Financial Stability Note
No. 9 January 2019

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The Financial Stability Note is framed within the tasks that the CNMV carries out to monitor financial stability conditions in the areas it supervises. In particular, the Note assesses the stress level of domestic securities markets during the last quarter, identifies changes in the level of different financial risks and identifies the major sources of risk.

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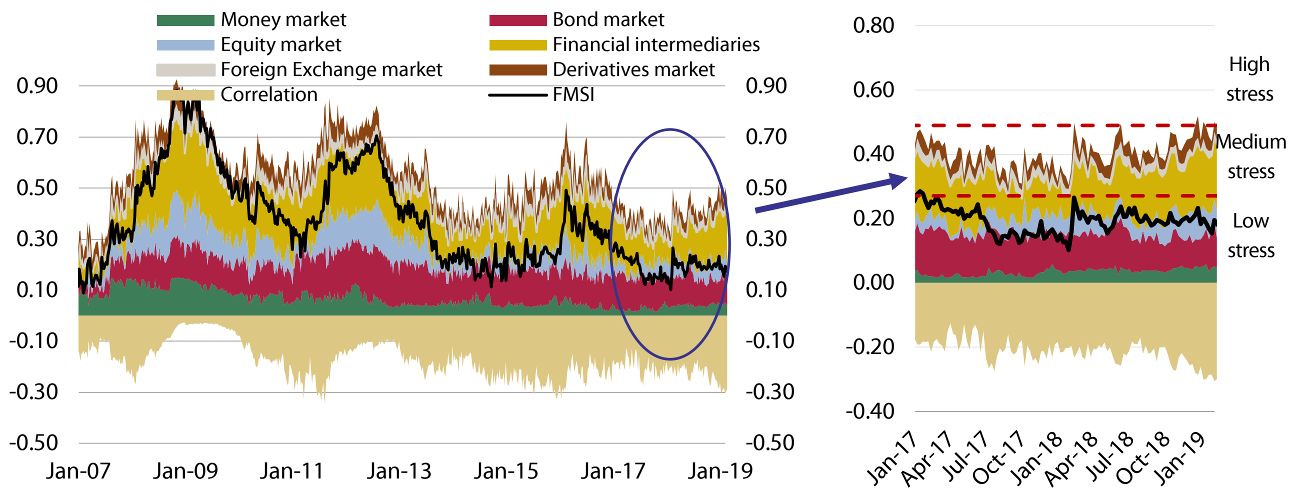
Summary

- ✓ The Spanish financial market stress index has remained at low levels since publication of the last Stability Note (October 2018). It only recorded a slight upturn at the end of last year (to 0.23) that coincided with the moments of greatest stock market uncertainty. At the end of January, it stood at 0.19[1] and it has fluctuated around that figure for practically one year. The highest stress levels were recorded in the financial intermediaries segment (mainly comprising banks) and in the fixed-income segment. The high level of stress in the banking sector is the result of the prolonged fall in share prices resulting from several uncertainties weighing on the development of banking operations together with occasional increases in volatility. The increase in the fixed-income segment is the result of the liquidity and volatility indicators.

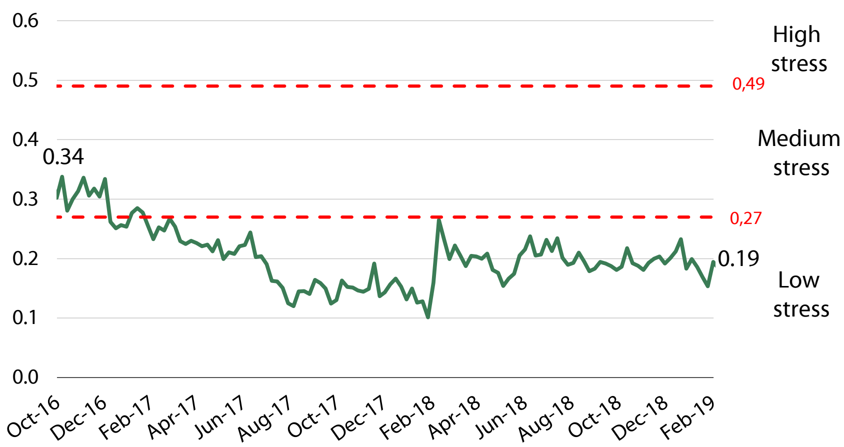
Spanish financial markets stress index

FIGURE 1



Source: CNMV.

For further details on recent movements in this index and its components, see the CNMV's statistical series (market stress indices), available at http://www.cnmv.es/Portal/Publicaciones/SeriesWeb/Inicio.aspx?codrama=1295. For further information on the methodology of this index, see Cambón M.I. and Estévez, L. (2016) A Spanish Financial Market Stress Index (FMSI). Spanish Review of Financial Economics 14 (January (1)), 23-41 or CNMV Working Paper 60 (http://www.cnmv.es/portal/Publicaciones/monografias.aspx).



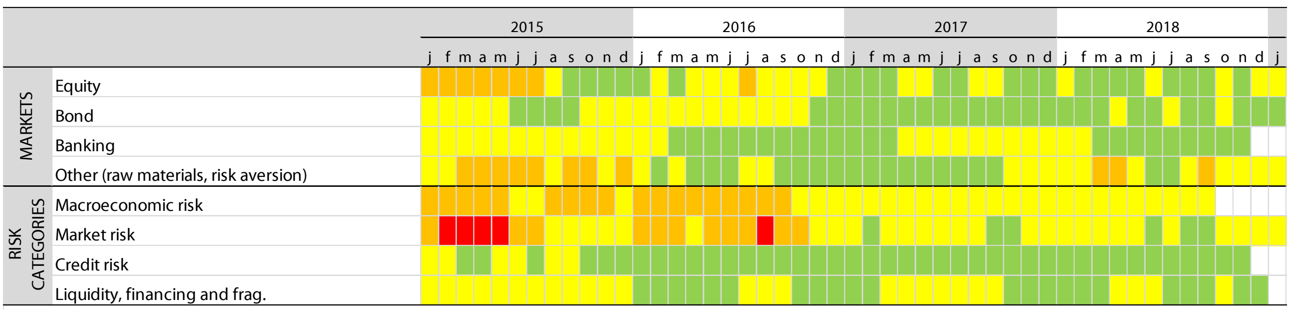
[1] The closing date of the note is 31 January, except for the stress index, which includes information to 1 February and some other specific figures.

- ✓ The macroeconomic performance of Spain is framed in a context of slowing economic growth worldwide related to the presence of several sources of uncertainty (disagreements relating to international trade, Brexit, and the lack of fiscal consolidation in Italy, among others). There has also been a slowdown in growth in Spain, but lower than that taking place in the euro area. The latest IMF forecasts place GDP growth in 2019 at 2.2% (2.5% in 2018) compared with 1.6% in the euro area (1.8% in 2018). The most significant challenges for the Spanish economy are still linked to the high level of debt in some sectors, particularly the general government, the ageing of the population, the difficulties faced by the banking sector in raising its returns, the still high unemployment rate and the level of parliamentary fragmentation.

- ✓ As in other comparable markets, Spanish equity markets have reflected the aforementioned uncertainties, which have outweighed the relatively positive performance of the economy. Movements in share prices were particularly unfavourable in the last quarter of 2018 (the Ibex 35 declined by 9%), raising the annual losses of the leading Spanish index to 15%. Share prices recovered significantly in January (6.1%) and in some cases stood at attractive levels following the sharp falls of 2018. However, the market remains highly sensitive to the appearance of information that is not in line with analysts' expectations. In sector terms, it is banks that are going through the most complex situation given the variety of factors that affect (or may affect) the development of their business.

- ✓ The likely maintenance of euro area interest rates at low levels in the short term, which modifies the expectation of a growth in rates held until recently, may have somewhat contradictory effects: on the one hand, it reduces the risk of an increase in finance costs, but maintains borrowing incentives in an economy with high (albeit falling) debt levels and, on the other hand, although it mitigates the probability of fixed-income assets losing value, it encourages the search for yield through riskier assets. As a result, the market risk of debt assets has eased slightly, but it remains high in some segments, particularly in high-yield assets. Further deterioration of the economic environment might quickly trigger an upturn in the credit risk premiums of these assets.

Heat map: summary by market and risk category FIGURE 2



Source: CNMV. See article in CNMV Quarterly Bulletin Quarter 1 2015. "Identification of vulnerabilities in the Spanish financial system: an application of heat maps". Data until 31 January.

