Financial Stability Note

No. 23, December 2022

Financial Stability Note

No. 23, December 2022

The Financial Stability Note is one of the CNMV's duties within the framework of its monitoring of financial stability conditions in the areas it supervises. In particular, the Note assesses the stress level of **domestic securities markets during the last quarter**, flags any changes in the level of the various financial risks and identifies the major sources of risk.

The Spanish National Securities Market Commission (CNMV) distributes its reports and publications online at www.cnmv.es.

ISSN (digital edition): 25030-7827

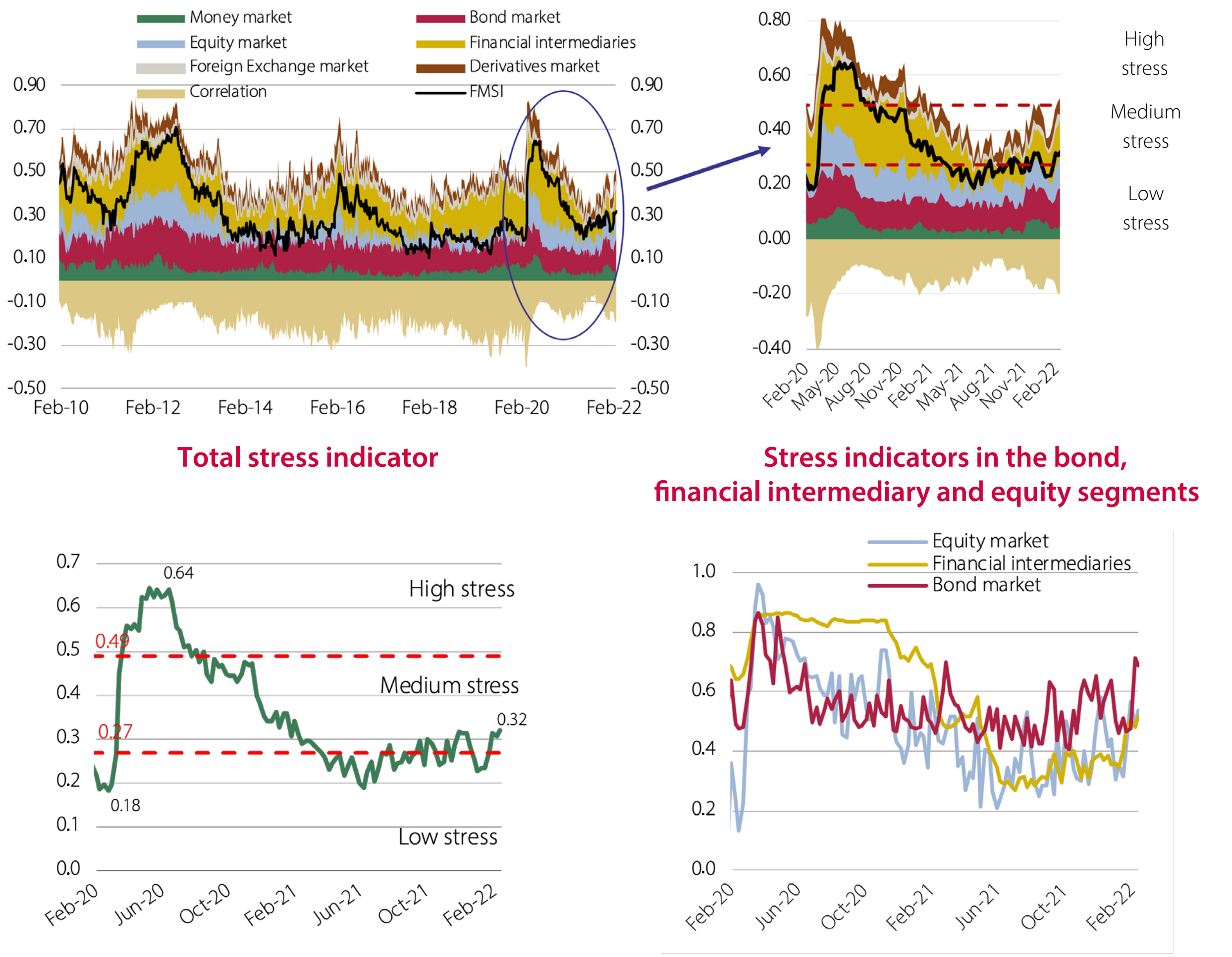
Layout: Cálamo y Cran

Summary

✓ Although in the final weeks of 2022 and the first weeks of 2023[1] a **decrease in stress level to 0.42 (medium risk)** was observed, in the second half of 2022 it remained in the high risk area (above 0.49) for several weeks, reaching a maximum of 0.55 in October, the highest value since the start of the COVID-19 pandemic. This increase was caused by an intensification of risk, which could be seen in new falls in asset prices, volatility spikes and increases in some risk premiums, all of which resulted in a general increase in the segments that make up the indicator. The price falls occurred in the different types of assets and were not limited to any in particular, unlike in other periods of recession. **The level of risk is currently concentrated** in the two fixed income segments (bonds and the money market), these being the most stress-affected. The correlation of the system has been gradually increasing.

Spanish financial markets stress indicator

FIGURE 1



