Sentiment Indicator [ESI] developed by the European Commission). Furthermore, **its fluctuations predicted changes in the reference interest rate** (before it stagnated at 0%).[6]

The ECB's U-turn from a communication perspective

In addition to offering a sentiment indicator, the index allows us to better understand the U-turn made by the ECB in the last year and a half, during which it has gone from preparing for the first rate hike to launching a new stimulus package. In fact, in the second chart, **a significant deterioration in ECB sentiment can be seen between late 2017** (when it had recovered to its highest levels in the last 10 years) **and Q3 2019.** Moreover, the decline in ECB sentiment has been much more marked than that of other indicators, posing the question as to whether the central bank's pessimism is an overreaction or anticipates a further decline in the indicators.

This deterioration reflects a change in the description of the economic environment, with a reduction in the proportion of positive words used (a 30% decrease) and, in particular, **a sharp rise in the use of negative terms** (which have tripled). As shown in the third chart, the latter rose from 8 different words, with a total frequency of 25 occurrences, to 21 words, with a total frequency of 80 occurrences.

Furthermore, the third chart also shows **a deterioration in the «quality» of the negative terms**: new terms appear, such as «weak», «prolong» and «persist» (reflecting the persistence of what was initially thought to be a temporary moderation in economic activity or increase in uncertainty), as well as «threat» and «protection» (a clear reference to the trade tensions). In fact, the loss of optimism (decrease in the use of positive words) and the rise in pessimism (intensification of negative terms) are the result of different patterns, as shown in the fourth chart: **while the ECB gives continuity to its description of the positive trends in the economic environment** (i.e. it uses the same positive words, albeit less frequently), **the increase in pessimism is in response to the emergence of a new narrative** (90% of the increase in negative words is due to the emergence of new terms).

What are these new terms? Even if the reader only follows the articles of the *Monthly Report* on economic outlook in passing, it will come as no surprise to see the appearance of terms related to protectionism in the third chart. As a result of trade tensions between China and the US, **geopolitics – and in particular the uncertainty it generates – have become the key factor determining the economic outlook**. The ECB's view is no exception: as shown in the last chart, the use of the word «uncertainty» has intensified in all its public statements.

Gabriel L. Ramos and Adrià Morron Salmeron

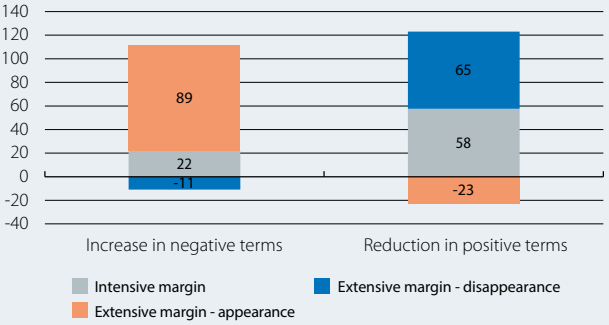
6. For the period 2000-2014, the ECB sentiment index alone explains around 50% of the change in the 2-year reference interest rate.

ECB press releases: main negative words

Note: *Comparison between the press releases of September, October and December 2017 with those of June, July and September 2019.*
Source: *CaixaBank Research.*

*Change in ECB sentiment: Q4 2017-Q3 2019 **

Contribution to the change in positive and negative terms (%)



Note: ** Comparison between the press releases of September, October and December 2017 with those of June, July and September 2019.*
Source: *CaixaBank Research.*

Speeches by the ECB: incidence of the term «uncertainty»

*Index (min. 0 - max. 100) **

Note: ** Constructed on the basis of a 12-month weighted moving average of the frequency with which the term «uncertainty» appears. The analysis covers all speeches given by members of the ECB Executive Board available at https://www.ecb.europa.eu/*
Source: *CaixaBank Research.*

The farewell of (Super) Mario Draghi

- Mario Draghi ended his eight-year mandate at the ECB on October 31, leaving the central bank at the cutting edge of monetary policy.
- Under Draghi's leadership, the ECB has offered significant support to the recovery of the euro area. However, the latest measures have raised doubts over the margin for action and effectiveness of monetary policy.
- Christine Lagarde, with a less technical profile but a vision of continuity in monetary policy, takes over in a sombre economic environment in which signs of fragmentation between ECB members have appeared.

Following a September full of announcements, the ECB meeting on 24 October was one of transition, at least in one way: 31 October 2019 marked the end the mandate of Mario Draghi, the most charismatic president[1] in the institution's history.

The legacy: a central bank at the cutting edge

Draghi's legacy will perhaps be summed up by his most famous phrase: Whatever it takes. With these three words, after just nine months in office, in 2012 Draghi put an end to the fear of the rupture of the euro area with the promise of leading an ECB that was willing to do whatever was necessary to ensure the euro's survival. With less than 15 years of history and having to tackle the most severe recession in recent decades, under Draghi's mandate **the ECB established itself as the great bastion for the stabilisation of the European economy and revolutionised the monetary policy of the euro area** by adopting tools at the «cutting edge» of central bank policy: asset purchases, negative reference interest rates, intensive use of communication,[2] injections of liquidity, etc.

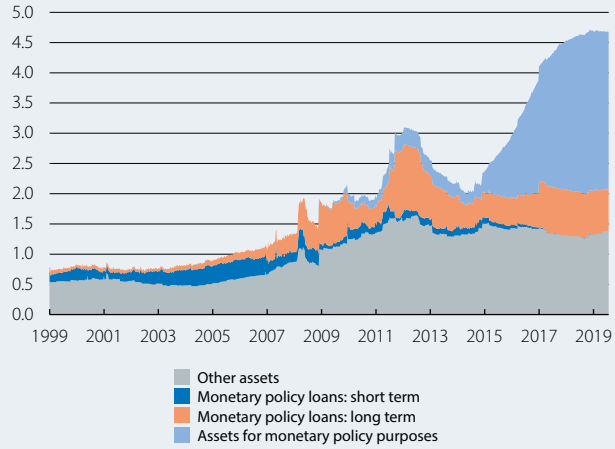
This revolution is reflected in the ECB's balance sheet, which has more than doubled in size (+150%) since 2011.[3] Not only that, but its composition is also very revealing: as shown in the first chart, **asset purchases and long-term loans have gone from being virtually non-existent in the pre-crisis period to representing 70% of the ECB's balance sheet today**, reflecting the intense use of unconventional monetary policy tools.[4]

All this has resulted in a highly accommodative monetary policy which, according to some estimates, would be the equivalent of having reduced the ECB's interest rate to around –7%.[5] In addition, whereas prior to the financial crisis monetary policy was much more suited to the needs of the core countries than to those of

1. This is demonstrated by the various nicknames he has received during the course of his mandate: from «Super Mario» (a video game character) to the more recent «Dracula Draghi», coined by critics because of the low interest rates.
2. The article «Mario Draghi and his "parole, parole"» in the MR01/2018 analyses the power of communication as a monetary policy tool.
3. As a percentage of GDP, the size of the ECB's balance sheet (40%) clearly exceeds that of the Fed (slightly below 20%).
4. Behind this change lie, in particular, asset purchases amounting to 2.6 trillion euros as part of the APP (asset purchase programme) initiated in 2015 (mostly public and corporate debt) and several rounds of injections of liquidity into the financial system through long-term loans (the latest of which, TLTRO-III, was announced in March), with a current balance of 0.7 trillion euros.
5. These estimates are based on the so-called «shadow rate»: the refi interest rate that we would observe in the current environment if it were not pegged at 0%. J.C. Wu and F.D. Xia (2016). «Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound». Journal of Money, Credit, and Banking. Also see the article «Discovering monetary policy in the shadow» in the MR02/2016.

ECB: composition of balance sheet assets

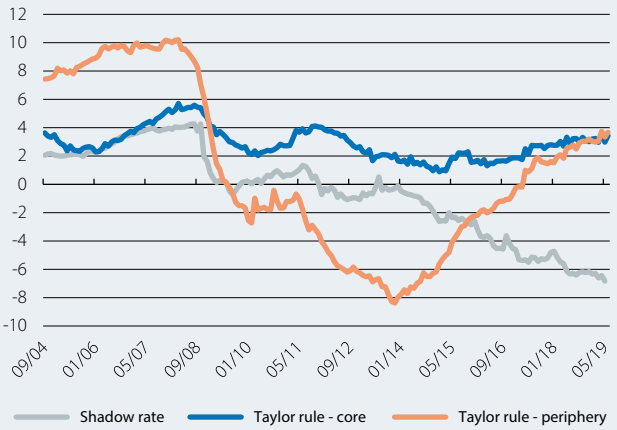
(EUR trillions)



Note: *Short-term and long-term loans consist essentially of MRO and TLTRO operations, respectively. Assets for monetary policy purposes mostly relate to purchases under the APP (asset purchase programme) and other previous programmes (CBPP, SMP). The «other assets» category includes gold, cash, foreign reserves, other monetary policy operations, etc.*
Source: *CaixaBank Research, based on data from the ECB.*

Euro area: Taylor rules and shadow rate of the ECB

(%)



Note: *The core includes Germany, Austria, Belgium, Finland, France, the Netherlands and Italy. The periphery includes Spain, Greece, Ireland and Portugal. The formula used for the Taylor rules is:* $i_t = 1 + 1{,}5\pi_t - (u_t - u_t^*)$*, where* π_t *is core inflation and* u_t^* *is the natural unemployment rate estimated by the OECD.*
Source: *CaixaBank Research, based on data from Wu and Xia (2016), Eurostat and the OECD.*

the periphery, between 2009 and 2015 the ECB found a middle ground between both areas. Since then, the second chart shows how monetary policy has left traditional rules behind[6] and has entered increasingly accommodative territory. This is possibly because those rules are based on how the economy functions in normal times and do not reflect the concerns that are currently generating uncertainty (geopolitics, but also the fragility of inflation and the true degree of the underutilisation of productive resources).[7] In fact, **one of Draghi's greatest achievements has been his ability to achieve consensus** on the implementation of this monetary policy despite the differences in the economies of the euro area.

The macroeconomic impact of Draghi's ECB

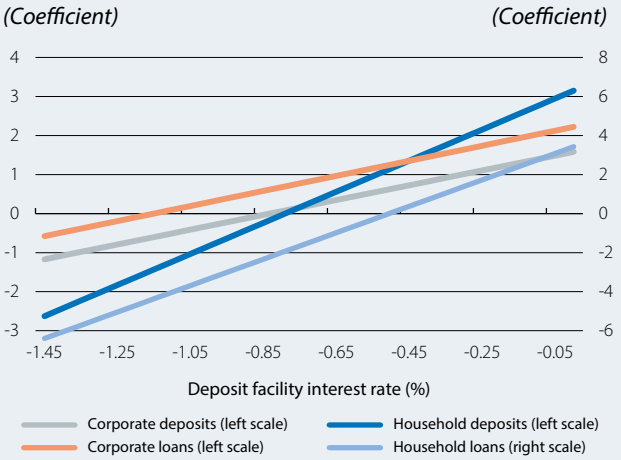
It is estimated that the ECB's measures, especially those announced since 2014, offered significant support for the recovery of the euro area. In particular, estimates suggest that **the ECB was responsible for around 25% of the growth in economic activity and around 40% of the recovery in inflation between 2016 and 2018,**[8] with GDP growth in the euro area accelerating to 2.2% on average during these three years (1.1% in 2013-2015). As such, with core inflation approaching 1.5% in mid-2018, the ECB prepared to bring asset purchases to an end, to give indications of the first rate hike and, ultimately, to begin to withdraw the monetary stimulus.

The latest decisions: an ECB at the limit?

However, the intensification and persistence of risks (such as geopolitical tensions, vulnerabilities in emerging economies or financial turbulences) and the moderation in economic activity they brought with them have led the ECB to make a U-turn. **Draghi could have said farewell with the first rate hike, but he did so with a new stimulus package** launched in September: cutting the interest rate of the deposit facility by 10 bps (down to –0.50%) and the resumption of net asset purchases (QE) at a rate of 20 billion euros per month.[9]

These measures, however, **have raised doubts over the ECB's margin for action and its effectiveness**. On the one hand, while the ECB argues that continuing with asset purchases will not cause any problems, estimates suggest that they may not last very long and that, under the current criteria, **the ECB could run out of capacity to buy more public debt securities towards the end of 2020.**[10] On the other hand, with the latest rate cut, **the ECB could be approaching the so-called «reversal threshold»**: the level at which a further reduction in reference rates would have a contractionary effect on the economy.

Sensitivity of interest rates to changes in ECB rates



Note: *The sensitivity is that derived from the regression* $i_t = \alpha + \beta r_t^{ECB} + \gamma (r_t^{ECB})^2 + \varepsilon_t$ *i.e. the coefficient plotted is* $\beta + 2\gamma r_t^{ECB}$. *Negative values suggest that ECB cuts could translate into increases in market rates. All estimates are significant at the 95% confidence interval.*
Source: *CaixaBank Research.*

Specifically, the analysis of the sensitivity of interest rates on household and company deposits and loans to changes in ECB interest rates suggests that the «reversal threshold» could lie at around –1.0% (see last chart). Indeed, this estimate is similar to the results of more sophisticated analyses[11] and relatively close to the –0.50% at which the interest rate of the ECB's deposit facility currently stands.

Christine Lagarde takes over in troubled waters

Mario Draghi hands over the baton to Christine Lagarde (nominated by European institutions last July) **in a more sombre context** than that expected a year ago. In addition, in the midst of the doubts over the new stimulus programme, **signs of fragmentation among the members of the ECB have appeared**: the governors of the central banks of Germany, the Netherlands and France (among others) have publicly expressed their opposition to the resumption of QE, and Sabine Lautenschläger, a member of the Executive Board, filed her resignation at the end of September. In this context, and despite having a less technical profile than her predecessor, the great communication skills and ability to generate consensus that Lagarde has demonstrated at the head of France's Ministry of Economy and as managing director of the IMF will prove key. Indeed, these are positions in which she was on the front line of the economic transformations of the last decade and in which she has defended the unconventional tools and the shift in monetary policy implemented by Draghi.

Adrià Morron Salmeron

(See an extended version of this article at caixabankresearch.com)

6. Such as the Taylor rule, which tells us what the official interest rate should be, based on the natural rate of interest, inflation (core) and a measure of how far off economic activity is from its potential.
7. On the other hand, the divergence between traditional rules and the actual position of monetary policy also illustrates the existence of a debate around the suitability of the latest measures taken by the ECB.
8. ECB (2019), «Taking stock of the Eurosystem's asset purchase programme after the end of net asset purchases». Economic Bulletin 02/2019.
9. In addition to better conditions for TLTRO-III, the package includes a tiered remuneration scheme and a communication that indicates that this new stimulus could continue for a long period of time.
10. The ECB has limited itself to purchasing no more than 33% of the assets of any given issuance or issuer and distributes the purchases according to the capital that each country contributes to the ECB. For example, cumulative purchases of German debt are already quickly approaching 30% of the total eligible stock of 1.5 billion euros: if public debt makes up 75% of new purchases (in line with the historic figure), and the fraction corresponding to Germany is around 25%, purchases of German debt would reach the 33% limit in around 12 months-time (in the absence of more issues arising, for instance, from a fiscal stimulus). In addition, while increasing the relative weight of purchases of corporate bonds or relaxing the limits would increase the margin for action, the very emergence of doubts reduces the effectiveness of the ECB's monetary policy.
11. See M.K. Brunnermeier and Y. Koby (2018). «The reversal interest rate». National Bureau of Economic Research n° w25406. Also see Radde and Stehn (2019). «How much could the ECB cut?» Goldman Sachs European Economics Analyst.