Sources of risk

Macroeconomic environment

- In the last quarter of 2018, the GDP of the Spanish economy continued to expand at a good rate, recording growth of 0.7% in quarter-on-quarter terms (0.1 percentage points up on the previous quarter) and 2.4% in year-on-year terms (the same figure as in the third quarter). These figures remain higher than those in the euro area, which recorded growth in the fourth quarter of 0.2% (quarter-on-quarter) and 1.2% (year-on-year) (Figure 21). In this context, employment continued to increase at rates of close to 2.5% (Figure 23), which allowed a fall in the unemployment[2] rate to 14.5% in the fourth quarter (16.6% one year earlier). However, the preliminary data for January reflect a certain worsening of the situation, with 200,000 fewer contributors to the Social Security system. Inflation has been progressively falling since October and closed the year at 1.2%, 0.5 percentage points lower than in November. This was mainly the result of the moderation in the year-on-year rate of change in transport prices (from 3.2% in November to 0.2% in December), as a consequence of the fall in fuel prices (Figure 22). The core inflation rate, however, which excludes the most volatile elements (energy and fresh food), remained at 0.9% (1% in the euro area). The preliminary data for January suggest that inflation in Spain continued to fall, with an estimated year-on-year price increase of 1%.

- The latest data for public sector finances show that the gradual reduction in the deficit continues. Between January and November, the combined debt of the general government, excluding local authorities, stood at 1.5% of GDP, 0.6 percentage points lower than in the same period of 2017. For 2018 as a whole, the deficit is estimated to stand at around 2.6%-2.7% of GDP (3.1% in 2017), which is therefore compatible with Spain exiting the excessive deficit procedure. The level of public debt at the end of the third quarter of 2018 stood at 98.3% of GDP, a figure that is very similar to that recorded over the last three years[3]. The reduction in the debt is expected to continue over this year, but some estimates place it at a little over 2% of GDP, thus exceeding official targets, such as those in the Budgetary Plan. The public debt ratio will also fall, albeit very gradually[4].

- According to the latest IMF forecasts, the global economy will continue to grow with some intensity over the next two years, although the forecasts have been downgraded and growth is expected to be less synchronised between countries. In particular, global growth is estimated at 3.5% and 3.6% in 2019 and 2020, respectively, 0.2 and 0.1 percentage points down on the October forecasts. By country, it is worth noting the downgrading of the expected growth in some euro area economies, such as Germany, where it is being cut by 0.6 percentage points to 1.3%, and in Italy, with a reduction of 0.4 percentage points to 0.6%. The downgrade in the leading European economy is the

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[2] Unemployment rate according to the EPA (labour force survey).
[3] Public debt ended 2015, 2016 and 2017 at 99.3%, 99% and 98.1% of GDP, respectively.
[4] According to Bank of Spain forecasts, this ratio will fall to 95% of GDP in 2021.

result of the introduction of the Worldwide Harmonised Light Vehicle Test Procedure[5]) (WLTP), which is predicted to have a significant effect on the automotive industry (although its effect is expected to be temporary) and restrictions on world trade. The downgrade in Italy is largely the result of the increase in domestic financial risks. In the case of Spain, the IMF has maintained its growth forecasts at 2.2% for 2019 and 1.9% for 2020. These forecasts are similar to those issued by other bodies, such as the Bank of Spain and the European Commission.[6]

- The international economic environment continues to be immersed in numerous uncertainties, which include the measures restricting world trade, the effects of the shift in monetary policy in advanced economies, which might have a significant impact on capital flows in emerging economies, doubts about the final Brexit agreement and the level of fiscal consolidation in Italy. In Spain, a short-term factor of uncertainty is the political situation, which is characterised by a high level of parliamentary fragmentation. Significant risks in the medium term include the maintenance of high, albeit falling, levels of debt in the economy, the high unemployment rate, the need to make progress in the fiscal consolidation process and the need to address challenges arising from an ageing population.

Low interest rate environment

- Even though the ECB had signalled at its December meeting its commitment to keep interest rates unchanged at least through the summer of 2019 and that its monetary policy would remain accommodative over an extended period of time[7], economic agents and investors expected for some time an additional signal of the normalisation of monetary policy. These expectations disappeared in January following the ECB's confirmation that economic growth was weaker than expected, in a context of contained inflation[8]. In parallel, agents also relaxed their expectations on the pace at which the Federal Reserve[9] would tighten monetary policy in view of the statements made by the Fed itself. Known growth and inflation data in the euro area, as well as the outlook[10] for their evolution over the coming months corroborate these estimates and it is therefore reasonable to believe that interest rates will remain at current levels for an extended period of time. Should this expectation be confirmed, some of the trends observed in the past may be maintained and, in some cases, intensified: (i) increased incentives to borrow, in an economy that has high rates of debt, (ii)

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[5] See https://www.boe.es/doue/2017/175/L00001-00643.pdf
http://europa.eu/rapid/press-release_MEMO-18-3646_en.htm

[6] The Bank of Spain's forecasts for Spanish GDP growth in 2019 and 2020 are the same as the IMF forecasts, while the European Commission estimates growth of 2.1% for 2019 and 1.9% for 2020, in both cases 0.1 percentage points below their previous forecast. The European Commission forecasts were published at the start of February.

[7] In December, the ECB confirmed the end of its asset purchase programme, but it indicated that it will reinvest the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising interest rates. In addition, the ECB announced that it will conduct surveys on banks with regard to their monetary policy expectations before taking policy decisions. The first survey will be conducted for the April meeting and a total of eight surveys will be carried out in 2019, in line with the central bank's scheduled monetary policy meetings.

[8] Inflation in the euro area fell to 1.6% in December 2018, its lowest level since April. The preliminary data for January 2019 place inflation at 1.4%.

[9] The Federal Reserve gave indications that the process of raising interest rates would be more gradual in 2019 and 2020.

[10] In January, the IMF updated its World Economic Outlook report, downgrading the growth forecast for the euro area to 1.8% in 2018, 1.6% in 2019 (0.3 percentage points down on the October forecast) and 1.7% in 2020, with downward revisions of the growth rates of Germany, France and Italy (see section above).

investors' greater propensity to acquire high-risk assets in the search for yield, and (iii) difficulties for the banking sector to raise its profitability.

- With regard to households' financial decisions, the data from the Financial Accounts corresponding to the third quarter of 2018 show a prolongation of the major trends that began in 2013: investment in term deposits and fixed-income securities is falling due to their low return, although less sharply than in previous years (3.5% of GDP[11] compared with 6.3% in 2017), while investments are being made in more liquid assets[12] (4.2% of GDP) and in investment funds (1.8% of GDP). It is important to note that in the field of investment funds, unit-holders have been showing a clear preference for higher-risk categories: cumulative data from the last four quarters until September 2018 show that the most conservative categories recorded net redemptions in an amount of almost 8.4 billion euros, while higher-risk categories received a significant inflow of investment, particularly global funds (over 13 billion euros). International equity funds and mixed equity funds also received significant subscriptions, with figures of over 4 billion euros.

- In the final part of the year, the price falls in financial markets (particularly equity markets) led to a reduction in the assets of these funds, which is basically the result of the loss in the value of their assets in portfolio. Unit-holders demonstrated a certain increase in risk aversion as they made significant subscriptions in guaranteed equity funds and redemptions in absolute return funds. With the information available to date, it is difficult to predict whether this risk aversion will persist over time. In theory, the maintenance of low interest rates will continue to encourage the search for yield, although it is not possible to rule out temporary reversals of this trend in the event of new episodes of market volatility. It should also be noted that the collective investment sector faces a complex year in which the rules resulting from MiFID II will be fully applicable, which will affect the distribution model of these products, which are very popular among Spanish retail investors.

- The banking sector continues to face a complex environment that is conditioned by low interest rates that apply downward pressure on its margins and profitability. In addition, some banks still hold a significant volume of non-performing assets and continue to suffer from the risks of some emerging markets and the exposure of their portfolios to Italian debt. However, the information from the income statements for the second half of the year showed that the sector performed positively thanks to the contribution from subsidiaries abroad, cost containment and the reduction in impairment provisions and losses. The sector's level of solvency is favourable, but emphasis continues to be placed on the need for these entities to continue strengthening their capital levels. The biggest risks faced by the sector are related to the slowdown in economic activity, which might affect their business and NPL ratio, and to the prolongation of low interest rates. They also face other reputational risks,

[11] Cumulative data from four quarters up to the third quarter of 2018.
[12] Cash and sight deposits.

some regulatory uncertainties and growing competition from new technology operators (fintech and insurtech).

Sources of political uncertainty

- The tariff measures adopted by the US administration in 2018 and the consequent reprisals by China had a negative impact on international equity markets, which ended the year with heavy losses, also as a result of the signs of a significant slowdown in world economic growth. However, after activating tariffs of 25% and 10% on imports from China valued at 50 billion dollars and 200 billion dollars, respectively, the United States delayed in December the additional increase in tariffs that it had announced for the start of 2019 (an increase from 10% to 25% in Chinese imports worth 200 billion dollars) until March, with the aim of negotiating a trade agreement with China. A future escalation in the adoption of protectionist policies that might have a negative impact on financial markets cannot be ruled out.