Source: CNMV. For further information on recent movements affecting this indicator and its components, see the CNMV statistical series (Market stress indicators), available at: http://www.cnmv.es/Portal/Publicaciones/SeriesWeb/Inicio.aspx? codrama = 1295. For further information on the methodology of this indicator, see Cambón, M.I. and Estévez, L. (2016). “A Spanish Financial Market Stress Index (FMSI)”. *Spanish Review of Financial Economics*, Vol. 14, No. 1, pp. 23-41 or as CNMV Working Paper No. 60 available at: http://www.cnmv.es/DocPortal/Publicaciones/MONOGRAFIAS/Monografia_60_en.pdf.

1 The closing date for this note is 30 December, except for the stress indicator (13 January) and certain other specific information.

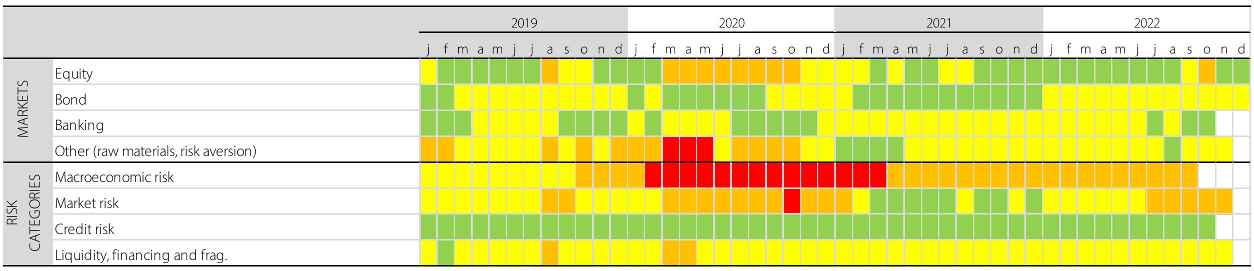
✓ **The macroeconomic scenario in recent months can be characterised by greater economic resilience, rising inflation and a notable slowdown in growth, which may lead to a brief, temporary recession in some European economies.** Monetary policy continued to tighten in the second half of 2022, but less abruptly. Everything seems to indicate that the path that central banks take will continue to be the same in 2023, although the scale of interest rate hikes and other decisions will depend on the degree of the slowdown in inflation and business activity and, above all, the anchoring of price expectations. **In Spain the slowdown in activity is less marked than elsewhere in Europe**, due to the country being relatively less affected by the war in Ukraine and through the recovery noted in the dynamism of sectors that had been heavily affected by the pandemic. The expected average growth for 2023 is 1.2%-1.3% compared to 0.5% in the euro area as a whole. Similarly, lower inflation is expected in 2023.