Interest rates (%)

	31-Oct.	30-Sep.	Monthly change (bp)	Year-to-date (bp)	Year-on-year change (bp)
Euro area					
ECB Refi	0.00	0.00	0	0.0	0.0
3-month Euribor	–0.39	–0.42	2	–8.5	–7.6
1-year Euribor	–0.27	–0.33	6	–15.6	–12.5
1-year government bonds (Germany)	–0.63	–0.68	5	–6.4	1.9
2-year government bonds (Germany)	–0.66	–0.77	11	–5.0	–4.5
10-year government bonds (Germany)	–0.41	–0.57	16	–64.9	–83.5
10-year government bonds (Spain)	0.24	0.15	9	–117.9	–133.6
10-year government bonds (Portugal)	0.17	0.16	1	–155.6	–171.8
US					
Fed funds	1.75	2.00	–25	–75.0	–50.0
3-month Libor	1.90	2.09	–18	–90.5	–69.0
12-month Libor	1.96	2.03	–8	–105.0	–115.0
1-year government bonds	1.49	1.74	–25	–110.1	–118.0
2-year government bonds	1.52	1.62	–10	–96.4	–138.0
10-year government bonds	1.69	1.66	3	–99.3	–152.1

Spreads corporate bonds (bps)

	31-Oct.	30-Sep.	Monthly change (bp)	Year-to-date (bp)	Year-on-year change (bp)
Itraxx Corporate	52	55	–4	–37.0	–19.0
Itraxx Financials Senior	60	64	–4	–48.0	–26.5
Itraxx Subordinated Financials	125	139	–15	–103.5	–51.3

Exchange rates

	31-Oct.	30-Sep.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
EUR/USD (dollars per euro)	1.115	1.090	2.3	–2.7	–2.1
EUR/JPY (yen per euro)	120.490	117.800	2.3	–4.2	–6.5
EUR/GBP (pounds per euro)	0.862	0.887	–2.8	–4.1	–1.9
USD/JPY (yen per dollar)	108.030	108.080	0.0	–1.5	–4.6

Commodities

	31-Oct.	30-Sep.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
CRB Commodity Index	389.5	387.6	0.5	–4.8	–6.8
Brent ($/barrel)	60.2	60.8	–0.9	12.0	–17.3
Gold ($/ounce)	1,512.9	1,472.4	2.8	18.0	22.7

Equity

	31-Oct.	30-Sep.	Monthly change (%)	Year-to-date (%)	Year-on-year change (%)
S&P 500 (USA)	3,037.6	2,976.7	2.0	21.2	11.5
Eurostoxx 50 (euro area)	3,604.4	3,569.5	1.0	20.1	12.1
Ibex 35 (Spain)	9,257.5	9,244.6	0.1	8.4	2.9
PSI 20 (Portugal)	5,119.6	4,973.8	2.9	8.2	2.8
Nikkei 225 (Japan)	22,927.0	21,755.8	5.4	14.6	3.1
MSCI Emerging	1,042.0	1,001.0	4.1	7.9	4.5

Uncertainty erodes the global expansion

Growth moderates in the second half of 2019. This is reflected in indicators such as the global composite Purchasing Managers' Index (PMI), which has been in decline for the past few months and stood at a rather modest level in September (51.2 points). This is largely due to the weakening of global trade and the widespread cooling of the manufacturing sector (the manufacturing PMI index remains below the 50-point threshold that separates expansive and contractionary territory). However, the services sector remains resilient (the services PMI index remains well above the 50-point threshold), at least for now, which mitigates the slowdown in economic activity growth. This less buoyant environment is also reflected in the latest update of the IMF's macroeconomic projections, in which the institution once again reduced its growth forecasts for the global economy in 2019 (from the 3.2% published in July down to 3.0%), for both advanced and emerging economies, and maintained the balance of risks skewed to the downside. The IMF's downward revision largely reflects the negative impact of the protectionist measures implemented by the US and China to date, as well as the indirect negative consequences of the trade tensions between the two countries. Despite this revision, the IMF expects a slight upturn in global growth in 2020 up to 3.4% (reasonably in line with CaixaBank Research's forecast of 3.2%), supported by the improvement in economic activity in several emerging economies.

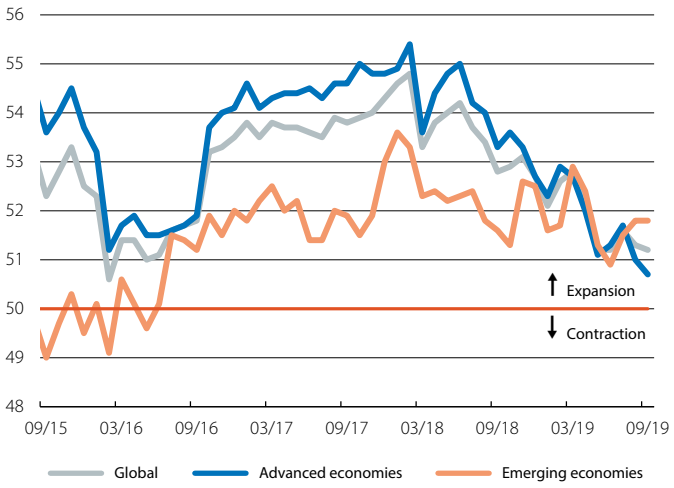
The trade tensions remain the primary source of risk for the global economy. On the one hand, the US and China announced an agreement (as part of a first phase of negotiations), which suspended the tariff increase on Chinese imports due to be introduced on 15 October, although the details of the deal are yet to be defined. However, despite this agreement and both parties' intention to continue the negotiations in a second phase, uncertainty will continue to weigh down on economic growth over the coming quarters (given that the negotiations have waned on more than one occasion in recent quarters, and business and consumer confidence will be restored only very gradually). On the other hand, the trade tensions between the US and the EU escalated after the World Trade Organization (WTO) ruled that the EU had given illegal aid to Airbus and, as compensation, authorized the US to introduce tariffs valued at 7.5 billion euros on a range of European products (mostly agri-food products). Despite the possibility for these tariffs to be removed at any time, their introduction (effective from 18 October) could contribute to the deterioration of economic sentiment.

EUROPE

In Europe, the Brexit saga continues to drag on. In particular, the British prime minister Boris Johnson and the EU reached a new agreement for the United Kingdom's withdrawal.

Economic activity indicators: composite PMI

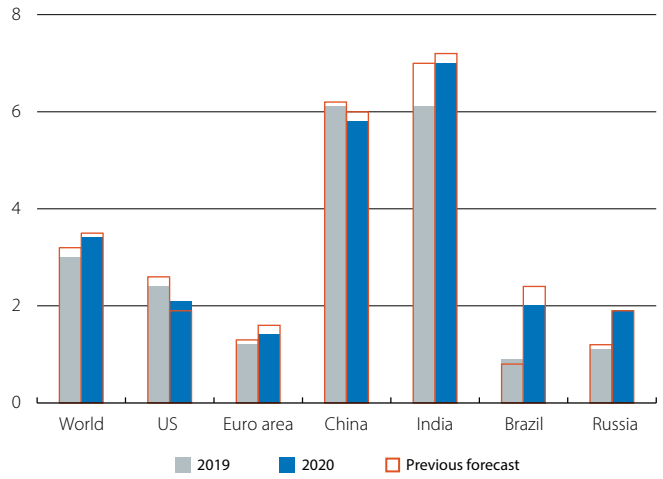
Index



Source: *CaixaBank Research, based on data from Markit.*

IMF: GDP forecasts for 2019 and 2020

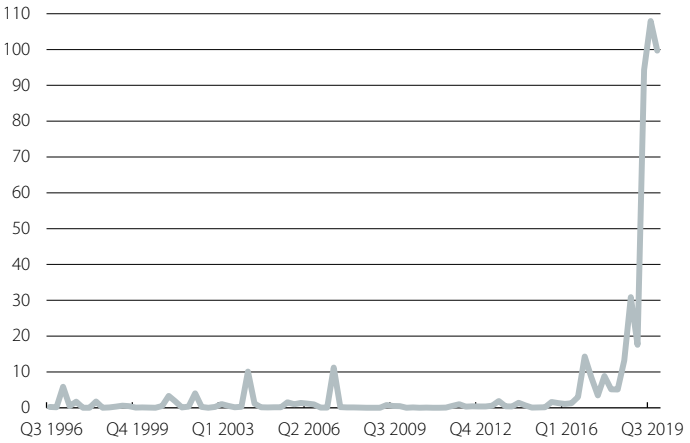
Annual change (%)



Source: *CaixaBank Research, based on data from the IMF (WEO, October 2019).*

Uncertainty over global trade

Index



Source: *CaixaBank Research, based on H. Ahir, N. Bloom and D. Furceri (2018), «The World Uncertainty Index», Stanford mimeo.*

However, the House of Commons suspended the ratification of this agreement, insisting on the necessary legislation to make it effective being approved first. Furthermore, since no agreement was ratified by 19 October, Johnson was forced by law to ask the EU for a new Brexit extension (the third such extension), this time until the end of January 2020, albeit with the option to leave earlier if the withdrawal agreement is ratified in the coming weeks. Although this extension allays fears of a disorderly Brexit in the short term, a no deal withdrawal further down the line cannot be entirely ruled out. For instance, this could occur if the pro-Brexit parties were to win sufficient support in the forthcoming general election (which has been called early, on 12 December) so as to put the option of a hard Brexit back on the table.

Meanwhile, economic activity in the euro area holds steady. In particular, GDP growth for the euro area remained stable at 0.2% quarter-on-quarter (1.1% year-on-year) in Q3 2019, slightly above our forecasts and analysts' consensus (0.1% quarter-on-quarter). All in all, growth remains at modest levels. This is particularly due to the weakness of industry and the foreign sector (both penalised by the slowdown in the global economy and the environment of global uncertainty brought about by the trade tensions between the US and China and the unknowns surrounding Brexit, among other factors), in addition to other idiosyncratic restrictions such as the sectoral shock in the automotive industry. All these elements are affecting Germany the most, a country for which the Q3 GDP figure has not been published yet. Among the countries for which we do have data, France performed particularly well, with growth remaining at 0.3% quarter-on-quarter in Q3 (1.3% year-on-year), as did Spain (0.4% quarter-on-quarter). In contrast, the Italian economy continued to muddle through (with growth of 0.1% quarter-on-quarter and 0.3% year-on-year).

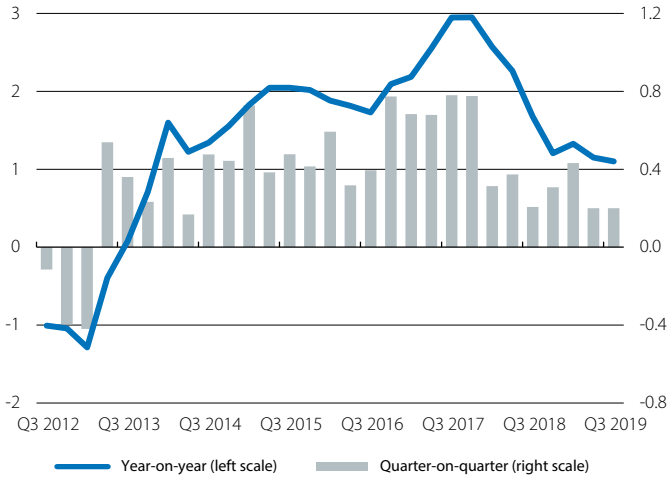
Domestic demand continues to support economic activity in the euro area. In particular, consumers continue to benefit from a highly accommodative monetary policy stance and a healthy labour market. This is a labour market that continues to generate jobs (+1.4 million in the last year, according to data from the labour force survey for Q2 2019, reaching 147 million people in work and exceeding the peak of 2008 by almost 3 million), while the unemployment rate is at its lowest in the past 11 years (7.5% in September). In addition, the buoyancy of the labour market is gradually translating into wage growth (which reached 2.2% year-on-year in Q2 2019). In this context, consumption indicators such as retail sales continue to perform well (+2.1% year-on-year in August). However, some demand-side sentiment indicators have also begun to decline (the consumer confidence indicator developed by the European Commission fell in October down to –7.6 points, its lowest level since the beginning of 2017).

US

The US economy remains strong. In Q3, GDP grew by 0.5% quarter-on-quarter (1.9% in annualised quarter-on-quarter terms) and by 2.0% year-on-year. This is a rate similar to that

Euro area: GDP growth

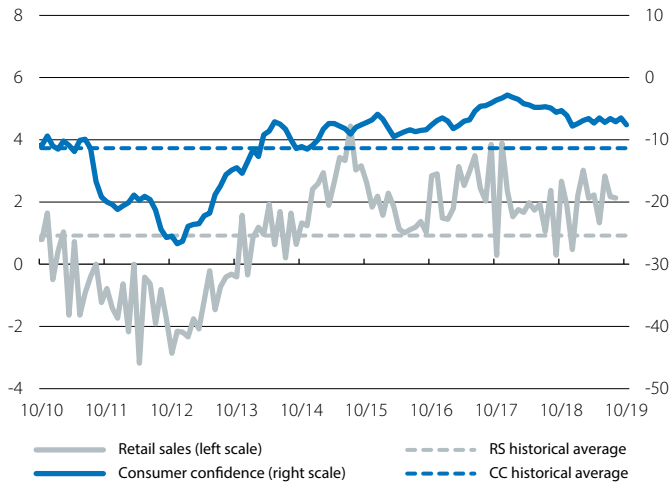
Year-on-year change (%) *Quarter-on-quarter change (%)*



Source: *CaixaBank Research, based on data from Eurostat.*

Euro area: consumption indicators

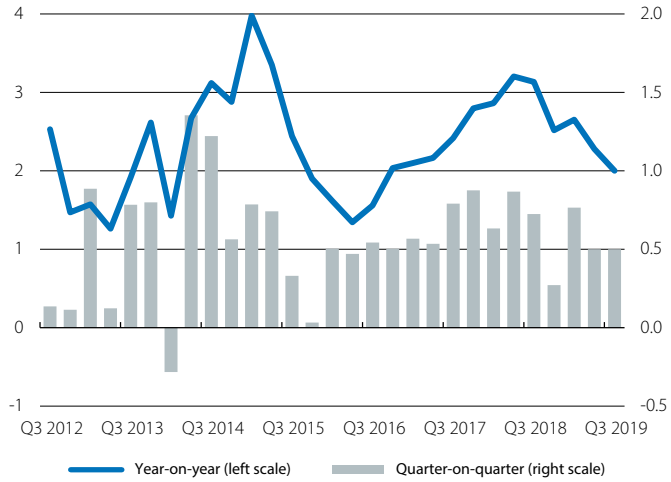
Year-on-year change (%) *Level*



Source: *CaixaBank Research, based on data from Eurostat and the European Commission.*

US: GDP growth

Year-on-year change (%) *Quarter-on-quarter change (%)*



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

observed in Q2 2019 and slightly above CaixaBank Research's forecasts and analysts' consensus. This is a solid growth rate, especially given the context of trade tensions surrounding the North American country for the past few months and the protectionist measures already in place. All in all, over the coming quarters US growth is expected to gradually moderate, partly because of the restriction of the trade conflict but also due to the inherent maturity of the business cycle. In this regard, some of the economic activity indicators published in recent months, such as the ISM manufacturing and services sentiment indicators, have registered a substantial decline (47.8 and 52.6 points in September, respectively, levels not seen since 2016). On the other hand, potential fiscal stimulus measures in 2020 (especially in the field of infrastructure) and the accommodative monetary policy of the Fed could act as a counterweight and mitigate the slowdown in growth.