- In Europe, Brexit remains one of the main sources of political risk for the economic and financial scenario. After the British Parliament rejected in January the deal negotiated over recent months between the United Kingdom (UK) and the European Union (EU) and at only a few weeks from the planned exit, the uncertainty surrounding the possible results of the negotiation process and the future relationship between the UK and the EU has intensified, raising the likelihood of a no-deal Brexit.

- The concerns relating to the impact of the fiscal policies proposed by the Italian government on the sustainability of public finances in said country continued to be reflected in the price of the Italian sovereign bond in November, when its yield stood at over 3.6% and the risk premium over the German bond reached 327 bp (the highest level since 2013). However, the yields on Italian public debt fell in December following the announcement of the modifications that the Italian government introduced into its 2019 budgetary plan. The amendments received the approval of the European Commission and avoided activation of the excessive deficit procedure.

- In Spain, the current scenario of parliamentary fragmentation and political tensions in Catalonia continue to be factors of uncertainty.

Risk categories

Market risk: yellow

- In 2018, international equity markets were affected by several sources of uncertainty that intensified in the final part of the year, giving rise to significant falls in share prices. As mentioned in a previous section, these uncertainties included doubts relating to trade tensions between the US and China, the tightening of monetary policy in the US and its consequences on some emerging economies, the level of sustainability of the public finances of some European economies, the outcome of Brexit negotiations and, at the end of the year, the fear of a sharper than expected slowdown in world growth. In the first few weeks of this year, equity markets recovered a large part of the losses recorded in the previous year (in some cases all the losses) after discovering the position of the ECB[13] and the Federal Reserve, which are more willing to delay (in the case of the former) and to make more gradual (in the case of the latter) interest rate rises in the current context of a slowdown in growth. The fact that many companies recorded attractive share prices for a good number of investors, following the losses of 2018, also had a positive impact.

- In this context, the leading stock market indices recorded losses in 2018 as a whole, which were particularly significant in the case of European markets and in Japan. In the case of US markets[14], the gains in January offset all the falls of the previous year, with a noteworthy recovery in the NASDAQ technology index, although many investors continue to warn that some technology companies are overvalued. Indices in Europe[15], where the falls in 2018 had been sharper, recovered but with less intensity as a result of fears relating to the slowdown in the economy together with the perception that the Brexit scenario is becoming increasingly complex with only a few weeks left until, in theory, the UK leaves the EU.

- In Spain, the Ibex 35 ended 2018 with a loss of 15%, in line with the falls of the leading European markets. In January, it recorded a gain of 6.1%, the best January performance since 2011. Among the Spanish shares, every sector performed positively, but the largest increases were recorded in the consumer goods and services sectors, which had been heavily penalised in the previous year. Similarly, there was a noteworthy recovery in small-cap companies, which are more exposed to the performance of the national economy, which performed more dynamically than in other neighbouring European countries. In the case of banks, which began the first week of 2019 with significant gains, the verification that the ECB's monetary policy will remain virtually unchanged for an extended period of time moderated the initial rises as a result of the expectation that the sector's margins will remain tight over the short term.

[13] In its statement at the end of January, the ECB reported that the data on the European economy were weaker than expected and that inflation was contained.
[14] In the last quarter of 2018, the US Dow Jones, S&P 500 and Nasdaq indices recorded falls of 11.8%, 14% and 17.5%, respectively, for a cumulative annual loss of 5.6%, 6.2% and 3.9%, respectively. In January 2019, they gained 7.2%, 7.9% and 9.7%, respectively.
[15] The main European indices fell between October and December, by 13.8% in the case of the German Dax 30, by 13.9% in the case of the French CaC 40, by 11.5% in the case of the Italian Mib 30 and by 11.7% in the case of the European Eurostoxx 50, accumulating falls of 18.3%, 11%, 16.1% and 14.3%, respectively, over the year as a whole. In January 2019, these indices gained 5.8%, 5.5%, 7.7% and 5.3%, respectively.

- The price-earnings (P/E) ratio fell from 11.4 in the middle of September to 10.8[16] in December (its lowest level since the first half of 2012), but rose slightly in January to 10.9 (its historical average is 13.5). This ratio fell as a result of the movements in companies' share prices as the expected earnings per share remained stable (Figure 4). Reported aggregate short positions[17] at the end of December stood at under 0.9% of total market capitalisation (Figure 3).

- Although the market risk for debt assets has eased in recent weeks as a result of lower expectations of rate hikes, it still remains high, particularly in high-risk corporate debt, as a deterioration in the economic environment might lead fairly quickly to an upturn in credit risk premiums. A context of economic slowdown and a worsening of both public accounts and expected business earnings would put upward pressure on the yields demanded of debt with lower credit ratings and longer maturities.

- In the public debt segment, the yield demanded by investors fell at the end of last year as a result of the easing of tensions relating to Italian debt, as well as the status of these assets as safe havens at times of greater stock market volatility. All of this led to a fall in the yield on the sovereign debt of euro area countries[18] that ranged from 12 bp in France to 81 bp in Italy (34 bp in Spain). The volume of Spanish government bonds held in the ECB's portfolio stood at 257.74 billion euros[19] at the end of January.

- Corporate bond yields, for the time being, continue recording a slight upward trend that is related, above all, to the impact of the disappearance of the ECB's asset purchase programme[20]. In the future, it is possible that the economic slowdown might affect the expected rate of growth in business earnings and companies' financial health, which might place upward pressure on their credit risk premiums. This risk, which is more significant in the subordinated debt and high-yield segments, as indicated above, should be appropriately assessed by investors in these assets.

Credit risk: green

- Sovereign and private Spanish issuers risk premiums suffered from market uncertainties in the final part of last year, although they dipped over January. The sovereign risk premium, which rose in the middle part of the last quarter of 2018, coincided with increased doubts about Italy, dipped at the end of December thanks to the reduction in tensions in the European Union, the status of debt as a safe haven asset in the context of significant stock market falls and the ECB's confirmation that the shift in its monetary policy would be gradual[21]. Accordingly, the spread between

[16] In the same period, the P/E ratio of the European Eurostoxx 50 and the US S&P 500 stock indices fell to 11.7 and 15.2, respectively, their lowest levels since the end of the first quarter of 2016.
[17] The CNMV has stopped publishing in 2019 the aggregate short positions by share (resulting from the reporting received on short positions of over 0.2% of the capital), thus applying the same criteria as other European supervisors.
[18] Between the highs recorded at the end of October and the end of 2018.
[19] This amount accounts for 28.7% of the balance of long-term debt securities issued by the State.
[20] In the context of this programme, the ECB had acquired corporate debt in an amount of 177.83 billion euros, of which 17.55% was purchased on the primary market.
[21] In mid-December, the ECB confirmed the end of its asset purchase programme (as from 19 December) as expected, but it announced that it would reinvest, in full, the principal payments from maturing securities purchased under the programme (2.6 trillion euros) for an extended period of time past the date when it starts raising interest rates.

the yield on the ten-year bonds in Spain and Germany – which reached a high of 133 bp in October – ended the year at 117 bp (Figure 11) and continued to fall over January (104 bp on the closing date of this note).

- The risk premiums of banks also rose in the last part of 2018 as some of these banks hold significant exposure to Italian debt assets as well as to some emerging economies that are undergoing difficulties. In addition, the delay in the normalisation of monetary policy in the context of rising risks (economic slowdown, regulatory and fiscal changes) hinders an improvement in the sector's margins and has an impact on its risk premiums, which ended December 2018 at an average of 108 bp (99 bp at the end of January). The risk premiums of non-financial companies also rose slightly at the end of the year (to 78 bp) after the end of the ECB's corporate sector purchase programme. Subsequently, when it became clear that the interest-rate hikes would be delayed over time, CDS spreads fell slightly to 66 bp on average at the end of January.

- The evolution of lending to non-financial sectors[22] of the economy is improving discreetly thanks to the positive performance of lending to companies, which offsets the slowdown in lending to households. Lending to households grew slightly in annual rates thanks to the expansion of consumer loans, although the rate of growth of such loans slowed to 4.8% in December – its lowest rate in 15 months. Mortgages continued to fall (-1.4% in December), although at the lowest rate since the end of 2011. Lending to non-financial companies rose by 1.2% in annual terms in December, mainly as a result of the increase in debt issues (9.4%). In this regard, large financial corporations maintained their debt issuing activity abroad, but they have re-orientated their issues towards short-term issues as they have covered most of their long-term financial needs in recent years. Borrowing from banks fell by 1.2% although there was a certain dynamism in lending to some SMEs that are taking advantage of the good financial conditions and low interest rates to finance their investments[23].