✓ **Equity markets showed sharp price declines in the third quarter of last year due to a further rise in perceived risk, although late 2022 and early 2023 have seen price gains.** The annual balance for 2022 saw significant falls in the main stock market indices. However, the Ibex 35 performed relatively better, with a decrease that was limited to 5.6%. In debt markets, the extraordinary turnaround in monetary policy brought an end to the era of low interest rates. Yields on 10-year sovereign bonds increased between 2.3 and 3.5 pp for the year, while risk premiums experienced increases that were not particularly significant. Primary markets, especially stocks, significantly decreased their activity, affected by high uncertainty, volatility and price falls.

✓ **The sources of uncertainty surrounding the financial outlook are still numerous and of a diverse nature.** The most relevant of these continue to be associated with the sharp increase in interest rates and the accompanying higher cost of financing for agents in a high-inflation environment. The rise in interest rates brings with it significant losses from the valuation of fixed-income portfolios that may continue into 2023. Meanwhile, in addition to reducing the disposable income of families, the increase in inflation reduces the real profitability of assets, which may accentuate the incentives of investors to acquire assets with higher yield expectations, which generally entail higher risk. It is also important to point out that the higher cost of financing especially affects those agents that are most indebted, with the possibility of credit risk in the medium term. Finally, it is worth noting the continued importance of cyber risks as well as those related to crypto-assets.

Heat map: summary by markets and risk categories[1]

FIGURE 2



Source: CNMV. See Cambón, M.I. (2015). "Identification of vulnerabilities in the Spanish financial system: an application of heat maps". *CNMV Bulletin*, Quarter I, pp. 109-121.

1 Figures to 30 December.

Sources of risk

Macroeconomic environment: slowdown in growth and inflation

- **After a significant 2% increase in GDP in the second quarter of 2022 compared to the previous quarter, the Spanish economy experienced a pronounced slowdown in the third quarter, with growth of 0.1%, which placed the year-on-year rate at 4.4%.** This slowdown in activity in Spain was caused by both domestic demand, with a contribution to year-on-year GDP growth of 0.9 pp (1.6 pp lower than the previous quarter),[2] and foreign demand, where the contribution was 3.6 pp (1.5 pp down on the second quarter). In comparison to the rest of the EU countries, year-on-year growth in Spain continues to be notably higher than that of the main economies,[3] although in the third quarter it stood slightly below them (see Figure 21).

  Forecasts for the end of 2022 have been corrected upwards due to improved performance in the second and third quarters compared to what was initially expected. In its latest economic projections from December, the Bank of Spain estimated that Spanish GDP would grow by 4.6% in 2022, 0.1% and 0.6% more than in the respective October and June estimates. This rate is slightly below the IMF forecast which in its recent report on the Spanish economy predicted growth of 5.2%. Meanwhile, growth forecasts for the euro area are below those of Spain, with the European Central Bank estimating an average growth of 3.4%.

  In contrast, 2023 forecasts have been corrected slightly downwards, mainly due to the lower contribution of external demand than expected a few months ago as a result of the deterioration in global economic prospects, which offsets the positive effect of the extension to 2023 of some measures to mitigate price rises. The Bank of Spain estimates growth of 1.3% and the IMF of 1.1%, in both cases 0.1% less than in previous forecasts.

- **During the third quarter of the year, 77,700 jobs were created,[4] meaning that the positive trend that started in 2021 has been maintained, although slowing down when compared to previous quarters.[5]** From September 2021 to September 2022, 514,700 jobs were created, a growth of 2.6%. The activity rate meanwhile showed little change in recent months, standing at 58.9% at the end of the third quarter, 0.2% above the June figure and 0.2% below that recorded a year before. Unemployment increased over the quarter by 60,800, resulting in a slight increase in the unemployment rate of 0.18%, rising to 12.7%. However, if the last 12 months are taken into account, unemployment has fallen 1.9 pp.

  As far as social security affiliation is concerned, the December records showed a monthly decrease of 79,000 affiliates, which left a total of 20.16 million people at year close. Despite the decrease in the last month, the balance for the year was positive, as an increase of 455,505 was recorded in the number of affiliates across the whole of 2022. The Bank of Spain's forecasts for the end of 2022 indicated that the unemployment rate would stand at 12.8%, meaning that there was virtually no change in the last three months of the year.