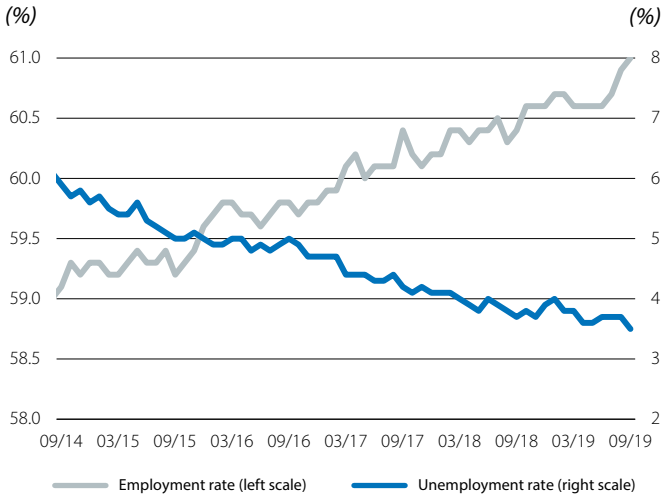
Despite the impact of the trade conflict on investment, the tone of the labour market and consumption remains upbeat. On the one hand, business investment contracted again for the second consecutive quarter in Q3 (–0.8% quarter-on-quarter), weighed down by the decline in capital goods. On the other hand, 136,000 jobs were created in September, a particularly high figure for an economy that has been in full employment since 2018. The unemployment rate, meanwhile, fell to 3.5%, its lowest level since December 1969, and wages rose by 2.9% year-on-year. Thus, the positive dynamics of the labour market continue to support private consumption (which grew by 0.7% quarter-on-quarter in Q3), a key component of growth and one with high inertia.

No signs of inflationary pressures. In September, headline inflation remained stable at 1.7%. On the other hand, core inflation, which is more closely correlated to fluctuations in economic activity, stood at higher levels (2.4%) but with no signs of upward pressure. In this context, the absence of pressures on prices and the presence of pockets of uncertainty led the Fed to cut interest rates once again (for the third time this year), this time by 25 bps down to the 1.50%-1.75% target range (but remaining cautious with regard to future cuts).

EMERGING MARKETS

In China, the slowdown of the economy continues. In particular, China's GDP grew by 6.0% in Q3 2019, which represents a slowdown of 2 decimal points compared to the figure for Q2 and the lowest growth since the country began to publish quarterly GDP data (in 1993). This slowdown partly reflects China's structural transition towards a more tertiary economy, which entails lower growth rates. However, part of the slowdown seen in recent quarters is also caused by the reduced buoyancy of the industrial sector and the high uncertainty associated with the trade war with the US, which has penalised Chinese exports. Over the coming quarters, we expect the Chinese economy to continue to slow down gradually. However, the authorities still have scope to further stimulate the economy, especially through monetary policy, and thus to avoid a sudden slowdown.

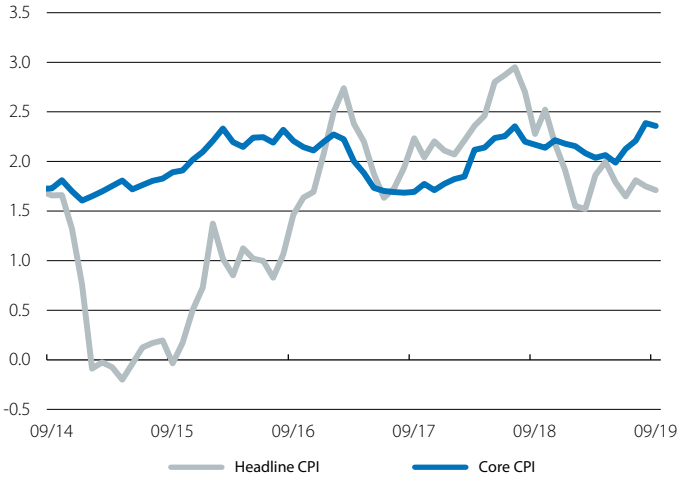
US: labour market



Source: *CaixaBank Research, based on data from the Bureau of Labor Statistics.*

US: CPI

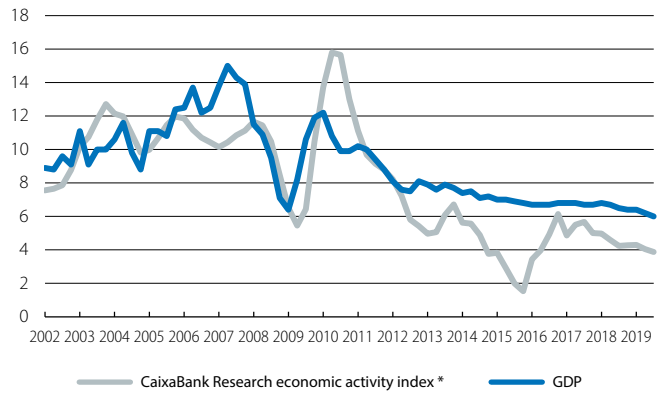
Year-on-year change (%)



Source: *CaixaBank Research, based on data from the Bureau of Labor Statistics.*

China: GDP vs. CaixaBank economic activity indicator

Year-on-year change (%)



Note: ** Moving average for the last four quarters of the economic activity index. The growth in Q3 has been calculated on the basis of monthly data for July and August.*
Source: *CaixaBank Research, based on data from the People's Bank of China and the National Statistics Office of China.*

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

UNITED STATES

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Activity									
Real GDP	2.4	2.9	2.5	2.7	2.3	2.0	–	...	–
Retail sales (excluding cars and petrol)	4.5	4.7	3.4	3.4	3.6	4.3	4.1	4.5	4.5
Consumer confidence *(value)*	120.5	130.1	133.6	125.8	128.3	132.1	135.8	134.2	126.3
Industrial production	2.3	3.9	4.0	2.9	1.2	0.2	0.5	0.4	–0.1
Manufacturing activity index (ISM) *(value)*	57.4	58.8	56.9	55.4	52.2	49.4	51.2	49.1	47.8
Housing starts *(thousands)*	1,209	1,250	1,185	1,213	1,256	1,282	1,215	1,386	1,256
Case-Shiller home price index *(value)*	200	211	214	215	216	...	216	216	...
Unemployment rate *(% lab. force)*	4.4	3.9	3.8	3.9	3.6	3.6	3.7	3.7	3.5
Employment-population ratio *(% pop. > 16 years)*	60.1	60.4	60.6	60.7	60.6	60.9	60.7	60.9	61.0
Trade balance [1] *(% GDP)*	–2.8	–2.4	–3.0	–3.0	–3.1	...	–3.1	–3.1	...
Prices									
Headline inflation	2.1	2.4	2.2	1.6	1.8	1.8	1.8	1.7	1.7
Core inflation	1.8	2.1	2.2	2.1	2.1	2.3	2.2	2.4	2.4

JAPAN

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Activity									
Real GDP	1.9	0.8	0.3	1.0	0.8	...	–	...	–
Consumer confidence *(value)*	43.8	43.6	42.8	41.3	39.5	36.8	37.8	37.1	35.6
Industrial production	2.9	1.0	0.5	–1.1	–1.2	...	–1.1	–2.0	...
Business activity index (Tankan) *(value)*	19.0	20.8	19.0	12.0	7.0	5.0	–	5.0	–
Unemployment rate *(% lab. force)*	2.8	2.4	2.4	2.4	2.4	...	2.2	2.2	...
Trade balance [1] *(% GDP)*	0.5	–0.1	–0.2	–0.3	–0.5	–0.6	–0.6	–0.6	–0.6
Prices									
Headline inflation	0.5	1.0	0.9	0.3	0.8	0.3	0.6	0.2	0.2
Core inflation	0.1	0.3	0.3	0.4	0.6	0.6	0.6	0.5	0.6

CHINA

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Activity									
Real GDP	6.8	6.6	6.4	6.4	6.2	6.0	–	6.0	–
Retail sales	10.3	9.0	8.3	8.5	8.5	7.6	7.6	7.5	7.8
Industrial production	6.6	6.2	5.7	6.4	5.6	5.0	4.8	4.4	5.8
PMI manufacturing *(value)*	51.6	50.9	49.9	49.7	49.6	49.7	49.7	49.5	49.8
Foreign sector									
Trade balance [1,2]	420	352	352	381	396	431	413	421	431
Exports	7.9	9.9	4.0	1.3	–1.0	–0.4	3.3	–1.0	–3.2
Imports	16.3	15.8	4.4	–4.5	–4.0	–6.5	–5.3	–5.6	–8.5
Prices									
Headline inflation	1.6	2.1	2.2	1.8	2.6	2.9	2.8	2.8	3.0
Official interest rate [3]	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	6.9	6.8	6.8	7.0	6.9	7.1	7.1

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 & 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	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Retail sales *(year-on-year change)*	2.5	1.6	1.7	2.5	2.1	...	2.2	2.1	...
Industrial production *(year-on-year change)*	3.0	0.9	–2.0	–0.5	–1.3	...	–2.1	–2.8	...
Consumer confidence	–5.4	–4.9	–6.4	–7.0	–7.0	–6.7	–6.6	–7.1	–6.5
Economic sentiment	110.1	111.2	108.8	106.0	104.1	102.5	102.7	103.1	101.7
Manufacturing PMI	57.4	55.0	51.7	49.1	47.7	46.4	46.5	47.0	45.7
Services PMI	55.6	54.5	52.8	52.4	53.1	52.8	53.2	53.5	51.6
Labour market									
Employment (people) *(year-on-year change)*	1.6	1.5	1.4	1.4	1.2	...	–	...	–
Unemployment rate *(% labour force)*	9.1	8.2	7.9	7.8	7.6	7.5	7.6	7.5	7.5
Germany *(% labour force)*	3.8	3.4	3.3	3.2	3.1	3.1	3.1	3.1	3.1
France *(% labour force)*	9.4	9.1	8.9	8.7	8.5	8.5	8.5	8.5	8.4
Italy *(% labour force)*	11.3	10.6	10.5	10.3	9.9	9.8	9.9	9.6	9.9
Real GDP*(year-on-year change)*	2.7	1.9	1.2	1.3	1.2	1.1	–	1.1	–
Germany *(year-on-year change)*	2.8	1.6	0.6	0.9	0.4	...	–	...	–
France *(year-on-year change)*	2.4	1.7	1.2	1.3	1.4	1.3	–	1.3	–
Italy *(year-on-year change)*	1.8	0.7	0.0	0.0	0.1	0.3	–	0.3	–

Prices

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
General	1.5	1.8	1.9	1.4	1.4	1.0	1.0	1.0	0.8
Core	1.1	1.2	1.2	1.1	1.2	1.1	1.1	1.1	1.2

Foreign sector

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Current balance	3.2	3.2	3.2	3.1	2.8	...	2.7	2.7	...
Germany	8.1	7.3	7.3	7.2	7.1	...	7.3	7.4	...
France	–0.7	–0.6	–0.6	–0.5	–0.7	...	–0.8	–0.8	...
Italy	2.7	2.6	2.6	2.6	2.8	...	2.8	2.9	...
Nominal effective exchange rate[1] *(value)*	96.5	98.9	98.5	97.3	97.3	97.7	97.5	98.1	97.4

Credit and deposits of non-financial sectors

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	07/19	08/19	09/19
Private sector financing									
Credit to non-financial firms[2]	2.5	3.8	4.0	3.7	3.9	...	3.9	...	...
Credit to households[2,3]	2.6	3.0	3.2	3.3	3.3	...	3.4	...	...
Interest rate on loans to non-financial firms[4] *(%)*	1.3	1.2	1.2	1.2	1.1	...	...	...	...
Interest rate on loans to households for house purchases[5] *(%)*	1.7	1.6	1.6	1.6	1.6	...	...	...	...
Deposits									
On demand deposits	10.1	7.9	7.1	7.0	7.7	...	8.3	...	...
Other short-term deposits	–2.7	–1.5	–0.9	–0.4	0.4	...	0.1	...	...
Marketable instruments	1.4	–4.4	–3.4	–3.7	–4.6	...	–1.2	...	...
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's economic growth holds steady in an adverse external environment

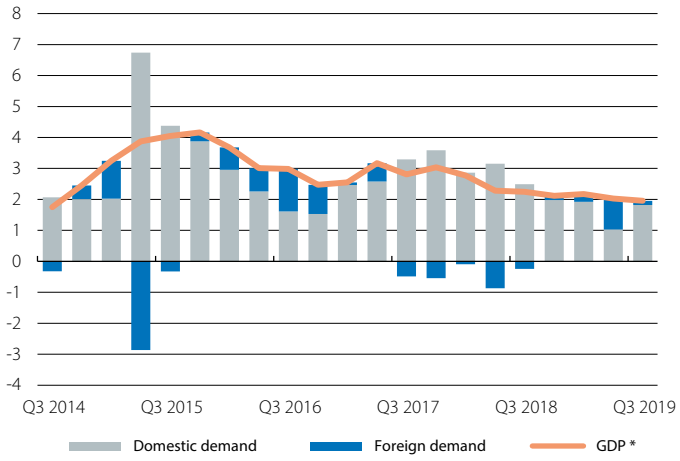
GDP grew in Q3 by 0.4% quarter-on-quarter (2.0% year-on-year), the same rate as in the previous quarter. This confirmation of GDP growth from the National Statistics Institute means that, in Q3, the Spanish economy was growing at a rate well above that of the euro area (0.2% quarter-on-quarter). All in all, the Spanish economy is in a deceleration phase, with lower growth than that registered in recent years, more moderate domestic demand and a more demanding external environment. As for the composition of the year-on-year growth rate, Q3 growth was very different from that of Q2 2019: domestic demand increased its contribution by 0.8 pps up to 1.8 pps, while foreign demand reduced its contribution by 0.8 pps down to 0.2 pps. Meanwhile, private consumption recovered from a poor first half and grew 1.1% quarter-on-quarter (1.5% year-on-year), and investment rebounded following the slump of the previous quarter to grow by 1.3% quarter-on-quarter (2.0% year-on-year, with a rebound of 5.6% in investment in capital goods). All this bodes well for the outlook for aggregate demand over the coming quarters. On the other hand, foreign demand registered a mixed performance, with greater growth in imports (1.3% quarter-on-quarter, 0.4 pps more than in Q2) and a contraction in exports (–0.8% quarter-on-quarter), which were affected by the trade war and the economic slowdown in Spain's main trading partners.

The indicators suggest that the expansion will continue at a moderate pace. The industrial sector is going through a difficult period, penalised by the deterioration in the external environment: its turnover fell in August by 0.3% year-on-year (three-month moving average), continuing the gradual deterioration seen in previous months. Then, in September, the manufacturing PMI index fell to 47.4 points, in contractionary territory (below 50 points). In contrast, the services sector continues to perform well, although its latest indicators reflect some erosion due to the weakness of the industrial sector. Services sector turnover grew by 3.4% in August, a healthy pace, albeit below the monthly average experienced between January and July (4.7%). In September, the services PMI index dropped to 53.3 points, 1 point below the figure for the previous month. Overall, these indicators point towards a gradual moderation in the pace of economic activity.

The economic slowdown becomes more noticeable in the labour market in Q3 2019. According to the Labour Force Survey, the pace of job creation slowed to 0.1% quarter-on-quarter (in seasonally adjusted terms), well below the rate experienced over the past four quarters (0.6% on average). In year-on-year terms, although job growth (1.8%) was lower than in Q2 2019 (+2.4%), employment increased by 346,000 people, reaching 19.9 million people in work. The reduction in unemployment, meanwhile, has also slowed down: the number of unemployed people fell in the past four quarters by 111,600, a figure well below the average of the third quarters

Spain: GDP

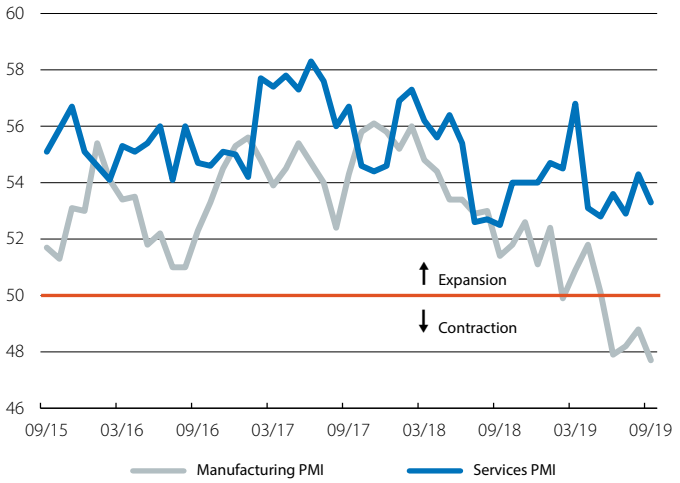
Contribution to year-on-year growth (pps)



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

Spain: economic activity indicators

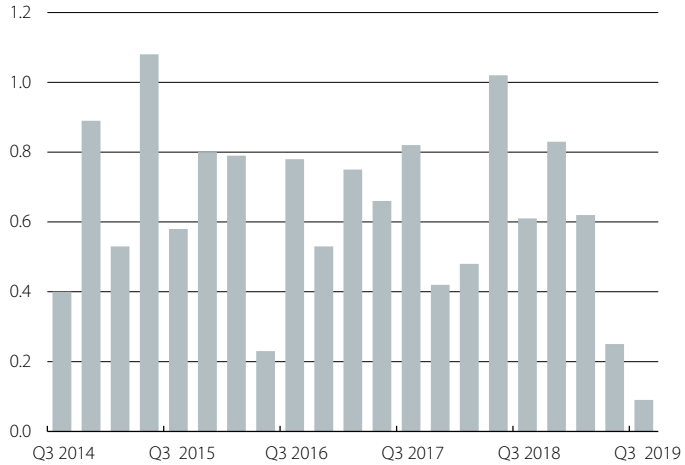
Level



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 (EPA).*

of the past five years (–294,000). This is due to both the lower creation of jobs and the greater increase in the total labour force. In the end, the unemployment rate stood at 13.9% (14.6% in Q3 2018), which is very much in line with the previous quarter (14.0%) but also represents the best figure in a third quarter since Q3 2008.