- Non-financial corporations and households continue taking advantage of growth to deleverage, reducing their debt to 153.5% of GDP in the third quarter (93.8% companies and 59.7% households), the lowest level in the last decade. Their net financial wealth amounted to 1.38 trillion euros in the same period, accounting for 115.6% of GDP.

Liquidity, financing and fragmentation risk: green

- Fixed-income issues registered with the CNMV in the fourth quarter of 2018 stood at 58.43 billion euros, 22% up on the same period of 2017. Particularly noteworthy, due to their volume, were three bond issues by the SAREB (Asset Management Company for Assets Arising from Bank Restructuring) for an amount of over 25.6 billion euros as well as an increase in the issues of mortgage bonds and securitisation bonds. The growth in the latter is the result of some banks wishing to renew their financing in the

[22] Source: Economic indicators of the Bank of Spain.
[23] According to data from the INE (Spanish National Statistics Institute) gross fixed capital formation grew by 4.8% year-on-year in the fourth quarter.

expectation that the ECB will define a new financing model for banks that will replace the Long-Term Refinancing Operations (LTROs), which have now ended. Another possible factor might be related to the start of the application of new European legislation on securitisations on 1 January 2019, which might have generated incentives to bring issues forward to said date in the expectation of significant implementing regulations for said legislation that are not yet available.

- In 2018 as a whole, debt issues registered with the CNMV amounted to 101.08 billion euros, 8% down on 2017 and the lowest volume of the last decade. For their part, fixed-income issues of Spanish companies abroad grew somewhat less than in previous years. However, they grew by 7% between January and November (84.41 billion euros) thanks to the expansion of short-term debt issues (47.82 billion euros). The preliminary data for January 2019 indicate that debt issues stood at 5.01 billion euros, 43% down on January of 2018, with noteworthy issues of mortgage bonds and structured bonds. In equity markets, two companies went public, the SOCIMI (Spanish REIT company) Arima Real Estate and the energy company Solarpack, by means of two primary offerings, and the restaurant group AmRest became listed on the Spanish stock exchange.

- Average daily trading volumes in the electronic equity market stood at 2.06 billion euros in the fourth quarter of 2018, 16.5% down on the same period of the previous year and below the average of the year as a whole (2.29 billion euros). The preliminary data for January of this year indicate that trading continued to fall (1.86 billion euros, 18% down in annual terms). Similarly, the fragmentation of the market seems to have accelerated in the last part of 2018 as the trading of Spanish securities on trading venues other than the home market grew to 40% of total trading subject to market rules (lit plus dark), its historical high, which is a little above the trend recorded in the leading European markets taken as a whole. This growing movement of trading abroad might accelerate in the event that a financial transactions tax is established in Spain, such as the one that has been under consideration in recent months (in reality, a tax on share purchases[24]).

- The Ibex 35 liquidity index (assessed through the bid-ask spread) remained at satisfactory levels, but worsened slightly in the fourth quarter of 2018, which continued in January despite the low levels of volatility. The spread of the sovereign bond improved over most of the period, with temporary upturns at the end of 2018 coinciding with the episodes of higher stock market volatility.

- The spread in interest rates between loans to euro area companies and to Spanish companies remains at around zero for loans of under one million euros – remaining at its lowest level since the end of 2007 – while it fell once again for loans of a higher amount (21 bp in December compared with 26 bp in September).

[24] On 8 January, the government approved the Draft Bill on the Financial Transactions Tax, whereby a tax of 0.2% would be applied to purchases of shares of Spanish companies with a market capitalisation of over 1 billion euros.

Contagion risk: yellow

- The correlation between the prices of different types of Spanish assets has remained at low levels (median value of 0.3) following the fall recorded in October. This figure stands at below the average recorded over the last decade (0.5). The maximum value of correlations rose slightly from December onwards, as the prices of equity assets (with the exception of utilities) followed a similar pattern, recording falls across the board in that month and rises in January (Figure 31). In general, this low level of correlation between the prices of Spanish assets is compatible with a certain amount of discrimination by investors between asset types, with no generalised falls in prices recorded at the times of the price reductions at the end of the year.

- With regard to the movements of European public debt assets, the correlation between the yield on Spanish government bonds and that of the core European countries fell in October and November, from 0.8 to 0.4, while the correlation with the yield of the peripheral countries rose from 0.6 to 0.8. This change, which coincides with the times at which the yield on the Italian bond recorded highs, is a result of a slight contagion effect of the concerns about the impact of the budgets put forward by the Italian government on the sustainability of its public debt. This context favoured the prices of the sovereign bonds of core countries due to their status as safe haven assets.

- However, as from December, the correlations increased to levels close to 0.9 both for core and for peripheral countries. This increase was due to a reduction in the yield on sovereign bonds in every country, which is explained both by the positive effect on the markets of the agreement reached between the EU and Italy on the Italian budget for 2019 and the slowdown in growth in the euro area and the consequent incentive for the ECB to maintain an accommodative monetary policy.

Market risk: yellow

Figure 3: Short selling

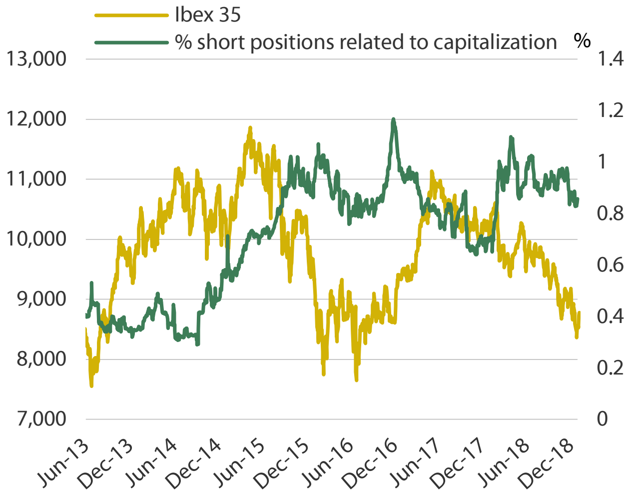


Figure 4: Price-earnings ratio (P/E)

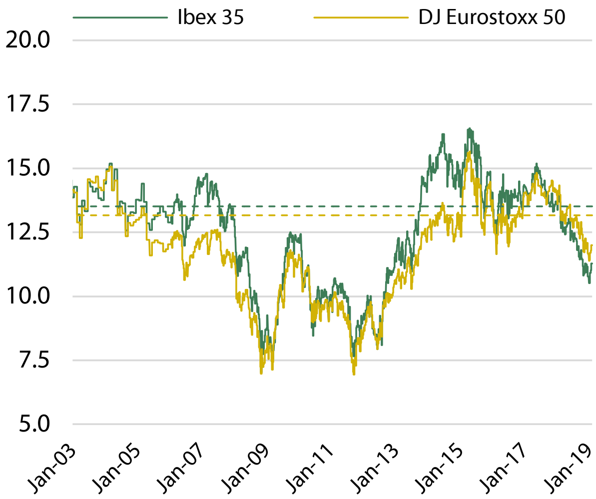


Figure 5: Short-term interest rates (3m)

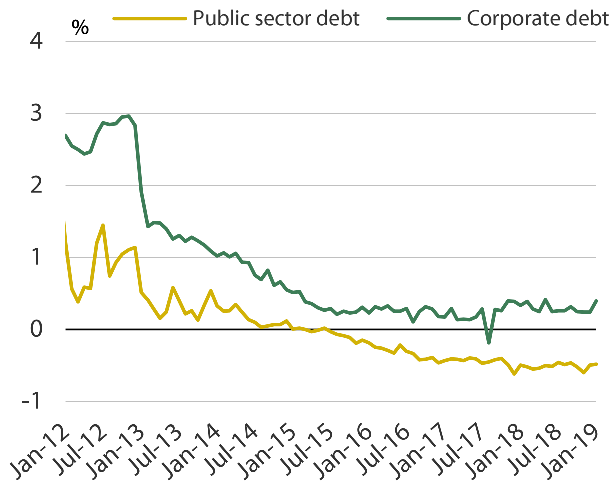


Figure 6: Long-term interest rates (10y)