---

2 This reduction was principally the result of the deceleration in the growth of household consumption (1.4% year-on-year compared to the 3.4% in the second quarter) and by investment (gross capital formation), whose increase was 2.5% in the last year (6% three months earlier).

3 For example, Germany and Italy grew by 0.4% and 0.5% respectively in the third quarter of last year, while the euro area average stood at 0.3%. In year-on-year terms, the growth of these three economies was 1.3%, 2.6% and 2.3% respectively.

4 Figures from the Labour Force Survey (EPA).

5 In fact, in seasonally adjusted terms, employment remained practically constant (-0.1%).

- **After reaching price rises of over 10% last summer, inflation eased to 5.7% year-on-year in December (8.4% on average for the year).** This meant that there were five consecutive months of deceleration in the annual rate of inflation, which basically responded to the moderation in energy prices (-6.9% year-on-year), above all in the case of electricity. However, the underlying inflation rate[6] continued to increase and reached 7% at the end of 2022, exceeding the level of general inflation. Among the components of the underlying rate, it is worth noting the strong increase in the cost of processed foods, which closed the year up 19.2%. The prices of (non-energy) industrial goods rose 5.2% and services by 4%. Elsewhere, **since the Spanish CPI fell below the euro area CPI in September for the first time since March 2021, this differential has increased, reaching 3.3 pp in November.**

- **The information available on public sector finances for October shows a notable contraction in the public deficit compared to the figures for the previous year**, due to the increase in non-financial income[7] and the stabilisation of expenses. The consolidated public administration deficit[8] stood at 1.62% of GDP at the end of October, well below the 4.4% for the same period in 2021.[9] Meanwhile, the level of public debt continued to fall in the third quarter of the year to reach 116% of GDP, 2.3 pp below the closing figure for the previous year. The Bank of Spain's forecasts for year-end 2022 put public deficit at 4.2%, compared to IMF calculations of 4.9%. Public debt was set to stand above 113% of GDP, falling gradually (along with the deficit) in the coming years.

- **The figures from the Financial Accounts corresponding to the third quarter of 2022 show a gradual return to pre-COVID patterns.** The savings rate fell again to 7.4% of household disposable income in September (cumulative figures over four quarters), maintaining the downward trend that began in March 2021, when it stood at 18.9%. These figures are still significantly lower than those registered in the euro area, where the savings rate at the end of the second quarter was 14.8% (see Figure 29). The decline in the level of Spanish household savings once again gave rise to a decrease in the acquisition of financial assets, which fell from 6% of GDP at the close of 2021 to 3.9% at the end of September (in net terms, with accumulated figures across four quarters). There was a divestment of 1.7% of GDP in term deposits and fixed-income securities and 1.3% in the case of shares and other equity stakes (see Figure 27). In addition, a significant percentage of savings continued to be invested in means of payment (cash and demand deposits), with resource inflows reaching 5.5% of GDP. It is important to note that the specific figures for the third quarter of the year reveal significant divestment in most types of financial assets, except for investment funds, which registered subscriptions of 0.7% of GDP over that period. A certain repositioning of the relationship between demand and term deposits began to be noted in response to the greater attractiveness of the latter due to higher interest rates.

  Analysis of the data available to the CNMV on investment fund flows shows that the relative polarisation of investments that began in 2019[10] did not continue in the third quarter of 2022. Among the categories considered to be the riskiest, there were positive net redemptions,[11] while the largest subscriptions of the quarter occurred in two of the most

6 This is calculated by excluding the most volatile elements from the general index, specifically energy and fresh produce.

7 The revenues that increased the most were those corresponding to VAT, up 18% and personal income tax, rising 38%.

8 Excluding local authorities and aid to financial institutions.

9 In the case of central government, the deficit decreased from 4.9% to 1.2% of GDP, mainly due to increased tax collection, while social security funds registered a surplus of 0.4% (-0.5% in 2021), as a result of the growth in contributions (5.2%). However, Spain's Autonomous Communities recorded poorer figures, falling from a surplus of 1% to a deficit of 0.4%. This was due to the increase in spending derived from the final close of 2020.