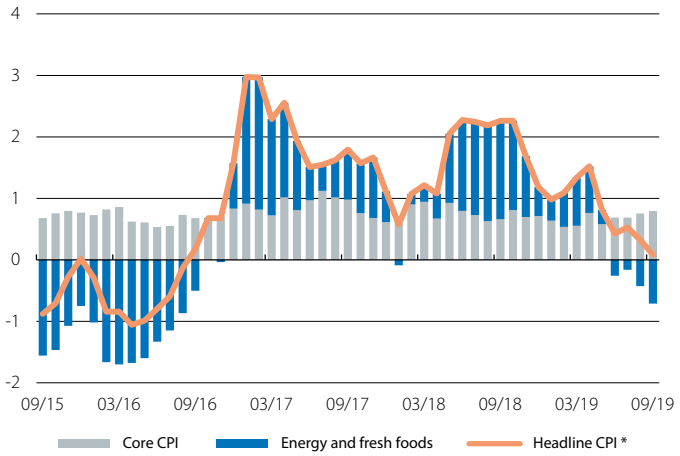
Inflation continues the trend of moderation of recent months. CPI growth in October remained at 0.1% year-on-year, the same figure as in the previous month. The low inflation of recent months is caused by the components with more volatile prices. Specifically, electricity amassed a price decline of 17.1% year-on-year in September, while the price of oil (in euros) in October registered a cumulative year-on-year decline of 23.7%, which will recede in November and December due to base effects. Looking ahead to the next few months, headline inflation will continue to be driven down by energy components and by the base effect of the oil price in particular (which, at around 60 dollars per barrel, lies well below the 80-dollar level reached in the autumn of 2018). Core inflation, meanwhile, will remain at around its current levels (1.0% in September).

The current account balance remains stable in August. In the cumulative 12 months to August 2019, the current account balance stood at 21,883 million euros (1.78% of GDP), very similar to the figure for the previous month (1.79% of GDP). Thus, after deteriorating steadily between the end of 2016 until March 2019, the current account has finally stabilised. This largely reflects a stabilisation in the non-energy goods component since April, especially due to the slowdown in imports (in 12-month cumulative terms, they grew by 2.2% year-on-year in both July and August). However, the adverse international environment continues to manifest itself in the weakness of exports, which in August grew by a modest 0.6% year-on-year (1.3% in July, 4.3% in August 2018).

The budget execution shows few signs of progress in the consolidation of the public accounts. In August 2019, the general government deficit (excluding local corporations) was slightly higher than the figure for August 2018, standing at 2.1% of GDP (+0.1 pp). This result was mainly due to the deterioration of the Social Security and autonomous communities' accounts, which experienced deficits of 0.5% and 0.2% of GDP, respectively. Meanwhile, the central government deficit, for which data are already available up to September, stood at 0.6% of GDP, below the 1.1% registered in September 2018. This points towards a slight improvement in the budget execution in the closing stages of the year. That said, this reduction would be insufficient to offset the shortfall from Social Security and the autonomous communities in order to achieve the general government's overall deficit target for 2019 (2.0%). This target is once again included in the update of the public accounts submitted by the government to Brussels in October. This Budget Plan includes an inertial scenario for 2020, without additional revenue measures envisaged and with only the increase in pensions (+0.9%) and public sector salaries (+2.0%) as additional spending measures included in 2020. For that year, the government forecasts a deficit of 1.7%, 3 decimal points below the figure anticipated by CaixaBank Research.

Spain: CPI

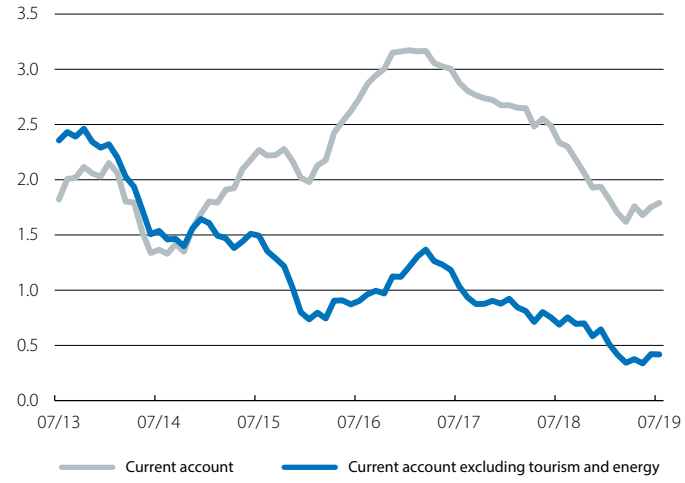
Contribution to year-on-year growth (pps)



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

Spain: current account balance

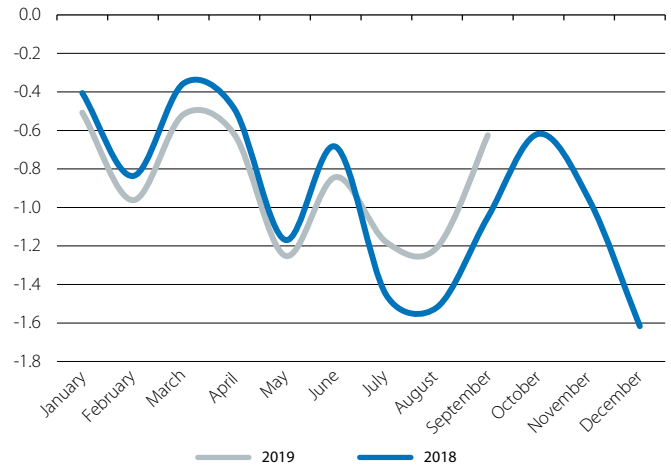
12-month cumulative balance (% of GDP)



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

Central government balance

(% of GDP)



Source: *CaixaBank Research, based on data from the General Comptroller of the State Administration (IGAE).*

Quo vadis, consumption?

- **The revision of the historical series by the National Statistics Institute shows that private consumption in Spain grew below previous estimates in 2018 and the first half of 2019.**
- **This lower growth was initially due to a slowdown in the consumption of semi-durable and non-durable goods, followed by a second phase driven by the durable goods component.**
- **The slowdown in foreign tourist expenditure, coupled with domestic tourist expenditure by residents being replaced with spending abroad, could explain the slowdown in the consumption in semi-durable and non-durable goods, while uncertainty over the purchase of vehicles could explain the behaviour of the durable goods component.**

In September, the National Statistics Institute (NSI) revised the historical series of the national accounts. In light of this review, we learned that private consumption growth was more moderate than previously thought, both in 2018 and in the first half of 2019. More specifically, private consumption grew by 0.5 pps below previously estimated in 2018 and by 0.7 pps less in the first half of 2019 (see first chart).[1] In this article, we analyse the motives behind this slowdown.

The second chart shows the year-on-year growth in household consumption, together with the contributions from the consumption of durable goods and that of semi-durable and non-durable goods.[2] We can draw three conclusions from the chart:

- Private consumption grew significantly up until Q4 2017 and has slowed sharply since then.
- The initial phase of the slowdown (between Q4 2017 and Q3 2018) can be mostly explained by the slowdown in the «Semi-durable and non-durable goods» component.
- The final phase of the slowdown (between Q4 2018 and Q2 2019) is down to the slowdown in spending on durable goods.

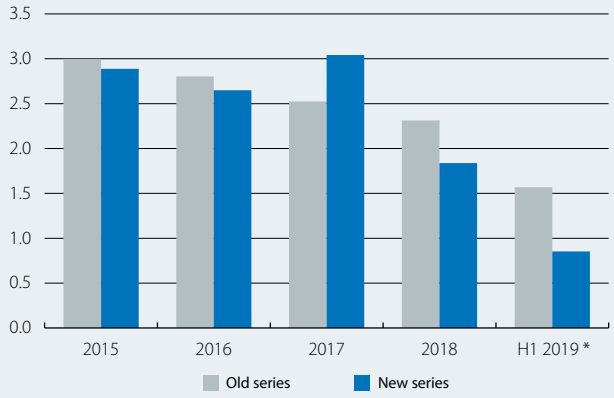
The quarterly breakdown of household consumption expenditure provided by the NSI does not allow for a more detailed analysis of each subgroup. Nevertheless, the NSI provides us with a greater level of detail in the annual national accounts, which include data up to 2018. This greater level of detail enables us to understand which categories are leading the slowdown in semi-durable and non-durable goods which we observe in 2018.

As shown in the third chart, practically all of the slowdown observed between 2017 and 2018 can be explained by the «Hotels, cafés and restaurants» component and, to a lesser extent, that of «Transport and communications».[3]

1. The latest data on the national accounts from the NSI show that consumption rebounded in Q3, placing the average growth rate of consumption for the first three quarters of the year at 1.1%.
2. Durable goods are those which, once acquired, can be used repeatedly over time. They include products such as furniture, household appliances, cars and audio-visual equipment.
3. This latter category excludes subcomponents such as the purchase of vehicles, since they fall within the durable goods category.

Spain: household consumption

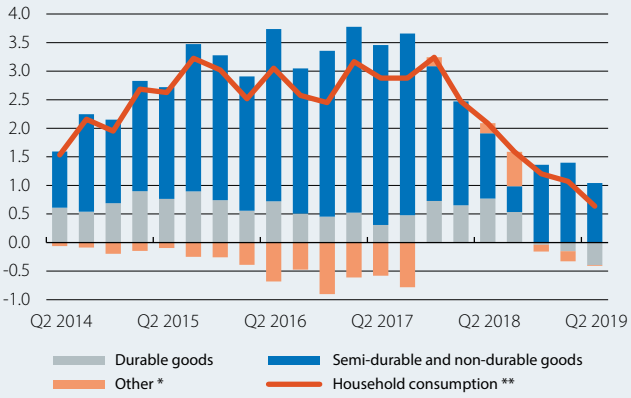
Annual change (%)



Note: ** Average year-on-year change of Q1 and Q2 2019.*
Source: *CaixaBank Research, based on data from the National Statistics Institute.*

Consumption: breakdown

Contribution to growth (pps)



Notes: ** The category «Other» captures the difference between the consumption expenditure carried out by foreigners in Spain and that of Spanish nationals abroad.*
*** Year-on-year change.*
Source: *CaixaBank Research, based on data from the National Statistics Institute.*

How can we interpret the data provided by these two charts? The data shown in the third chart include expenditure by foreigners in Spain and do not take into account the possibility of Spanish residents replacing domestic tourist expenditure with tourist expenditure abroad. As such, the decline in the contribution of the «Hotels, cafés and restaurants» component in 2018 could either be due to foreigners spending less on this component compared to in 2017, due to residents

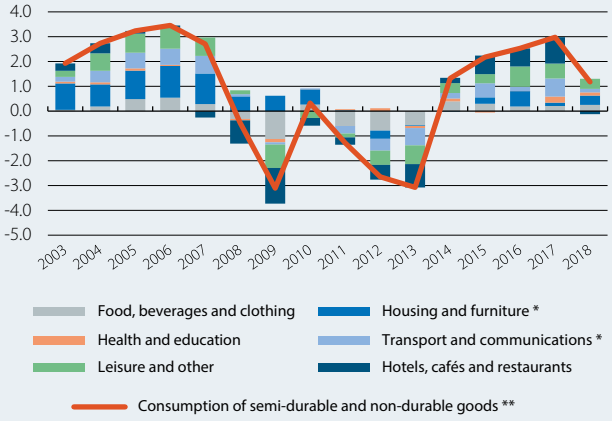
spending less as they have spent more abroad, or due to a combination of both. Well, between 2017 and 2018, growth in expenditure by foreign tourists in Spain slowed from 12.1% to 4.1%. Also, over the same period, the growth of tourist expenditure abroad by Spanish residents accelerated from 7.2% to 12.6%. The slowdown in tourist spending by foreigners, together with the significant growth in residents' expenditure on tourist services abroad, suggest that a combination of both factors could explain the behaviour of this category, at least in part.

The decline in expenditure on durable goods that can be seen towards the end of 2018 and in the first half of 2019, meanwhile, could be the product of uncertainty surrounding the automotive sector.[4] That is, faced with greater regulatory uncertainty threatening the sector[5] and the challenge of technological change (combustion engines *vs.* electric propulsion), consumers may have decided to postpone their spending plans until these unknowns have cleared. If this is the case, one might expect that if these uncertainties dissipate in the future, spending on vehicles will experience a rebound effect due to the pent-up consumption that is currently accumulating.

Oriol Carreras

Consumption of semi-durable and non-durable goods: breakdown

Contribution to growth (pps)



Notes: ** Excluding the subcategories that are classified as durable goods.*
*** Annual change expressed as a percentage.*
Source: *CaixaBank Research, based on data from the National Statistics Institute.*

4. The NSI data in the second chart does not allow us to see whether the fall in the contribution of the durable goods component is due to car sales or other categories. Nevertheless, indicators such as vehicle registrations, which show an average year-on-year decline of around 7.0% between Q3 2018 and Q2 2019, suggest that cars are at least partly responsible for this decline.
5. Uncertainty regarding taxation or possible restrictions on the movement of combustion vehicles.

Activity and employment indicators

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Industry									
Industrial production index	3.2	0.3	–2.7	0.0	1.6	...	1.7	...	...
Indicator of confidence in industry *(value)*	1.0	–0.1	–1.9	–3.8	–4.6	–2.0	1.6	–4.6	–7.9
Manufacturing PMI *(value)*	54.8	53.3	51.8	51.1	49.9	48.2	48.8	47.7	46.8
Construction									
Building permits *(cumulative over 12 months)*	22.9	25.7	23.9	25.8	21.9	...	12.1	...	...
House sales *(cumulative over 12 months)*	14.1	14.2	11.5	8.3	5.5	...	1.1	...	...
House prices	6.2	6.7	6.6	6.8	5.3	...	–	–	–
Services									
Foreign tourists *(cumulative over 12 months)*	10.0	4.0	0.9	1.0	1.5	2.1	2.2	2.1	...
Services PMI *(value)*	56.4	54.8	54.0	55.3	53.2	53.5	54.3	53.3	...
Consumption									
Retail sales	1.0	0.7	1.4	1.3	2.2	...	3.2	...	...
Car registrations	7.9	7.8	–7.6	–7.0	–4.4	–7.9	–30.8	18.3	6.3
Consumer confidence index *(value)*	–3.4	–4.2	–6.2	–4.8	–4.0	–5.8	–6.2	–6.2	–9.1
Labour market									
Employment [1]	2.6	2.7	3.0	3.2	2.4	1.8	–	–	–
Unemployment rate (% labour force)	17.2	15.3	14.4	14.7	14.0	13.9	–	–	–
Registered as employed with Social Security [2]	3.6	3.1	3.0	2.9	2.8	2.5	2.5	2.4	...
GDP	**2.9**	**2.4**	**2.1**	**2.2**	**2.0**	**2.0**	**–**	**–**	**–**

Prices

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
General	2.0	1.7	1.7	1.1	0.9	0.3	0.3	0.1	0.1
Core	1.1	0.9	0.9	0.7	0.8	0.9	0.9	1.0	...