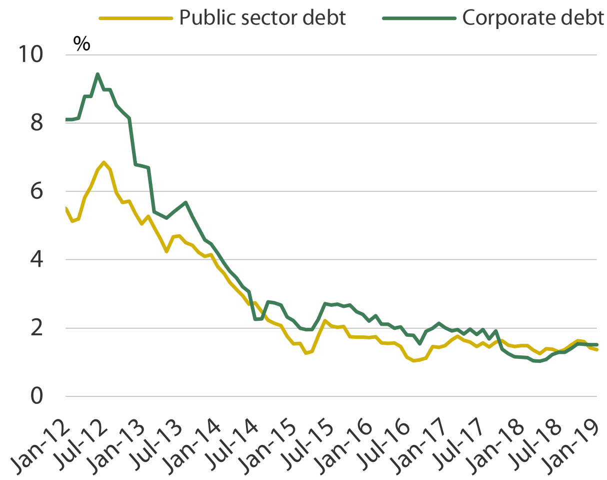
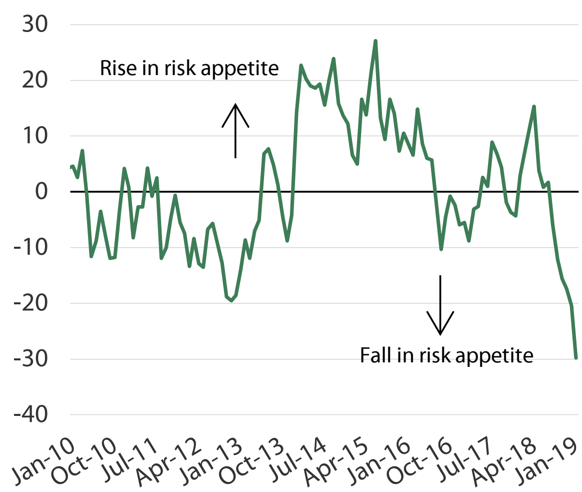


Figure 7: Oil price

Figure 8: Risk appetite (State Street)



Credit risk: green

Figure 9: Financing of non-financial sector

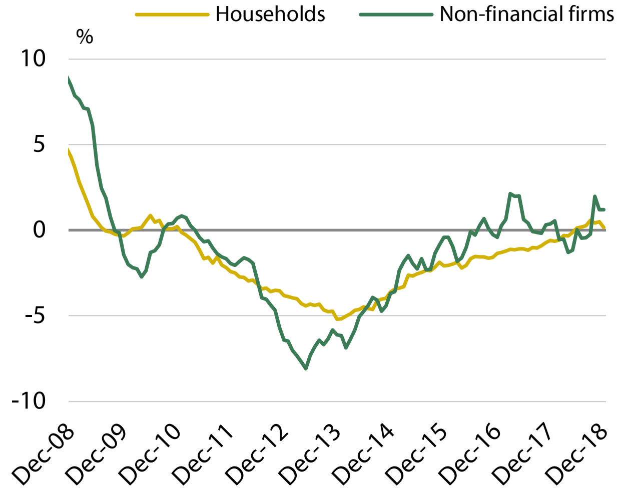


Figure 10: NPL rate and unemployment rate

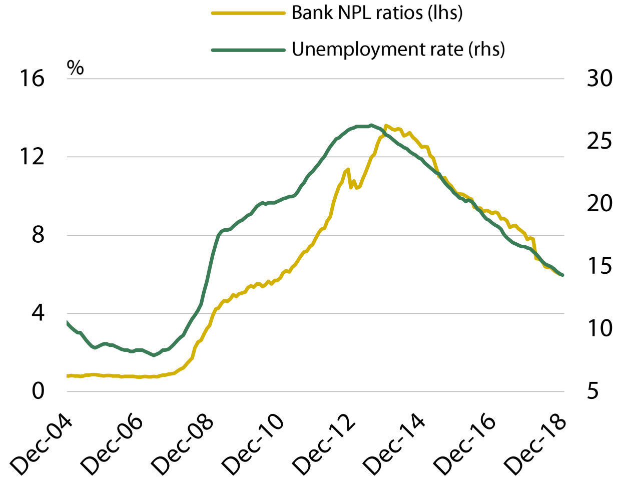


Figure 11: 10-year government debt risk premium (spread with Germany)

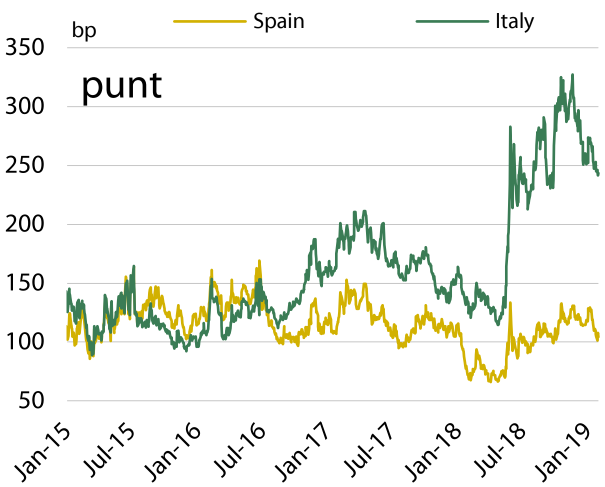


Figure 12: Private debt risk premium (5-year CDS)

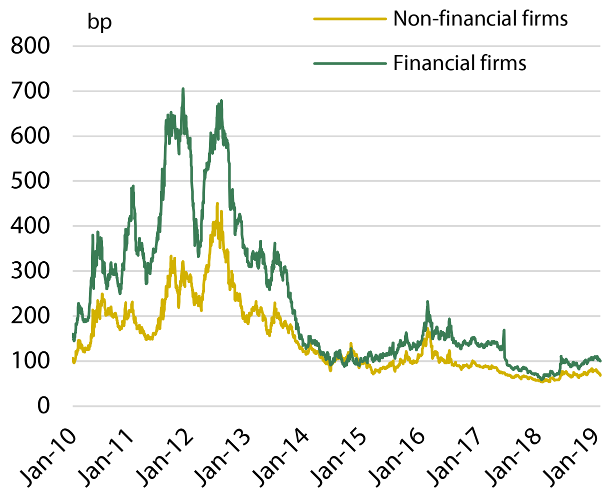


Figure 13: House prices (year-on-year change)

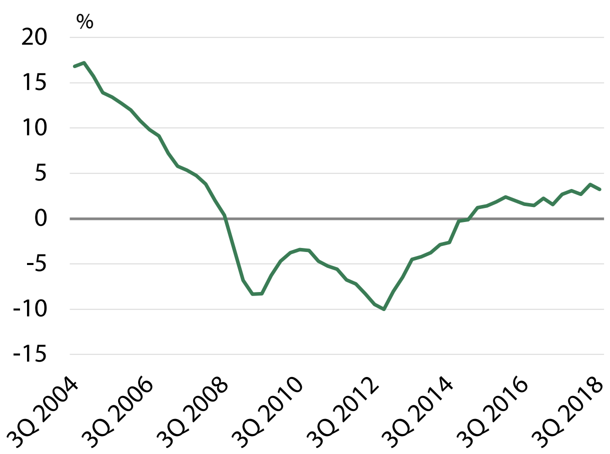
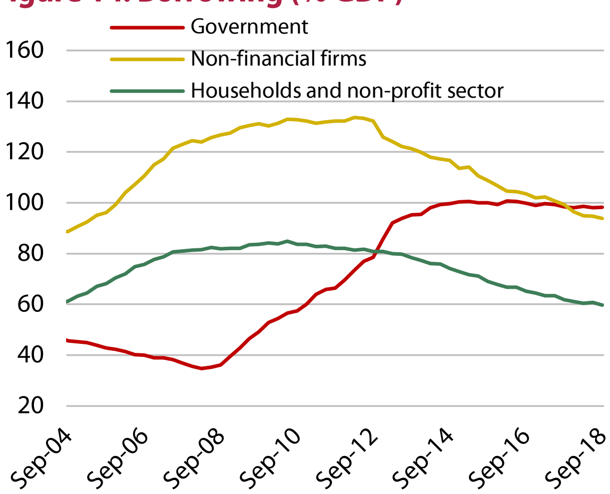
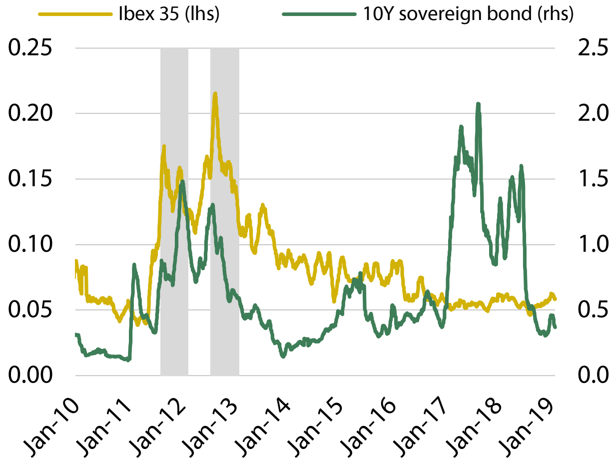


Figure 14: Borrowing (% GDP)



Liquidity, financing and fragmentation risk: green

Figure 15: Liquidity (bid-ask spread, %)



The shaded area corresponds to the period with bans on short selling.