10 A significant percentage of investment was in funds that offered a higher return at a greater risk, while others went to safer funds as a result of the highly volatile financial environment.

11 There were only net resource inflows in international equity funds, to a total value of €276 million.

conservative categories. In particular, global funds, which attracted strong investment in 2021 and the first half of 2022, experienced net redemptions of €983 million in the third quarter.[12] In contrast, fixed-income funds received the largest net subscriptions in the quarter, with a figure of €1.7 billion. It is also worth mentioning that the guaranteed equity funds recorded positive net subscriptions for the first time since 2018, albeit registering a relatively small total (€109 million).

The volume of net fund subscriptions over the first three quarters of the year was 8.4 billion (24 billion in the equivalent 2021 period). Fixed-income funds were the largest recipients of investments in net terms, with an amount close to 10 billion, due to the attractiveness of the higher yields on fixed-income assets. At the opposite end of the spectrum were mixed fixed-income funds, which experienced net redemptions of more than €7.43 billion. At the end of the third quarter of 2022, fund assets were slightly below €300 billion, €25 billion less than at the beginning of the year, a decrease that can solely be explained by the negative performance of the portfolio in all areas (-10% between January and September in aggregate terms). **Similarly, the assets of foreign collective investment institutions marketed in Spain, which had increased strongly in recent years,[13] shrank substantially in the first nine months of 2022**, with a decrease of close to 25% to €208.5 billion.

Interest rate context: uncertainty surrounding the end of the process of interest rate rises, which continues to determine the evolution of the economic and financial outlook

- **The world's main central banks continued to raise their interest rates in the second half of 2022 in order to fight high inflation.** However, in its most recent decisions adopted in December, a slowdown in the intensity of the increases was observed in order to lessen their negative impact on growth, now that inflation has begun to show some signs of moderation.
- **After the initial rise of 50 bp in July, the ECB continued to tighten its monetary policy with three new consecutive increases situating rates at 2.5%[14] at their December meeting,[15] the highest level since 2008.** The last rate rise was more moderate (50 bp) given the prospect that inflation would start to show signs of slowing down, although the Central Bank repeated their concern that interest rate rises will continue as long as price rises[16] remain a long way off the target. The ECB will also continue with the normalisation of its monetary policy in 2023, as in March it will stop reinvesting the maturities of the bonds acquired within the framework of its asset purchase programme at a rate of €15 billion per month until the end of the second quarter of 2023.[17] The market as a whole expects the ECB to announce additional rate rises throughout 2023, as inflation expectations are not sufficiently well-anchored. However, there is uncertainty about their frequency and extent.[18]
- **In the United States and the United Kingdom, central banks also maintained the rate-rise trend, introducing greater increases than in the euro area.** The Federal Reserve

12 In 2021, net subscriptions were almost €23 billion. In the second quarter of 2022 alone they rose to over €5 billion.
13 Between 2019 and 2021 alone it increased more than 50%.
14 The credit and the deposit facilities increased to 2.75% and 2% respectively.
15 The ECB raised rates 75 bp in September and October, as well as 50 bp in December.
16 In December the ECB stated that while inflation had eased off in November, rising food prices and underlying inflationary pressures in the broader economy had increased and would persist for some time.
17 The rate of reduction of the amounts reinvested from that date will be determined later.
18 On average, forecasts point to two increases of 50 bp throughout the year.

closed 2022 by relaxing the pace of increases by raising its rates 50 bp in December (up to the 4.25%-4.5% range, the highest level since late 2007), after four consecutive 75 bp gains.[19] In addition, both those responsible for the Federal Reserve and the market as a whole expect additional rate hikes for 2023 to levels above 5%, indicating that rates will not fall as long as inflation does not evolve more favourably, although they will reduce the extent of the increases. The Bank of England also began to moderate the increases in December (up to 50 bp) to situate them at 3.5%, their highest level since October 2008. The bank made nine consecutive increases last year.