Foreign sector

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Trade of goods									
Exports *(year-on-year change, cumulative over 12 months)*	8.9	2.9	2.9	2.4	2.3	...	0.8	...	...
Imports *(year-on-year change, cumulative over 12 months)*	10.5	5.6	5.6	6.1	3.9	...	2.3	...	...
Current balance	**31.1**	**23.3**	**23.3**	**19.6**	**21.4**	**...**	**21.9**	**...**	**...**
Goods and services	41.6	32.6	32.6	30.2	31.6	...	31.8	...	...
Primary and secondary income	–10.5	–9.3	–9.3	–10.6	–10.2	...	–9.9	...	...
Net lending (+) / borrowing (–) capacity	**33.9**	**29.1**	**29.1**	**25.5**	**27.4**	**...**	**27.6**	**...**	**...**

Credit and deposits in non-financial sectors [3]

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Deposits									
Household and company deposits	2.8	3.2	3.7	5.3	5.8	5.4	5.9	4.8	...
Sight and savings	17.6	10.9	10.0	11.3	10.9	10.3	10.9	9.6	...
Term and notice	–24.2	–19.9	–16.8	–13.7	–12.8	–13.4	–13.2	–13.9	...
General government deposits	–8.7	15.4	16.9	17.8	15.7	3.6	3.9	4.3	...
TOTAL	**1.9**	**3.8**	**4.5**	**6.0**	**6.4**	**5.3**	**5.7**	**4.8**	**...**
Outstanding balance of credit									
Private sector	–2.2	–2.4	–2.2	–2.1	–1.1	–1.1	–0.8	–1.3	...
Non-financial firms	–3.6	–5.5	–5.7	–5.5	–3.0	–2.1	–1.8	–2.5	...
Households - housing	–2.8	–1.9	–1.4	–1.1	–1.2	–1.5	–1.5	–1.4	...
Households - other purposes	3.7	5.1	4.7	4.2	3.8	3.0	3.4	2.0	...
General government	–9.7	–10.6	–11.8	–10.4	–7.2	–5.3	–5.0	–5.6	...
TOTAL	**–2.8**	**–2.9**	**–2.8**	**–2.6**	**–1.5**	**–1.3**	**–1.1**	**–1.6**	**...**
NPL ratio (%)[4]	**7.8**	**5.8**	**5.8**	**5.7**	**5.4**	**5.0**	**5.2**	**5.0**	**...**

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 continues to perform well in a less favourable external environment

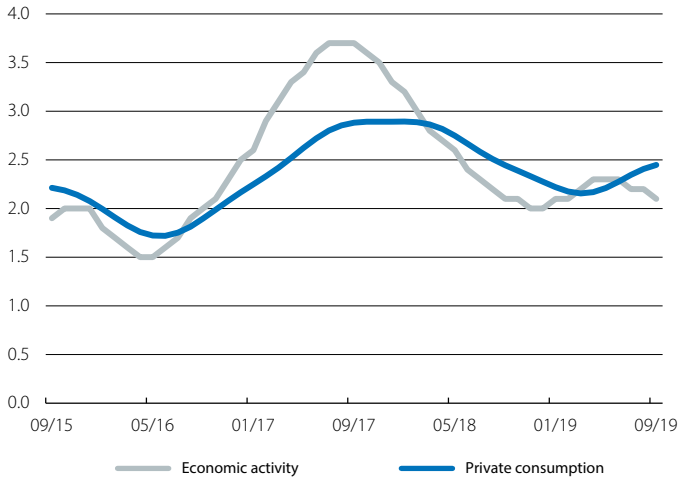
The indicators show favorable developments in activity, supported by the performance of private consumption and investment. In particular, the coincident indicator for private consumption accelerated in Q3 up to 2.4% (2 decimal points higher than in the previous quarter), driven by a solid labour market. In addition, consumer confidence indicators have steadily improved since April, fueling retail sales, which registered growth of around 5% in Q3. Meanwhile, the Bank of Portugal's coincident economic activity indicator (which has a close correlation with GDP growth) stood at 2.2% for Q3 as a whole, only 1 decimal point lower than in the previous quarter (when GDP growth was 0.6% quarter-on-quarter and 1.9% year-on-year). However, this performance among the aggregate indicators coexists with less optimistic figures relating to industrial activity (affected by more moderate global growth and lower foreign demand) and investment. In fact, with data up to August, the coincident indicator for investment suggests that investment will slow down to around 4%-5% in Q3 (its growth stood above 7% in Q2). On the other hand, the slowdown in global economic activity makes the external environment more demanding and will contribute to a moderation in the Portuguese economy's growth rate over the coming quarters.

The current account deficit is smaller than expected. Following a statistical review of the external accounts, which involved a change to the base year (2016) and the incorporation of more information on tourism activity, e-commerce and, above all, income balance flows (with the addition of a greater number of pensions received by foreign pensioners residing in the country), the new series show that the current and capital account balance stood at 1.4% of GDP in 2018 (1 pp higher than previously estimated). This review has also modified the data for the current and capital account balance relating to 2019. Specifically, in July the current account deficit stood at –0.7% of GDP (*versus* the –1.1% initially estimated), while in August the deficit moderated slightly down to –0.5% (1.1 billion euros, in 12-month cumulative terms). After these changes, the current account balance is expected to register a deficit of 0.7% of GDP in 2019-2020, while the current and capital account balance is expected to register a surplus of 0.2% of GDP in the same period.

Mixed data in the real estate market. Although the housing price index accelerated in Q2 up to 10.1% year-on-year (9.2% in Q1), and despite the boost to the sector provided by the accommodative financial environment supported by the ECB, other indicators paint a less rosy picture and indicate a potential slowdown in prices over the coming quarters.

Portugal: coincident economic activity indicators

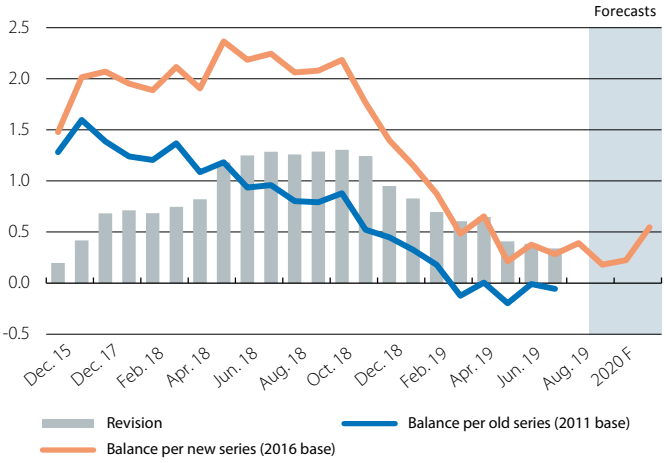
Year-on-year change (%)



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

Portugal: current and capital account balance

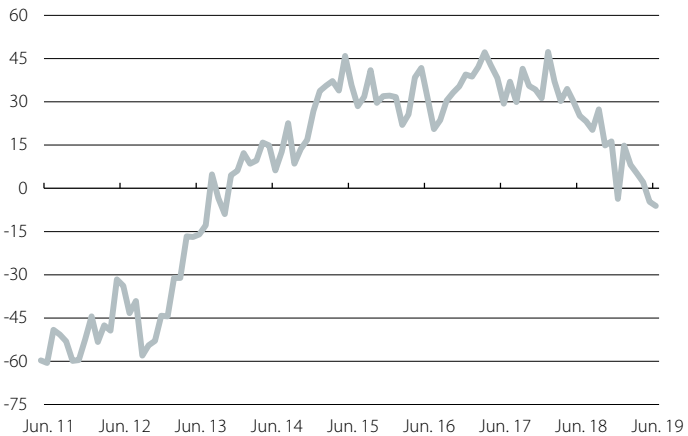
(% of GDP)



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

Portugal: real estate market confidence indicator

(Points)



Source: *CaixaBank Research, based on data from Confidencial Imobiliário.*

In particular, the real estate market confidence indicator (developed by Confidencial Imobiliário using information from real estate agencies) shows a declining trend since the beginning of 2018. Furthermore, the indicators for property sales in negotiation and customer enquiries (also produced by Confidencial Imobiliário) have registered a decline in recent months, and for the first time since 2013 they have stood at levels that indicate a contraction in activity.

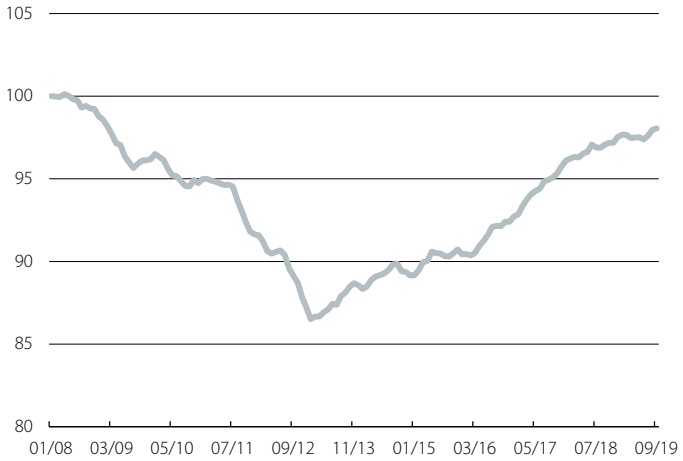
The labour market shows signs of maturity. The data for September (still preliminary) indicate job growth of 1.0% year-on-year (seasonally adjusted), albeit with a level of employment still below the figures achieved in 2008. The unemployment rate, meanwhile, rose in September to 6.6% (+0.2 pps compared to August) due to an increase in the labour force (1.0% year-on-year), with a notable contribution from foreign workers. The labour market is thus displaying a more moderate performance than in previous quarters, consistent with the country's entry into a more mature phase of the cycle.

The budget execution remains on a path of consolidation. The total general government balance registered a surplus of 1.6% of GDP in September (2,542 million euros), which represents a +0.9% improvement over the same period last year. This trend was due to the good performance of revenues (4.8%), as well as to the lower growth of expenditure (2.9%). Of particular note on the revenues side was the growth in Social Security contributions and in VAT revenues (7.1% and 7.3%, respectively). On the other hand, the reduction of the interest burden (–7.8% year-on-year) and the lower growth in investment (5.1%, compared to the 31.2% forecast by the government for the year as a whole) explain the lower increase in expenditure. As such, the general government deficit for the year as a whole could end up being lower than expected. Indeed, in the Budget Plan submitted to Brussels on 15 October, the government estimates a deficit of 0.1% of GDP in 2019 and of 0.0% in 2020.

Non-performing loans continue to decline. The NPL ratio of the non-financial private sector fell to 9.2% in Q2, 0.7 pps lower than in Q1 and 9.3 pps lower than the high-point registered in Q2 2016. This reduction can be explained by the sales of non-performing loan portfolios and the strong performance of the Portuguese economy, which facilitates lower levels of bad debt. Specifically, non-performing loans fell by 851 million euros compared to the previous quarter, mostly thanks to the non-financial corporation segment (–653 million euros). However, the NPL ratio in this segment remains high (16.6%). The stock of loans to the private sector, meanwhile, continued to contract in August (–1.4% year-on-year) as a result of the contraction in loans to non-financial corporations (–2.9% year-on-year) and to households (–0.5%).

Portugal: employment

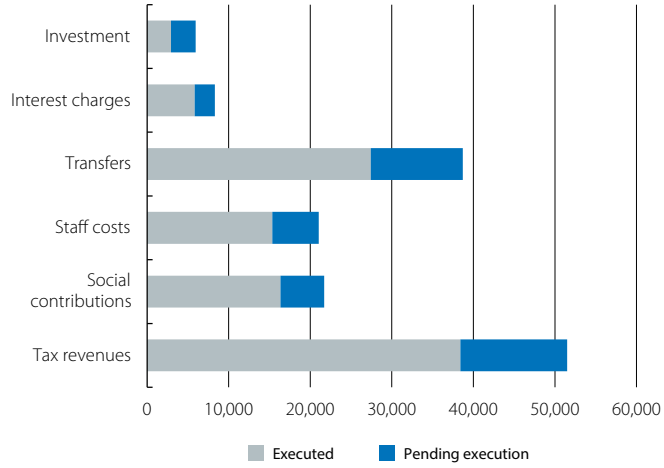
Index (100 = January 2008)



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

Portugal: general government budget execution

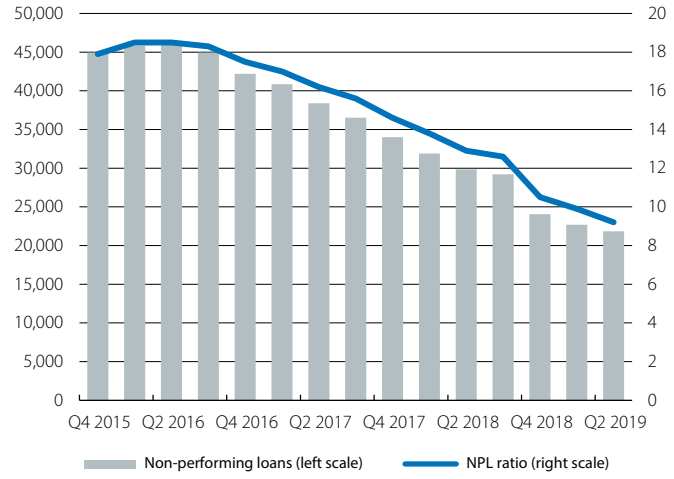
(EUR millions)



Source: *CaixaBank Research, based on data from the DGO.*

Portugal: non-performing loans and NPL ratio

(EUR millions) *(%)*



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

Investment in Portugal: growing in the most productive sectors

- **Investment fell substantially during the financial crisis, but since 2013 it has shown significant recovery. However, this recovery is still insufficient to recover the levels of capital seen in 2007. For this reason, encouraging investment remains important in order to improve the Portuguese economy's growth potential.**
- **On the other hand, the composition of investment over the course of the recovery has shown a promising trend, since investment in the most productive sectors of the economy has gained relative weight.**

Although the total gross fixed capital formation (GFCF)[1] is still 14% below the levels of September 2008, this is essentially due to investment in construction, which lies 31% below its level prior to the financial crisis. Nevertheless, as we shall see, the rest of the components of investment have exhibited a significant recovery.

Since 2008, there has been a notable reduction in the relative weight of investment in construction, which has fallen from 60% of GFCF in 2008 to 48.5% in 2019. This reduction is to be expected, considering the base effect of the significant investment in infrastructure and housing before the crisis. This has cleared the path for an increase in investment in more productive areas, such as intellectual property (16% of GFCF in 2019, +5.2 pps compared to 2008) and information and communication technologies and machinery (25%, +6.1 pps).

If we focus on investment excluding construction, the outlook is positive and there are signs indicating a change in the productive model, with an increase in the role of the industrial sector. With data up to June 2019, investment excluding construction stands 11.6% above the level of September 2008. This is driven by growth in investment in machinery and intellectual property, which stand 13.4% and 27.6% above their levels registered prior to the financial crisis, respectively.

The trends in investment in machinery[2] are also encouraging, since they show a particularly strong recovery in industry. In 2017, 44% of investment in machinery occurred in the industrial sector (6 pps more than in 2008), while investment in machinery in the construction sector accounted for just 4.9% of the total, almost half the levels of 2008 (8.5% in 2008 and 11.6% in 2000).