Figure 16: Volatility (1m moving average)

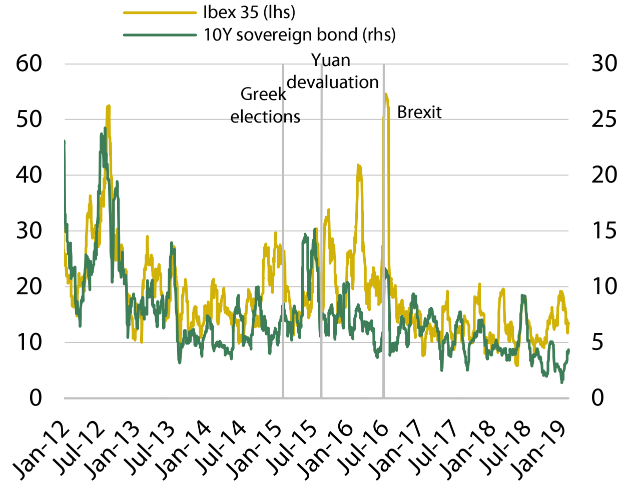


Figure 17: SIBE trading (1m moving average)

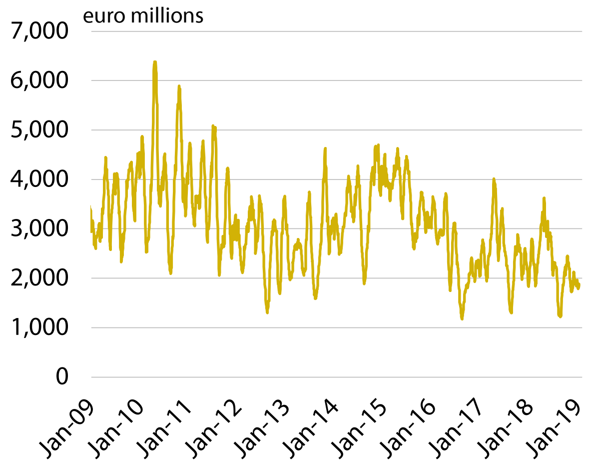


Figure 18: Interbank spread (LIBOR-OIS)

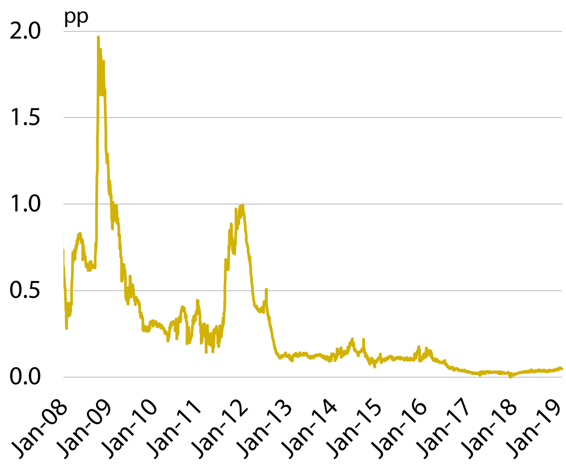


Figure 19: Spain-EU spread on corporate lending rates

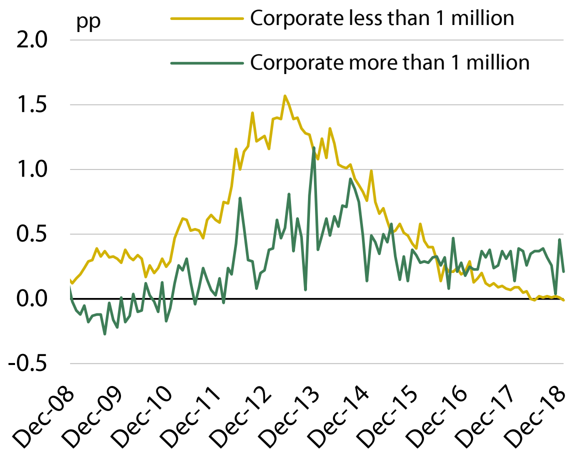
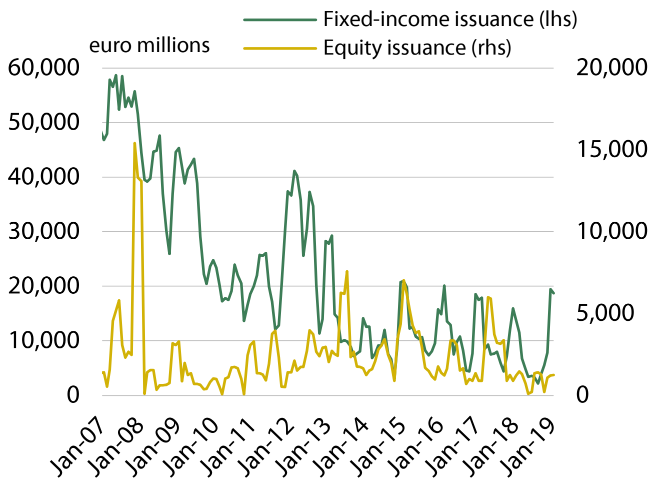


Figure 20: Issues (3m moving average)



Macro-economic risk: yellow

Figure 21: GDP (year-on-year change)

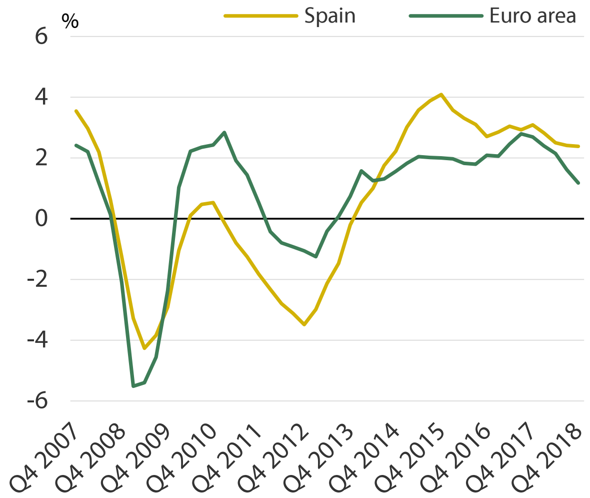


Figure 22: HCPI and core CPI (year-on-year change)

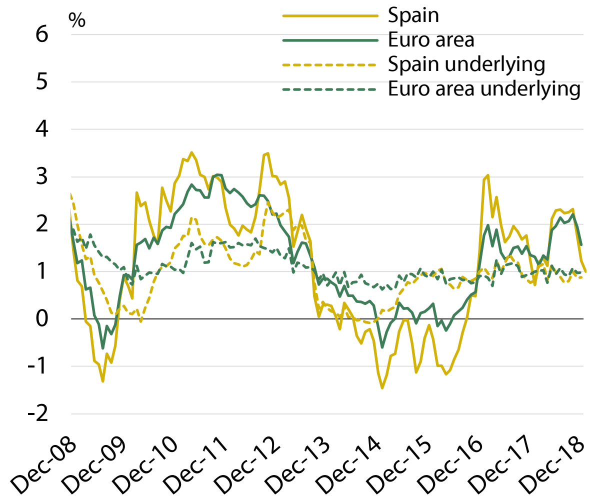


Figure 23: Employment (year-on-year change)

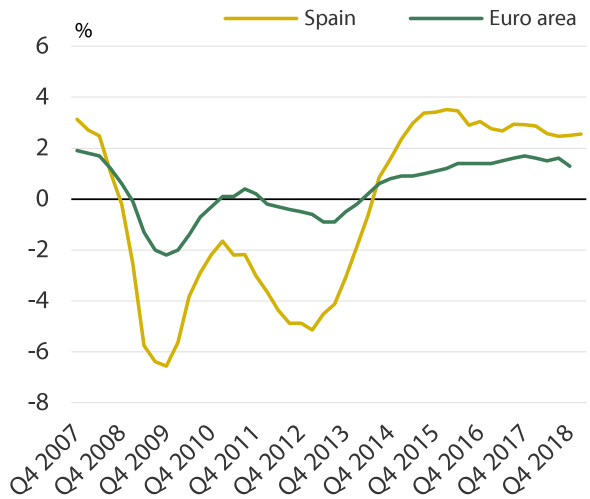
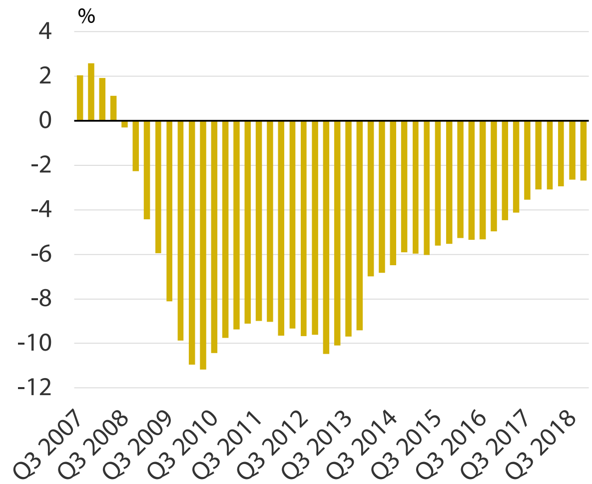


Figure 24: Government balance (% GDP)



Data accumulated over four quarters.

Figure 25: Exchange rates

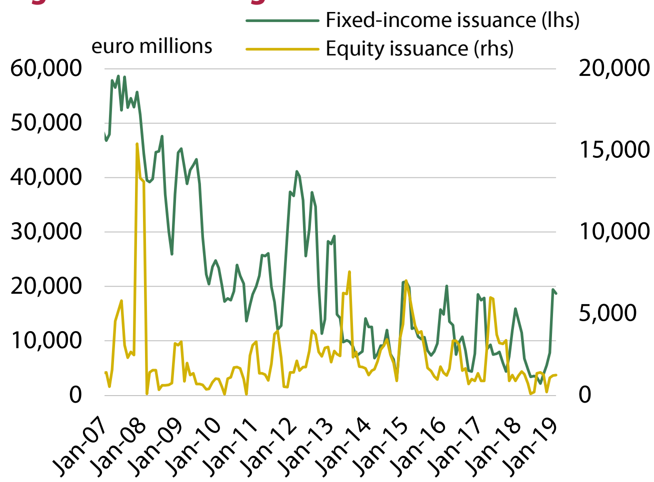
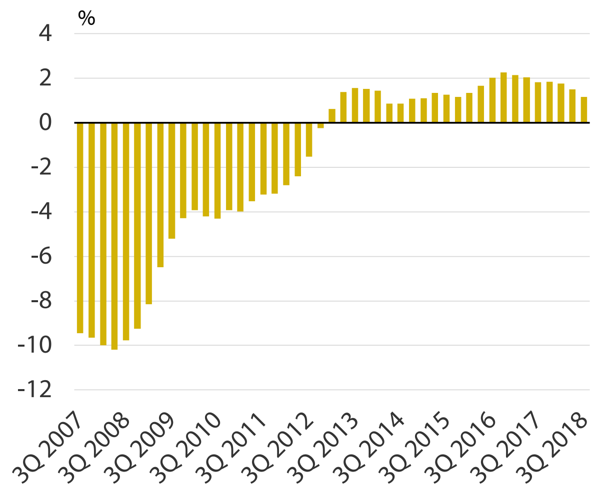
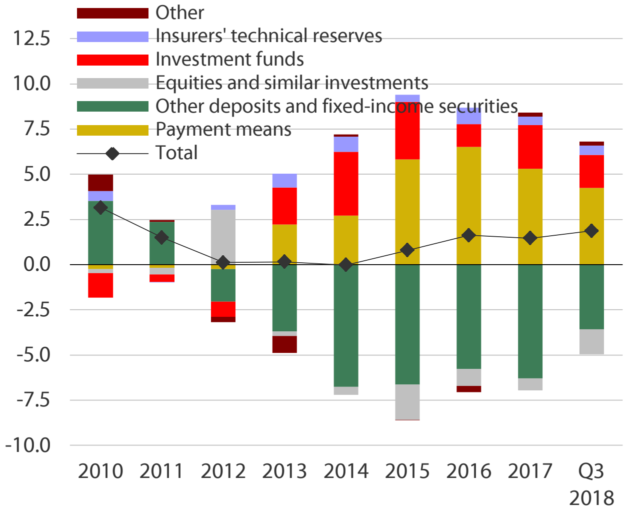


Figure 26: Current-account balance (% GDP)



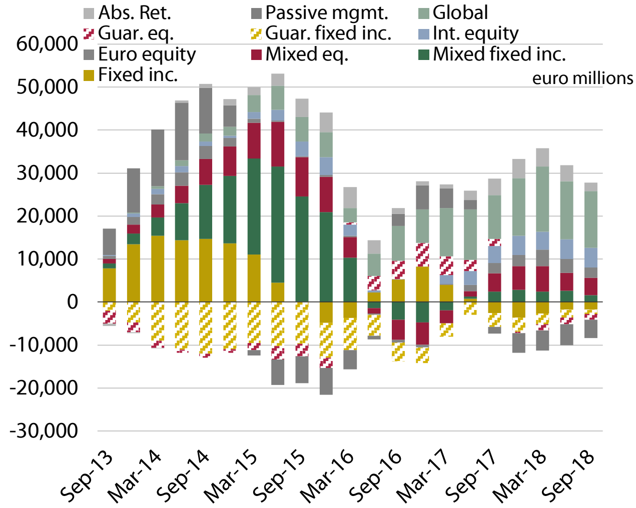
Investors

Figure 27: Households: net financial asset acquisitions (% GDP)



Data accumulated over four quarters.

Figure 28: Net subscriptions to investment funds



Data accumulated over four quarters (million euros).

Figure 29: Households: savings (% disposable income)

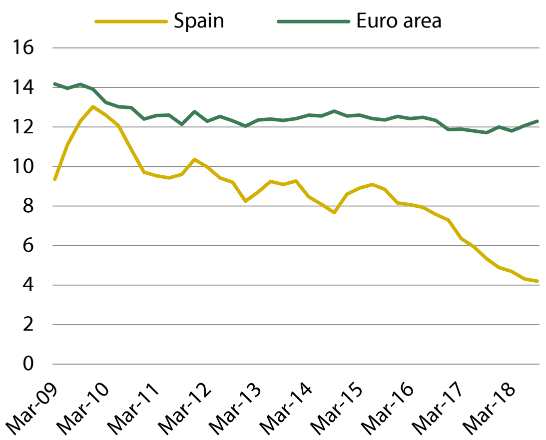
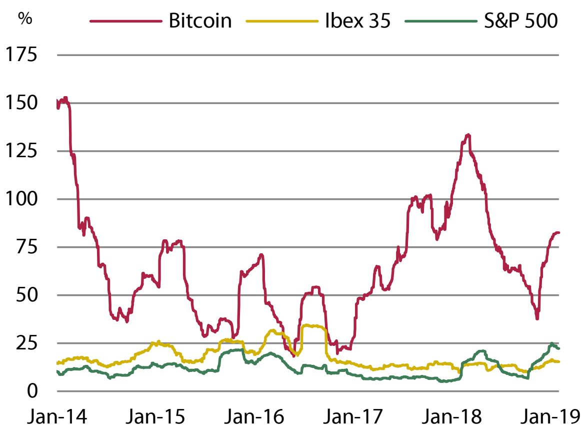