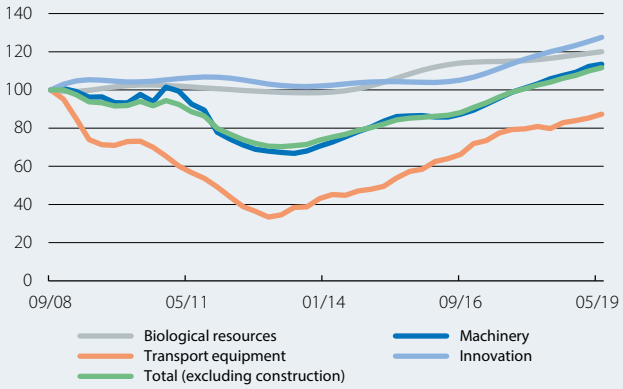
The recovery in investment, both in total and in machinery specifically, is a phenomenon common to all industrial sectors. Of particular note is the strength of investment in the manufacture of transport equipment (with an annual increase of 25% and 28%, respectively, since 2008), in textile and clothing (with growth of 12% in a sector which, following the difficulties experienced in the early 2000s,[3] has adjusted thanks to higher value-added production, with improvements in the design and incorporation of technology into the production process), and in wood and metallurgy.

1. Data at constant prices and cumulative for the period Q3 2018 - Q2 2019.
2. Information available up to 2017. Analysis with constant prices.

3. In the early years of the 21st century, the increase in competition from more competitive markets significantly affected the activity of the textile sector, especially through the relocation of companies backed by foreign capital to more competitive economies.

Portugal: components of investment (excluding construction)

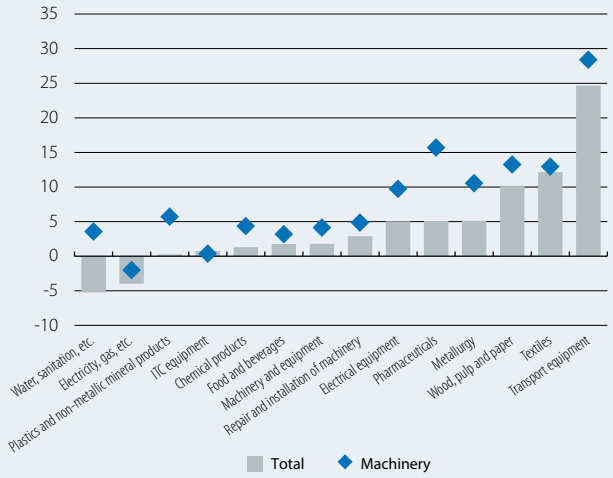
Index (100 = September 2008)



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

Portugal: GFCF in volume by industrial sector

Average annual growth for 2008-2017 (%)



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

The breakdown of investment by institutional sector[4] helps to reinforce these favourable dynamics. Business investment, which is usually more productive, stands out as the best-performing sector. This greater buoyancy is evident since the early 2000s', with an average annual growth of 2.7% (0.6% in the economy as a whole), but the recovery in the period following the financial crisis stands out in particular. Specifically, after reaching a low point in September 2013, business investment has recovered at an average annual rate of 9.3% (versus 6.3% for the economy as a whole). With data up to June 2019 (four-quarter cumulative figures), investment in the business sector represents around 69% of total investment in the economy, the highest level since the beginning of the 21st century. Meanwhile, household investment (usually linked to the acquisition of housing) represents 20.8% of investment. Lastly, the data relating to the general government sector (10.3% of the total) show how public investment was cut in response to the need to reduce the budgetary imbalance.

At the international level, investment as a proportion of GDP in Portugal (17.6%, including construction) remains below that of the euro area (21%). That said, there has been some convergence in terms of its composition, since investment in machinery, ITC equipment and intellectual property represented 40% of GFCF in 2018 (41.3% in the euro area), approximately 13 pps above that of 1998 (see fourth chart).

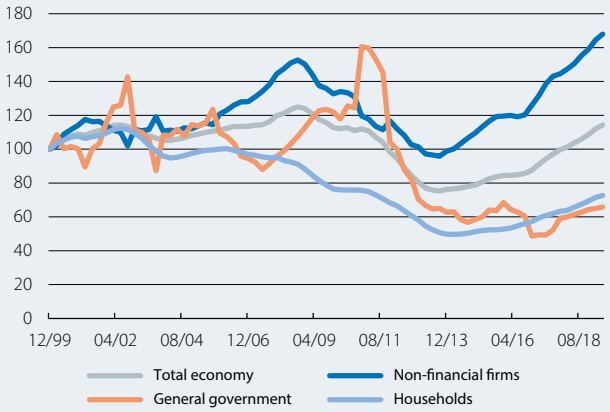
We estimate that the recovery in GFCF since 2013 has resulted in the stock of capital rising to 665.5 billion euros in 2018,[5] representing an average annual nominal growth of 2.2% since 2013. However, as a percentage of GDP, capital still stands below the levels recorded prior to the financial crisis. Specifically, we estimate that in 2018 this ratio will have stood at around 330%, 4 pps less than in 2007 (see last chart). In this context, it remains important to provide a favourable investment environment in order to contribute to strengthening the recovery of capital stock and to have a positive influence on the economy's production potential, productivity and growth.

Teresa Gil Pinheiro

4. Data at current prices.
5. This calculation is based on the equation $Capital\ Stock_t = Capital\ Stock_{t-1} + GFCF_t\ (1 - \delta)$, where δ is the depreciation rate, which is assumed to be equal to that observed between 2016 and 2018.

Portugal: investment by institutional sector

Index (100 = December 1999)



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

Portugal: gross fixed capital formation by asset type

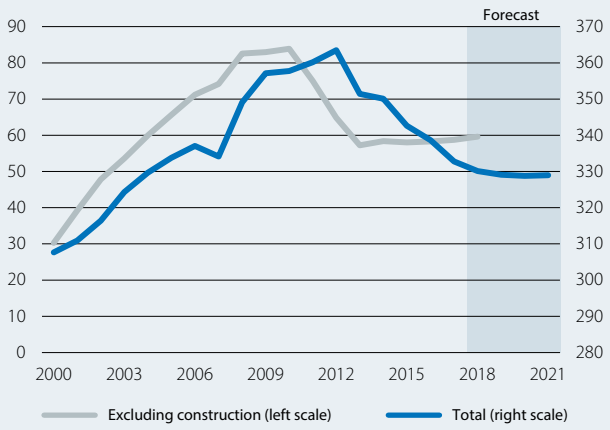
(% of total GFCF)

	1998		2008		2018*	
	Euro area	Portugal	Euro area	Portugal	Euro area	Portugal
Residential construction	27.7	28.4	28.2	20.4	25.9	17.3
Other construction	24.9	31.9	26.2	36.5	23.1	32.9
Transport equipment	8.0	11.5	8.4	8.4	9.5	8.9
ITC equipment	4.3	6.2	3.4	6.0	3.6	5.2
Machinery	21.1	15.5	18.9	16.3	18.1	19.2
Biological resources	0.2	1.3	0.2	1.0	0.2	1.5
Intellectual property products	13.8	5.1	14.6	11.3	19.5	15.6

Note: ** For Portugal, the figures for machinery and ICT are from 2016.*
Source: *CaixaBank Research, based on data from Eurostat.*

Portugal: capital stock

(EUR billions) *(% of GDP)*



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

Activity and employment indicators

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Coincident economic activity index	3.4	2.5	2.0	2.1	2.3	2.2	2.2	2.1	...
Industry									
Industrial production index	4.0	0.1	–1.3	–3.7	–2.2	–4.1	–5.3	–5.2	...
Confidence indicator in industry *(value)*	2.1	0.8	–0.8	–1.4	–3.3	–3.7	–3.2	–4.1	–4.2
Construction									
Building permits *(cumulative over 12 months)*	16.6	19.1	19.1	20.7	15.5	...	...	...	...
House sales	20.5	16.8	9.4	7.6	–6.6	...	...	...	...
House prices *(euro / m² - valuation)*	5.1	5.8	6.2	6.7	7.5	7.9	7.7	7.8	...
Services									
Foreign tourists *(cumulative over 12 months)*	16.0	4.8	5.2	4.5	4.9	...	5.7	...	...
Confidence indicator in services *(value)*	13.3	14.1	13.0	15.3	14.2	11.5	11.3	9.9	10.4
Consumption									
Retail sales	4.1	4.2	5.2	4.3	5.9	4.5	4.4	3.9	...
Coincident indicator for private consumption	2.7	2.6	2.3	2.2	2.2	2.4	2.4	2.4	...
Consumer confidence index *(value)*	–5.4	–4.6	–5.4	–8.3	–8.9	–7.6	–7.6	–7.1	–7.2
Labour market									
Employment	3.3	2.3	1.6	1.5	0.9	...	1.1	1.0	...
Unemployment rate (*% labour force*)	8.9	7.0	6.7	6.8	6.3	...	6.4	6.6	...
GDP	**3.5**	**2.4**	**2.0**	**2.1**	**1.9**	**...**	...	...	...

Prices

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
General	1.4	1.0	0.8	0.8	0.5	–0.2	–0.1	–0.1	0.0
Core	1.1	0.7	0.5	0.8	0.6	0.1	0.2	0.2	0.3

Foreign sector

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Trade of goods									
Exports *(year-on-year change, cumulative over 12 months)*	10.0	5.1	5.1	5.8	3.3	...	1.8	...	...
Imports *(year-on-year change, cumulative over 12 months)*	13.7	8.2	8.2	9.2	8.3	...	7.0	...	...
Current balance	**2.4**	**0.8**	**0.8**	**–1.1**	**–1.2**	...	–1.1	**...**	**...**
Goods and services	2.9	1.6	1.6	0.1	–0.5	...	–0.7	...	...
Primary and secondary income	–0.5	–0.8	–0.8	–1.2	–0.7	...	–0.4	...	...
Net lending (+) / borrowing (–) capacity	**4.1**	**2.8**	**2.8**	**1.0**	**0.8**	**...**	0.8	**...**	**...**

Credit and deposits in non-financial sectors

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

	2017	2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	08/19	09/19	10/19
Deposits [1]									
Household and company deposits	1.7	3.8	4.2	4.9	4.5	...	5.3	...	
Sight and savings	15.7	14.3	14.6	14.2	13.3	...	15.0	...	
Term and notice	–5.8	–3.0	–3.1	–1.9	–2.3	...	–2.4	...	
General government deposits	1.3	–1.9	–9.9	–11.6	–11.9	...	–14.7	...	
TOTAL	**1.6**	**3.5**	**3.4**	**4.1**	**3.6**	**...**	4.3	...	
Outstanding balance of credit [1]									
Private sector	–4.0	–1.7	–1.8	–2.6	–1.9	...	–1.4	...	
Non-financial firms	–6.5	–3.8	–4.5	–5.7	–3.8	...	–2.9	...	
Households - housing	–3.1	–1.5	–1.3	–1.5	–1.4	...	–1.5	...	
Households - other purposes	0.9	4.5	5.2	3.1	2.6	...	3.9	...	
General government	9.3	2.4	–11.6	–12.5	–8.1	...	–6.5	...	
TOTAL	**–3.5**	**–1.6**	**–2.3**	**–3.0**	**–2.1**	**...**	–1.6	...	
NPL ratio *(%)* [2]	**13.3**	**9.4**	**9.4**	**8.9**	**8.3**	**...**	...		

Notes: *1. Aggregate figures for the Portuguese banking sector and residents in Portugal. 2. Period-end figure.*
Source: *CaixaBank Research, based on data from the National Statistics Institute of Portugal, Bank of Portugal and Datastream.*

The climate challenge: the future of the planet at stake

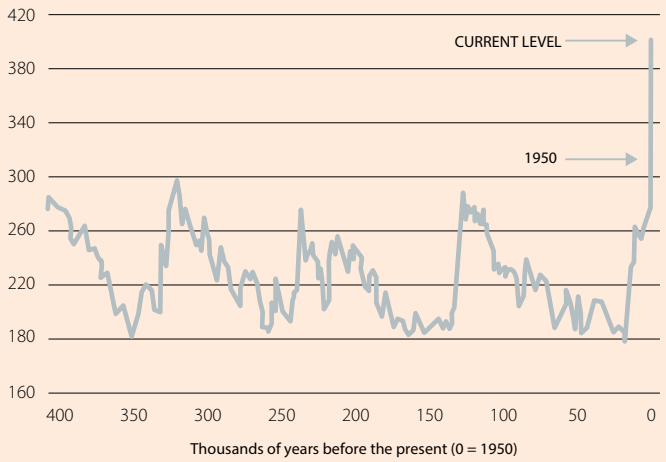
Climate change is a highly topical issue at present: you can see so for yourself every day in the media. Moreover, a huge number of studies have been undertaken on the topic, indicating not only its popularity but also the magnitude of the problem. Indeed, 37% of Spaniards consider it to be the greatest threat facing the world.[1] In this article we will try to determine the scope of this phenomenon.

The phenomenon: scientific and climate evidence

This is a Dossier written entirely by economists. However, we need to take off our economist hat for a moment to briefly explain the scientific basis behind global warming. So, without further ado, let's start. The Earth absorbs half of the radiation that reaches it from the Sun, before emitting it in the form of infrared radiation. A portion of this radiation continues out into space, but another portion is reflected back towards the Earth by greenhouse gases in the atmosphere (mainly carbon dioxide, but also methane and nitrogen oxide). This is what is known as the «greenhouse effect». In theory, this is a positive effect: without it, the Earth's average temperature would be 30°C lower than it is, too cold for most of our ecosystems to survive. The problem lies in the fact that, **since the mid-20th century, the concentration of carbon dioxide and methane in the atmosphere has grown**, causing an excessive amount of infrared radiation to «bounce back» to the Earth's surface and, therefore, a rise in temperatures. For instance, the amount of carbon dioxide in the atmosphere increased by 14.2% between 1765 and 1965, but it has soared by 27.5% between 1965 and the present day.[2]

Concentration of carbon dioxide in the atmosphere

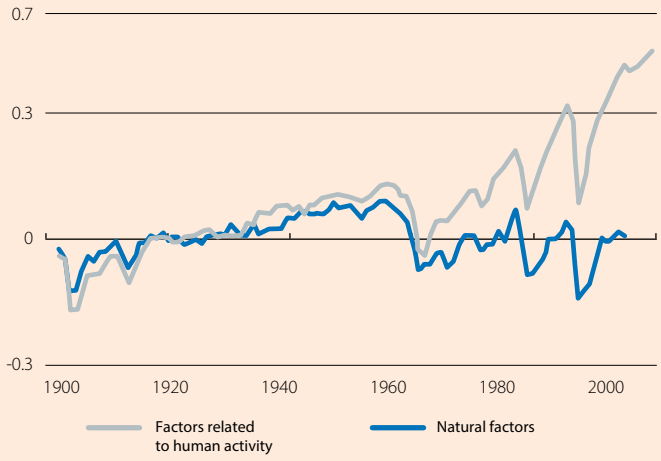
(Parts per million)



Source: *CaixaBank Research, based on data from the NASA.*

Global temperature increase

Deviation from the average for 1850-1900 (°C)



Source: *CaixaBank Research, based on data from M. Huber and R. Knutti (2011). «Anthropogenic and natural warming inferred from changes in Earth's energy balance». Nature Geoscience, 5.*

What lies behind these changes? In a somewhat provocative manner, we could say that there has always been climate change: the climate changes continuously and, in fact, up until the industrial era (which began in around 1750), our planet had warmed up and cooled down in alternating cycles of around 100,000 years in length.[3] What has changed in recent decades is that **human activity** (for instance, through the use of fossil fuels, intensive farming, etc.) **has substantially increased emissions and the subsequent concentration of greenhouse gases in the atmosphere**, which has led to a 1°C temperature rise compared to 1750.[4] Therefore, rather than talk about climate change, it would make sense to talk about **anthropogenic climate change** (caused by human beings).

The scientific community supports the idea that climate change is anthropogenic – there is scientific consensus[5] on this point. One of the most significant studies was undertaken in 2011 by the physicists from the prestigious Federal Polytechnic School of Zurich,[6] Mark Huber and Reto Knutti. In this study, using a relatively simple model of the Earth's energy flows, **they estimated that at least three-quarters of the climate change experienced over the past 60 years is due to human activity**. In contrast, the natural factors that influence temperature changes (such as the Earth's orbit, the level of solar

1. See L. Lázaro, C. González and G. Escribano (2019). «Los españoles ante el cambio climático». Real Instituto Elcano.
2. See Earth System Research Laboratory (2018). «Trends in atmospheric carbon dioxide». US National Oceanic and Atmospheric Administration.
3. These fluctuations would be caused by small changes in the Earth's rotation axis. See J. Clark *et al.* (2009). «The Last Glacial Maximum». Science.
4. Specifically, it is estimated that 72% of the greenhouse gas emissions generated by human activity come from energy production; 11% from agriculture; 6% from industrial processes not related to energy, and 6% from land-use change and forestry.
5. See J. Cook *et al.* (2016). «Consensus on consensus: A synthesis of consensus estimates on human-caused global warming». Environmental Research Letters 11 048002.
6. See M. Huber and R. Knutti (2011). «Anthropogenic and natural warming inferred from changes in Earth's energy balance». Nature Geoscience.

radiation and volcanic activity, among others) could only explain a small portion of the global warming we have experienced in recent decades (see second chart).

Climate change scenarios: what does the future hold?

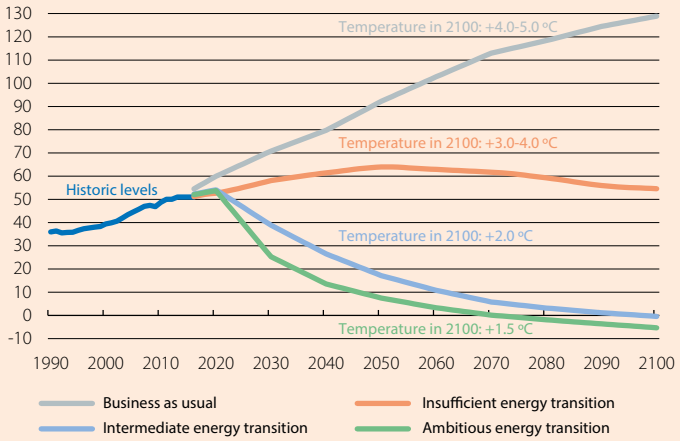
We must bear in mind that the average temperature on Earth will continue to rise in the coming years, even if greenhouse gas emissions were to stabilise today. Therefore, the Earth will continue to heat up in the short term. This is partly as a result of current and recent emissions (the accumulation of gases in the atmosphere is crucial, as the majority of them take years to disappear) and partly due to the thermal inertia of the oceans (between 30% and 40% of carbon emissions in recent decades have dissolved into oceans, rivers and lakes, increasing their temperature and acidity).

The Intergovernmental Panel on Climate Change (IPCC), the group of scientists who advise the UN on this matter, has proposed four scenarios of average temperature rises by 2100 compared to pre-industrial levels (remember that, to date, there has already been a 1ºC rise).

To do this, they have made projections of the levels of greenhouse gas emissions based on the policies adopted and, using historical data, have translated these levels into temperature rises. The four scenarios put forward are as follows:

Carbon dioxide emission scenarios

(Global gigatons)



Note: *The temperature projections in 2100 are increases compared to pre-industrial levels (1750).*
Source: *CaixaBank Research, based on data from the Climate Action Tracker.*

- **Scenario 1. Business as usual**: if no action is taken at all and emissions continue to increase at the current rate, the temperature rise would be between 4°C and 5°C.
- **Scenario 2. Insufficient energy transition**: if the current policies to mitigate emissions growth continue to be applied, the rise would be between 3°C and 4°C.
- **Scenario 3. Intermediate energy transition**: the temperature rise would be 2ºC (or slightly below) if the policies set out in the Paris Agreement were implemented in full.[7]
- **Scenario 4. Ambitious energy transition**: the temperature rise would be 1.5ºC.

What do these figures and scenarios mean? They are simply benchmarks that can help us to glimpse what the future living and environmental conditions on the planet will be like depending on the policies that are adopted today. Scientists agree that **any temperature rise in excess of 2°C would lead to serious climate risks**, such as a significant sea level rise, drought and more violent and frequent weather events (cyclones, hurricanes, floods, etc.).

This does not mean that the consequences of staying below 2ºC are harmless: according to the IPCC, **there is a significant difference between limiting the temperature rise to 1.5°C** (the target sought by the Paris agreement) and to 2.0ºC. For example, in the first case, the number of people who would experience difficulties in accessing safe drinking water would be cut in half.

The great challenge for governments and regulators lies in the fact that limiting the rise to 1.5°C by 2100 requires highly ambitious measures[8] with a significant impact on the productive model and on the vast majority of economic sectors: for example, the goal could be achieved by cutting carbon emissions in half by 2030 and, from 2050, bringing emissions down to zero. These efforts could be supplemented with other measures (such as large-scale reforestation) and the development of technologies that allow a portion of the greenhouse gases we emit to be captured and stored. The technologies in question are yet to emerge, which is why it is essential that public policies support the efforts of the private sector and of the scientific community to develop them. In any case, the sooner action is taken, the less disruption this transition will involve. After all, in view of the scope of the phenomenon, such a transition is inevitable.

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7. The 2015 Paris Agreement set the goal of keeping the increase in the planet's temperature below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5ºC. This goal requires a significant global reduction in greenhouse gas emissions, something that will only be possible in the context of an energy transition that reduces the demand for energy and creates a shift towards cleaner energies.
8. See the article «How to act in the face of climate change? Actions and policies to mitigate it» in this same Dossier for an in-depth analysis of specific measures.

Climate change: consequences and difficulties to mitigate it

We are currently beginning to witness the first consequences of climate change. As an example, it is well known that the rise in temperature is causing the polar ice caps to retreat. However, this could be just the tip of the iceberg if we do not take appropriate action. Below, we consider some of the potential future consequences of climate change, as well as what factors are preventing more progress from being made in the transition towards a greener economy and one that is ultimately more sustainable in the long term.

The costs of climate change

Climatologists agree that the most likely effects of global warming include **the melting of glaciers and the polar ice caps, sea-level rise and more frequent and extreme weather-related disasters**.[1]

However, accurately estimating the extent of these effects is very difficult, since this will depend on the degree to which economies and the population adapt to the new environment. What seems clear is that the rise in temperature **will increase the severity and frequency of extreme events** (or «long tail» events, to use the economic jargon). These are weather events that are not only unpredictable but also have serious consequences, such as cyclones, hurricanes and floods, and the likelihood of them occurring will increase significantly if the rise in greenhouse gases is left unchecked.

It is also very difficult to accurately estimate the economic impact of climate change. The main obstacles in doing so are as follows:

- The aforementioned difficulty in determining the increased frequency of extreme weather events.
- **The close relationship between economic development and climate**. An increase in temperature affects economies in different ways, such as through the economic damage caused by extreme weather events. However, changes in the productive model and in economic growth influence the level of carbon emissions, which ends up influencing how the temperature changes.
- We do not know the scope of **technological change** and the extent to which it will be able to mitigate these risks (for instance, research is being conducted into new ways of absorbing a portion of our carbon emissions, besides reforestation and increasing green spaces).
- How do we **evaluate the economic gains and losses** over the next 100 years? The so-called «discount rate», which seeks to measure current generations' solidarity with future generations, is very difficult to estimate since it depends on the preferences of society as a whole, which can change over time.
- The energy transition will generate **transition** costs for many sectors that will be at risk of falling behind if they fail to adapt to an economy with lower greenhouse gas emissions. Depending on the compensatory measures that are implemented and the speed of the energy transition, companies will be more or less affected.

Do all these pitfalls mean that it is not worth assessing the potential economic impact of climate change in years to come? Nothing could be further from the truth. Better understanding and quantifying the impact of climate change on the basis of a cost-benefit analysis is key, for instance, in order to estimate the damage caused by emitting an additional ton of carbon into the atmosphere. According to the prestigious University of Chicago economist Michael Greenstone, this is «the most important number you've never heard of», and having a decent estimate would help us all to better understand the consequences of our decisions.

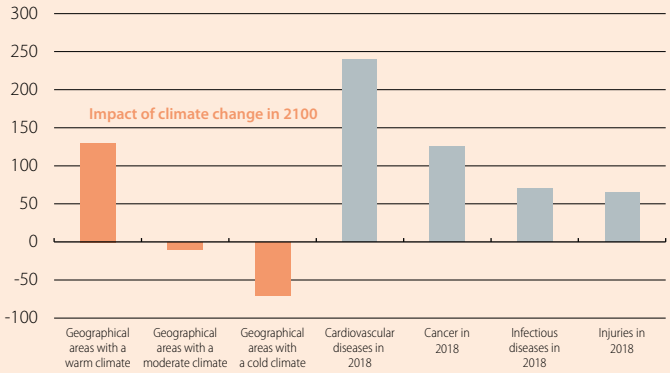
In fact, in recent years, analyses of the economic impact of climate change have improved significantly. A prime example is the article by three Stanford University professors published in 2018 in the journal *Nature*. In this article, they estimate that[2] **in a scenario in which current energy policies continue to be applied, there will be a reduction in global GDP of between 15% and 25% in 2100 compared to a scenario in which temperatures remain at their current levels. The reduction would be even greater than 25% if no action were taken whatsoever** (a business as usual scenario).[3] Furthermore, they estimate that going from a scenario with a 2°C temperature rise to one of 1.5ºC would benefit 90% of the global population in 2100, and would save more than 18 trillion euros (an amount equivalent to one quarter of today's global GDP). One of the criticism this study has received is that it does not account for the transition costs that cutting emissions would entail. All in all, based on other studies, the authors conclude that these costs would be far less than the benefits of limiting global warming. In addition, they argue that their estimate of the economic impact of climate change is a conservative one, as their analysis excludes the impact of extreme weather events.

1. We have already felt its effects: we need look no further than the heat wave that claimed 70,000 victims in Europe in 2003, which is attributable to climate change according to K. Trenberth, J. Fasullo and T. Shepherd (2015). «Attribution of climate extreme events». Nature Climate Change 5.8: 725-730.
2. See M. Burke, M. Davis and N. Diffenbaugh (2018). «Large potential reduction in economic damages under UN mitigation targets». Nature.
3. To calculate these figures, they use a discount rate (3%) that is neither too high nor too low.

We would also like to emphasise that the impact of climate change affects all aspects of life, not just the economic one. The study on mortality led by Greenstone in 2018 is particularly alarming.[4] According to this study, **in a business as usual scenario, climate change would be responsible for 85 deaths per 100,000 inhabitants in 2100** (today, all types of cancer cause 125 deaths per 100,000 inhabitants). This figure was estimated taking into account the costs of humans adapting to the new temperatures and their economic capacity to deal with them. It is also interesting to note that the impact would be negative in areas with high temperatures, and positive in areas with low temperatures,[5] as shown in the chart. Finally, the World Bank estimates that, if we do not take measures, in **2050 the effects of climate change could force more than 140 million people to emigrate**, especially from the poorest countries.[6]

Impact of climate change on mortality

(Deaths per 100,000 people)



Note: *It is assumed that no measures will be taken to curb climate change. The impact takes into account changes in the population's adaptation to the rising temperature.*
Source: *CaixaBank Research, based on data from Greenstone, M.* et al. *(2018). «Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits». Working Paper n.º 2018-51. Becker Friedman Institute. University of Chicago.*

Curbing climate change: where it is going wrong?

If the problem is so severe, why have the appropriate decisions not been taken yet? In this section, we describe some of the factors that make it difficult for more decisive progress to be made in tackling climate change:

- **Lack of information**

  First of all, in order for households, businesses and the public sector to take the right decisions, they should have as much information as possible. Only then will they be able to correctly assess the costs and benefits of their decisions.

  At the start of the industrial revolution, little or nothing was known about the impact of greenhouse gases. At present, although major progress has been made in scientific research on the causes of climate change and its consequences for nature and human activity, there is still a significant portion of the population that is unaware of the consequences of their decisions. Educating people about the origins of climate change and its potential consequences remains essential.

- **Difficulties in factoring in externalities**[7]

  The greenhouse gas emissions that are generated when a company produces something, or when a household consumes it, has costs for society as a whole which that person or company does not usually take into consideration. This is what, in economic jargon, is referred to as a negative externality.

  In contrast, investment in sustainable technologies and energy generates positive externalities. That is to say, besides the direct economic return provided by the investment itself, other benefits are generated for society as a whole (such as cleaner air), which investors do not always take into account as they do not receive any financial reward for them.

  For these reasons, **it is desirable to implement mechanisms that make it easier for all of us, both individuals and companies, to take into consideration the indirect effects of our decisions on the climate**.

- **The free-rider problem**

  «Why should I pollute less when, if everyone else is already doing so, I can benefit anyway?». If we all think this way, greenhouse gas emissions will not be reduced.

- **Short-termism**

  Even taking into account all the available information, and being aware of the costs of some decisions, households, companies and regulators sometimes take decisions that have a detrimental impact on the climate in the medium and long term, as they act thinking only in the short term.

In short, climate change caused by human activity is a crucial challenge for our species that affects us in a multitude of areas. There are no excuses for not addressing it with the seriousness and determination that it deserves. **There is not a second to lose**.

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4. See M. Greenstone *et al.* (2018). «Valuing the global mortality consequences of climate change accounting for adaptation costs and benefits». Becker Friedman Institute Working Paper nº 2018-51. University of Chicago.
5. This is the average effect, i.e. without taking into account the possibility of long tail events occurring.
6. World Bank (2018). «Groundswell: preparing for internal climate migration».
7. In general, externalities are consequences that an economic activity imposes on the rest of society and which are not properly reflected in their price.

How to act in the face of climate change? Actions and policies to mitigate it

In recent years, the need for swift action on climate change has become clear, to the point that we refer to this phenomenon as a «climate emergency».[1] How can we address this situation? In this article, we propose measures to mitigate its effects, or at least to try. This is a collective challenge which must encompass regulators, businesses and households.

Regulators

Regulation plays a key role in the fight against climate change. As such, the measures taken by the regulator must be implemented as quickly as possible and must be part of a clear and stable framework. The longer they take to be implemented, the more costly adaptation will be for businesses and households.

One of the proposals that generates the most consensus among economists is **the introduction of mechanisms that make greenhouse gas emissions more expensive**,[2] modifying as required the incentives for businesses when they invest and produce, and those for households when they consume. Ideally, these mechanisms should enable the cost to the environment of emitting greenhouse gasses to be properly reflected. Furthermore, the revenues that would be generated could be used to compensate consumers for the rise in prices of carbon-intensive goods, as well as to invest in new low-emission infrastructure or to support technological innovations.

However, determining the price of emissions is no trivial task. Some estimates suggest that, in order to comply with the 2015 Paris Agreement, the price on carbon should lie between 36 and 72 euros per ton of CO_2 in 2020, and between 45 and 90 euros in 2030, varying in each economy according to their characteristics.[3] In addition, the IMF estimates that with a carbon price that gradually rises to 68 euros per ton by 2030 in G-20 countries, global warming could be kept below 2°C.[4] Nevertheless, according to data from the World Bank, **currently only 20% of greenhouse gas emissions are taxed, so the average global price of emitting 1 ton of CO_2 is only 1.8 euros.**

European Union: price of carbon in the emissions market

(Euros per metric ton of CO_2)

Source: *CaixaBank Research, based on data from European Energy Exchange.*

There are two mechanisms for increasing the cost of greenhouse gas emissions:

- **Emissions market**. In this system, the regulator sets a limit on the total number of tons of CO_2 that can be emitted per year and region. Then, within this established limit, companies receive or buy emission rights which they can trade between one another according to their needs. The limit decreases each year, giving companies an incentive to emit less CO_2 and to invest in more environmentally sustainable technologies. Currently, the biggest emissions market in the world is in the EU: the European Trading System (ETS) was one of the first emissions markets and regulates 45% of greenhouse gas emissions in the region. Under this system, some emission rights are distributed free of charge (a percentage that decreases year after year). Meanwhile, as can be seen in the chart, the final price determined by supply and demand has been somewhat volatile.
- **Emissions tax**. The regulator sets a price on greenhouse gas emissions, which gradually increases (instead of a quantity that decreases, as in the case of the emissions market). In this way, with a future price escalation laid down from the start, companies can properly plan how to invest in new technologies in the most efficient way.