Figure 30: Bitcoin volatility



Contagion risk: yellow

Figure 31: Correlations between asset classes

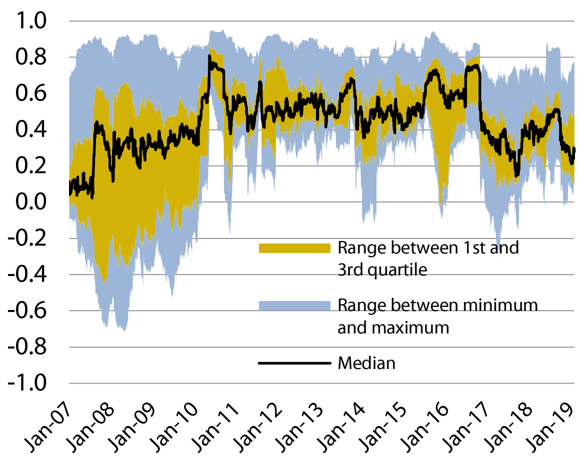
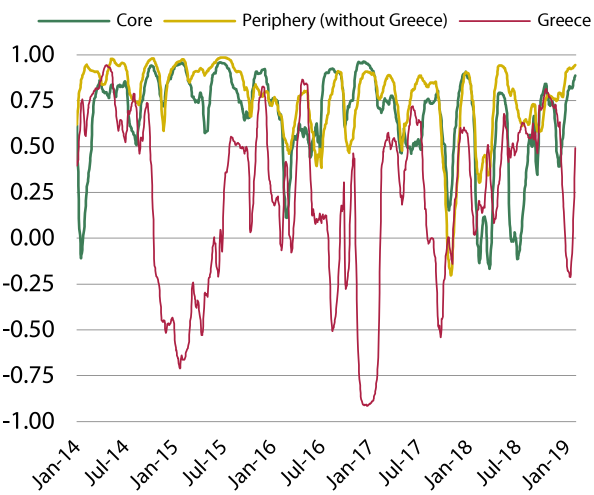
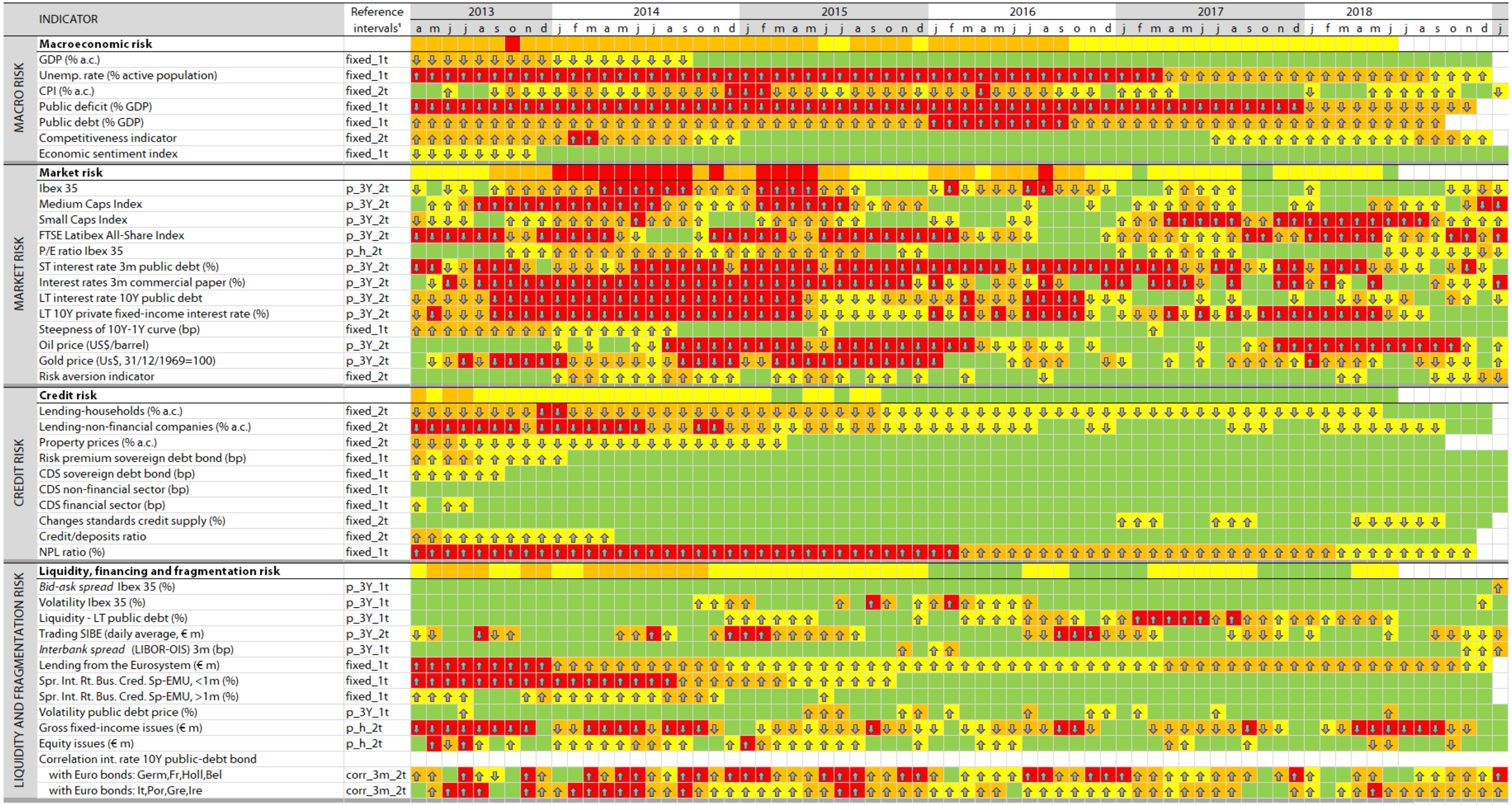


Figure 32: Correlation between the yield on the Spanish and European 10Y bonds



Heat map: risk categories



(1) Reference intervals could be: (i) "fixed": predetermined numerical tresholds, one (1t) or two-tailed (2t); (ii) "corr_3m": 3 months windows correlation coefficients; (iii) "p_3Y": percentiles obtained from 3 past years distribution, one (1t) or two-tailed (2t) or (iv) "p_h": percentiles obtained from historical distribution.
Source: CNMV, Bloomberg and Thomson Datastream.

Explanatory notes

Spanish financial markets stress index (Figure 1): The stress index provides a measurement in real time of the systemic risk facing the Spanish financial system, ranging from between zero and one. To this end, stress is evaluated in six segments of the financial system (equity income, fixed income, financial intermediaries, the money market, derivatives, and the exchange markets) which are then aggregated to obtain a single figure. The stress for each segment is evaluated by means of cumulative distribution functions and the subsequent aggregation takes into account the correlation between segments, in such a way that the index places greater emphasis on stress situations in which correlations are very high. In general terms, the stress variables chosen for each segment (three for each one) correspond to volatilities, risk premiums, liquidity indicators, and sudden loss of value. These variables are good indicators of the presence of stress in the markets. Econometric estimates indicate that index values below 0.27 correspond to periods of low stress in the financial system, while scores between 0.27 and 0.49 correspond to periods of medium stress, and values above 0.49 indicate periods of high stress. The methodology of this index follows the work of Holló, Kremer and Lo Duca in 2012 to propose a similar index for the euro area. For further details on recent movements in this index and its components, see the CNMV's statistical series (market stress indices), available at http://www.cnmv.es/portal/Menu/Publicaciones-Estadisticas-Investigacion.aspx. For further information on the methodology of this index, see Cambón M.I. and Estévez, L. (2016) A Spanish Financial Market Stress Index (FMSI). Spanish Review of Financial Economics 14 (January (1)), 23-41 or CNMV Working Paper 60 (http://www.cnmv.es/portal/Publicaciones/monografias.aspx).

Heat map: summary by market and risk category (Figure 2 and final annex). The heat maps provided in this release show the monthly trend of the most important indicators in the Spanish financial system in recent years. They contain information on domestic securities markets, the banking sector, and also some macro-economic variables. The main purpose behind the production of these maps is to provide an idea of the position of the reference indicators in relation to their recent history (in most cases three years) or with some predetermined limits, by associating this position with a certain colour. When an indicator changes from green to a warmer colour (orange or red), it does not necessarily mean the existence of risk; rather it indicates a movement towards an extreme value (very high or very low) in the period or range of values used as a reference. If an indicator remains at extreme values for a prolonged period, it may suggest the need for a more detailed analysis; that is to say, it may be interpreted as an alarm signal. The most comprehensive heat map (see page 13) includes 43 indicators[25], five of which are prepared by the CNMV. The large number of indicators taken into consideration allows us to make an analysis of vulnerabilities for each segment of the financial markets (equity income, fixed income, banking sector, etc.) or for different risk categories (macro, market, liquidity, credit, etc.), as illustrated in Figure 2. The colours of these aggregates (markets or risk categories) are assigned by calculating a weighted average of the values of the individual indicators they

[25] Since June 2017, the heat map includes an additional indicator: the bid-ask spread of the ten-year sovereign bond.

comprise. In each aggregate, one of the individual indicators determines the generation of the overall colour: for example, in macro-economic risk, the indicator used to calculate the aggregate is GDP. This means that until this is published, the macro-economic risk block is not given any colour in the map. For more detailed information on the methodology and the analysis of these maps, see the article "Identification of vulnerabilities in the Spanish financial system: an application of heat maps", published in the Quarterly Bulletin of the CNMV corresponding to the first quarter of 2015.

Short positions (Figure 3): The figure for aggregate net short positions includes the sum, to the reference date, of the individual positions declared (0.5% or higher), plus the total for positions of 0.2% or higher but lower than 0.5%. The series only reflects the positions declared at each date and is therefore not recalculated to take into account any later changes or exceptional inclusions of notifications of positions at a date previous to that of each aggregation.

Bitcoin Historical volatility (Figure 30): Annualised standard deviation of the daily changes in prices in 90-day windows.

Contagion risk: The indicators making up this block are of somewhat greater complexity. We set out the most important of these indicators below:

- Correlation between assets (Figure 31). The correlation pairs are calculated using daily data in three-month windows. There are six asset classes: sovereign debt, private fixed income from financial institutions, fixed income from non-financial firms and Ibex 35 securities, financial companies, utilities, and other sectors. A high correlation between the different classes of Spanish assets would indicate the possible existence of herding behaviour by investors. This situation could lead to high volatility in periods of stress. Meanwhile, diversification would offer fewer advantages since, in this context, it would be more difficult to avoid exposure to sources of systemic risk.

- Correlation between the yield on the Spanish and European 10Y bond (Figure 32). The correlation is calculated using daily data in three-month windows. The countries of the core group are Germany, France, Holland and Belgium, and the peripheral countries are Portugal, Italy, Greece and Ireland.