However, setting a price on emissions involves some challenges that the regulator must take into consideration:

- **Carbon leakage**. The climate challenge is global and knows no borders. If there is no international coordination and carbon emissions are more expensive in some countries than in others, this will undermine the effectiveness of the measures taken since companies could relocate their production centres if the impact on their competitiveness were too high. For this reason, in the absence of international coordination, various economists have argued that it would be a good idea to establish tariffs on imports of carbon-intensive products (to compete on equal terms in the domestic market), while subsidising exporting companies (so that they can compete in international markets).[5]

1. See the first two articles of this Dossier, setting out the causes and consequences of climate change.
2. Although all greenhouse gas emissions contribute to climate change, the rise in temperature caused by man is mainly the result of CO_2 emissions. See IPCC (2013). «Climate Change 2013: The Physical Science Basis».
3. See J.E. Stiglitz, N. Stern *et al.* (2017). «Report of the high-level commission on carbon prices».
4. IMF (2019). «Fiscal Monitor: How to Mitigate Climate Change».
5. This measure can be found in a letter signed in 2019 by 27 Nobel Prize winners and 4 former presidents of the US Federal Reserve Bank, among others. C.L. Council (2019). «Economists' Statement on Carbon Dividends». Wall Street Journal.

- **Political backlash**. With the increase in the price of carbon-intensive products, some vulnerable groups (such as low-income households or the transport sector) could be more adversely affected than the rest of society and end up strongly opposing such policies, as occurred with the yellow vests movement in France.[6] In particular, according to estimates by the IMF, a carbon price of 68 euros would increase the cost of energy consumption by around 45%, and petrol by around 15%,[7] hence the need for the energy transition to be fair and as inclusive as possible. Two solutions have been proposed to solve this potential problem:
  - Directly compensating the groups most adversely affected by this policy using the revenues collected from the price of emissions.
  - Return the revenues collected to all citizens of the region equally, in the form of a lump-sum rebate.[8]

According to the World Bank,[9] there are currently 57 initiatives in the world that increase the cost of carbon emissions (either through a greenhouse gas emissions market or an emissions tax). Among them, **Sweden's carbon tax stands out**, with a price of 115 euros per ton and covering 40% of the country's CO_2 emissions (bearing in mind that emissions already included in the EU ETS are exempt). This measure was introduced in 1995 and has contributed to cutting CO_2 emissions by 25% since then.[10]

All in all, the price of emissions is neither the only solution nor is it sufficient to mitigate the effects of climate change. **In order to be effective, it must be accompanied by other measures that offer sustainable alternatives to both consumers and businesses** (improvements in the energy efficiency of infrastructure, that of urban and inter-urban mobility, or subsidies for research into new technologies, among others).

Businesses

The climate challenge concerns the whole of society, and it is crucial that the private sector also plays a very active role. Thus, **it is essential that companies take on a commitment to the planet's sustainability**. This requires them to incorporate into their mission the interests of all stakeholders that contribute to the creation of business value: customers, shareholders, employees and society as a whole.

In this regard, a wide range of indicators besides financial profits are becoming increasingly important. These include the SDGs (sustainable development goals), a set out 17 goals adopted by the United Nations to eradicate poverty, protect the planet and ensure prosperity for all. Of particular use for analysing the specific areas in which businesses can contribute to the sustainability of the planet is the information provided by the so-called *Observatorio ODS* (SDG Observatory), which evaluates Spanish companies' compliance with the SDGs. With regard to environmental issues, the Observatory's second report[11] analyses the progress made by Spanish listed companies in 2017 in areas such as the use of renewable energy, water consumption, waste management, emissions reporting and levels, and environmental policies. The report notes an improvement compared to the previous year, but points out that there is still a long way to go: in 2017, 34% of listed companies reported the use of renewable energies in their annual reports (26% in 2016) and 35% claimed to have reduced greenhouse gas emissions (20% in 2016).

It is also important to emphasise that **in no way is this commitment to sustainability at odds with companies' financial profits:** those that undertake to take measures in line with the SDGs can benefit, in the short term, from greater customer loyalty, greater commitment from their employees and lower costs of capital.[12] On the other hand, there is a reputational risk for companies that are perceived as being part of the problem and are not taking decisive action to curb climate change. In the medium and long term, those that have been unable to adapt or to innovate in this direction could face serious difficulties in the new regulatory environment or when faced with rejection from increasingly conscientious consumers.

Households

Households are key to the acceleration of these changes in the regulatory and business environment. If citizens do not demand stricter regulations on greenhouse gas emissions, it will be more difficult for policy makers to set a suitable price that taxes them in order to (at least) comply with the Paris Agreement. Furthermore, without a change in consumer preferences for carbon-intensive products, companies that produce them will not be so incentivised to innovate in greener technologies.

In order for this change in individuals' preferences to occur, the impediments to the fight against climate change set out in this dossier must be overcome. For instance, if we do not know what damage our actions cause to the environment, we will not be able to make the right decisions. In addition, we may often think that individual actions against climate change are insufficient – what we economists refer to as the «free-rider problem». To some extent this is true, since, for example, one person using energy-efficient household appliances is not much use if the rest of the world is using much more polluting appliances. However, **the actions that one takes have the ability to influence those around us and can end up creating virtuous circles**.

In short, we must keep in mind that **in the fight against climate change there will be winners and losers**, and that latter will need to be compensated. But we must also keep in mind that **if it is not addressed, there will not be any winners at all**. After all, the climate emergency is precisely that - an emergency - which is why we must act as soon as possible and in the most fair and ambitious way we can.

Ricard Murillo Gili

6. See the article «Political instability in Europe: France in the eye of the storm» from the MR04/2019.
7. See note 4.
8. See note 5.
9. https://carbonpricingdashboard.worldbank.org/
10. See V. Gaspar *et al.* (2019). «Fiscal Policies to Curb Climate Change». IMFBlog.
11. See À. Castiñeira *et al.* (2019). «La contribución de las empresas españolas a los objetivos de desarrollo sostenible. Segundo Informe». ESADE and "la Caixa".
12. IMF (2019). «Global Financial Stability Report: Lower For Longer». Chapter 6: *Sustainable Finance: Looking Farther.*

Climate change, the green transition and the financial sector

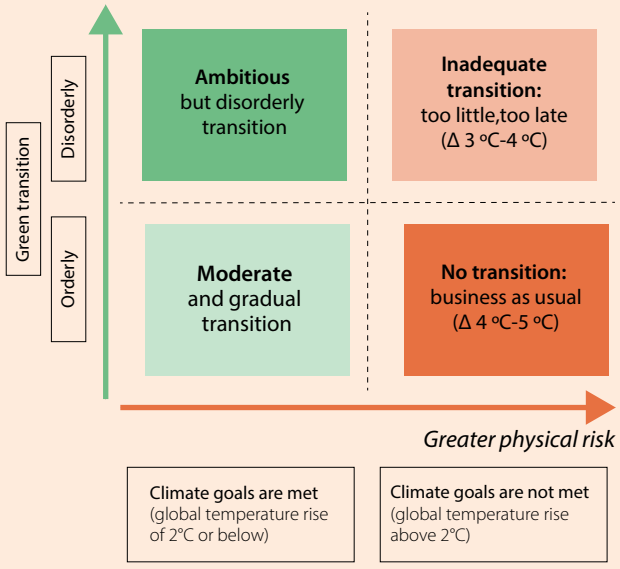
Climate change and the transition towards a low-carbon economy also involve the financial system. Firstly, this is **because of its role as an intermediary between savings and investment**, since the financial sector can facilitate the channelling of funds towards activities that contribute to the green transition.[1] Secondly, **climate change and actions to mitigate it involve financial risks**. In this article, we focus on analysing the implications of climate change for the financial sector and the transition towards a low-carbon economy.

Economies face two types of risks associated with climate change:

- **Physical risks**, which stem from the direct effects of climate change, such as **more frequent and extreme weather events and changes in the balance of ecosystems**. These risks can manifest themselves suddenly (in the form of specific events, such as floods or storms) or gradually (as changes in weather patterns). In addition, these risks can lead to substantial increases both in the costs to address them and in the physical damage caused to the productive capacity of businesses (such as disruptions in their supply chain) and to household assets. Thus, **virtually all sectors of the economy face the physical risks**.
- **Transition risks**, linked to the **transformation towards a low-carbon economy**. Transition risks derive from **regulatory changes** (such as strict limits on emissions of carbon dioxide and other greenhouse gases)[2] and **technological changes**[3] (such as fully electric transport systems) required to achieve the goal of decarbonisation. Furthermore, the green transition could entail **demand-side changes** resulting from evolving consumer preferences and behaviour as they become more sensitive to environmental issues. All this will generate new opportunities, but it could also affect the performance of various economic sectors and the market valuation of a wide range of assets, with the financial implications this entails.[4]
- **The physical risks and those associated with the green transition are interrelated**. The physical impact of climate change largely depends on the corrective actions taken in the short term by governments, investors, businesses and consumers. In particular, if the corrective action is ambitious and taken early, the transition risks may be higher but the physical risks will be lower. On the contrary, belated and weak corrective action (entailing lower transition risks) would increase the physical risks associated with climate change. There are also potential scenarios in which both risks are high, such as if the corrective action is sudden and occurs late, when some of the physical risks are already difficult to avoid.[5] Thus, depending on the speed and intensity of the actions aimed at mitigating the effects of climate change, different climate scenarios emerge (see chart).

Climate scenarios and risks

Greater transition risk



Source: *CaixaBank Research, based on the Network for Greening the Financial System.*

For the financial sector, the impact of the **risks associated with climate change could materialise through the traditional risks facing the sector**. In particular, **both the physical and the transition risks could have an impact in terms of credit, reputational, operational and market risks.**[6] For instance, extreme weather events can cause significant damage to assets and reduce borrowers' payment capacity. For the banking sector, this can lead to an increase in the likelihood of default and a loss of value of loan collateral. In addition, credit risk can arise from exposures to companies with business models that are not aligned with the transition towards a low-carbon economy. Another example would be the physical damage caused to buildings by extreme weather events, which would pose an operational risk.

1. See the article «Green finance in focus» from the MR04/2019.
2. The 2015 Paris Agreement, for instance, poses a transition risk driven by regulatory changes. In particular, the signatory countries agreed to limit global warming to below 2°C through a drastic reduction of greenhouse gas emissions. This will require regulatory measures and significant changes in industrial and energy policies, among other elements.
3. The technological risk is associated both with the speed and scale of new technologies and with the degree of transformation and disruption in the various sectors facing the irruption of these new technologies.
4. European Systemic Risk Board. «Too late, too sudden: Transition to a low-carbon economy and systemic risk». Reports of the Advisory Scientific Committee, nº 6.
5. See Clara I. González and Soledad Núñez, 2019. «Mercados, entidades financieras y bancos centrales ante el cambio climático: retos y oportunidades», Working Papers 019-06, FEDEA.
6. The risk resulting from the behaviour of a class of assets or a market. Some examples include substantial and sudden changes to asset prices, which render some assets obsolete.

In this context, the need to assess and integrate climate risks into the set of risks that can affect the financial sector is shared by both the financial institutions that make up the sector and the regulators and supervisors. However, this is no easy task, since the very nature of climate risks makes them difficult to **identify, measure and assess**:

- First of all, **the physical risks associated with climate change are difficult to discern**. Specifically, their **occurrence and magnitude are unpredictable, they have wide-ranging consequences** (affecting multiple sectors, lines of business and geographical areas), and **the time horizon over which they can materialise** is long, unknown and largely **exceeds the traditional decision-making horizon** used by the various economic players. In contrast, the effects of climate change depend on the actions that are taken today, and it is precisely this temporary mismatch between action and impact (the so-called «tragedy of the horizon») that makes climate risks difficult to discern.[7]

- Secondly, the **transition risks are doubly uncertain**. On the one hand, the path towards a low-carbon economy is itself unknown. The change could happen quickly but in an uncoordinated and costly manner (in which case the transition risks would be particularly high),[8] it could happen in a gradual and orderly manner (in which case the transition risks would be low), or the extent of the transition could prove inadequate (in which case there would be a surge in the physical risks). On the other hand, within each trajectory, the terms and conditions for decarbonising the economy are also uncertain.

- Thirdly, **it is difficult to measure the impact of the physical and transition risks on the financial sector**. This is partly due to the **lack of corporate information** (in the public domain) **on the financial impact of climate risks and their consideration at the strategic level**. For instance, there is no **standardised taxonomy** that clearly separates activities that are considered green[9] from those that are not, and that clarifies precisely how green each activity is. There are also currently **no common standards for the disclosure of climate-related financial information**. This is relevant because it hinders transparency, the establishment of clear benchmarks and the evaluation of questions such as which companies can make the most of the opportunities offered by a low-carbon economy, or which companies are best prepared to cope with climate-related risks. This lack of information can also lead to an incorrect valuation of certain assets and to an inefficient allocation of capital. In this context, initiatives to establish common standards are very welcome. These include the recommendations by the Task Force for Climate-related Financial Disclosures (TCFD), an initiative of the Financial Stability Board for the corporate disclosure of financial risks associated with climate change. All in all, to date, **climate risk disclosure initiatives have been limited in scope or have been developed on a voluntary basis**.[10]

- Finally, **the lack of appropriate methodologies makes it difficult to assess climate risks** and to incorporate them into internal risk models. Risk analysis requires scenarios to be designed, the economic impact to be analysed and the financial risks in each scenario to be assessed. Assessing climate risks also requires a much longer forecasting and analysis horizon than usual.[11] In addition, estimating the impact that climate change will have on the economy as a whole, and on the financial sector in particular, is a complex task, particularly when the historical data are a poor indicator for what will happen in the future. For instance, the risk associated with the green transition has not been seen before, which makes it difficult to estimate using current tools. Similarly, there is insufficient data and scientific knowledge to assess the physical impact that could have a global temperature rise well above what has been historically observed.[12] Finally, scenario analysis is a relatively new and complex practice, and many of the climate scenarios (such as those developed by the IPCC)[13] are intended for use in policy-making and scientific research, rather than in corporate and financial analyses.

In short, **climate change is a global challenge** (in terms of both its causes and its consequences), **which requires global solutions and a high degree of coordination** between all economic players and sectors. In this context, an **early, gradual, orderly and fair transition towards a low-carbon economy** is key to reducing the potential impact of climate risks on the economy as a whole, and on the financial sector in particular. It is also, therefore, important for the financial sector to have the necessary tools, methodologies and standards in order to properly assess and manage the financial risks associated with climate change. In this way, the sector will be able to contribute effectively to driving change.

Roser Ferrer

7. Bank of England (2015). Speech by Mark Carney. «Breaking the tragedy of the horizon – climate change and financial stability».
8. As an example, a belated recognition of the importance of controlling emissions could result in a sudden implementation of restrictions and regulations on the use of energy sources from fossil fuels playing catch-up.
9. The work by the European Commission to support future legislation on a Europe-wide sustainable taxonomy is a step in the right direction.
10. Bank of England (2019). Speech by Mark Carney. «TCFD: strengthening the foundations of sustainable finance».
11. In general, financial regulatory frameworks tend to focus on risks to financial stability over the next 2-3 years, so they are not designed to capture unconventional risks over the long term.
12. Also see the article «The climate challenge: the future of the planet at stake» in this same Dossier.
13. Intergovernmental Panel on Climate Change.

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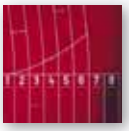

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