- **The importance of interest rate risk has been maintained due to the significant impact that the rate of increase in rates has on the price of debt assets, as well as the continuance of strategies to preserve the value of money in the face of the uptick in the inflation.** Interest rate rises caused significant losses in the valuation of fixed-income asset portfolios in 2022, which, to a certain extent, might be transferred to the first half of 2023 if the forecasts of additional rate increases are met and which would be more intensely felt in assets with longer maturities and worse credit ratings (among them, fixed income and high-yield debt funds). Added to this is the loss of value due to inflation of liquidity positions and risk-free assets, which increases the incentives for investors to acquire assets with higher expected returns and therefore with a significant increase in the associated risk levels.[20]

  Rate rises also help to improve the margins of the financial sector and increase its profitability, although in the medium term they may expose certain vulnerabilities such as a possible rise in non-performing loans associated with the increase in financing costs for companies and households. These would be more pronounced in the case of those intermediaries with the most indebtedness. Finally, the tightening of bank financing conditions may encourage activity in the primary securities markets, particularly variable income markets, which would be very positive for the Spanish capital market.

Sources of political uncertainty: the war between Russia and Ukraine remains the most important aspect, although there are many other elements that complicate the outlook

- **Since the beginning of the Russian invasion of Ukraine, it has been seen as the main focus of geopolitical uncertainty worldwide.** The consequences in human, political and economic terms that this war is generating are extraordinary. It has also led to an unprecedented increase in political and economic uncertainty in many regions and triggered changes in the strategic positions of some countries.[21] In order to contain Russia's aggression against Ukraine, multiple sanctions have been imposed on individuals, companies and assets of Russian origin that continue to expand as the conflict continues.[22] The repercussions of this war on the price of raw materials (particularly energy) and food

[19] In June, July, September and November.

[20] These types of assets are generally associated with a greater degree of volatility (equities, emerging market assets or crypto-assets) and credit risk (worse credit ratings – subordinated debt and high yield-) as well as less liquidity (subordinated debt and high yield, private equity funds or real estate assets).

[21] At the end of June, NATO updated its Strategic Concept and identified Russia as the most direct and significant threat to the security of the allies and to the maintenance of peace and stability in the Euro-Atlantic area, in contrast to the previous NATO Strategic Concept, declared that Russia was a strategic partner.

[22] Economic sanctions on Russia date back to 2014, after the annexation of Crimea. However, since the outbreak of war in 2022, these have increased considerably. These include the imposition of financial measures (for example, the freezing of assets and prohibition of access by the central banks of Russia and Belarus to reserves in international currencies and to transactions in these currencies), as well as commercial, industrial, personal and other diplomatic-type measures. Economic sanctions have been established against strategic Russian sectors such as energy, banking and defence, while restrictive measures have also been applied to individuals and entities. These range from the immobilisation of goods and assets in the EU and the funds available to them, to the prohibition of entry into the territory of the Union. The latest sanctions package was approved in December and includes a ban on exporting drones to Moscow or the suspension of various Russian television channels.

– and therefore on inflation – have significantly modified the global macroeconomic and financial scenario, forcing central banks to tighten the tone of monetary policy, and deteriorated growth expectations.[23] Operational risk has also been affected by this situation, given the increase in cyberattacks perpetrated against different entities and sectors. Within such a context, the degree of uncertainty in financial markets continues to be high. This war, the end of which is not in sight in the short term, continues to be one of the greatest threats to financial stability at a global level.

- **In Europe, the high dependence on Russian gas is emerging as one of the main sources of risk.** Although European countries have tried to reduce their energy dependence on Russia,[24] this continues to be significant, especially for some of the countries with the greatest weight in the EU economy. In recent months there have been cuts in the energy supply and new interruptions over longer periods of time – which could even become permanent – cannot be ruled out. The EU's current goal is to phase out its dependence on Russian fossil fuels and try to cope with high energy prices.[25]

  At a European level, it is also worth noting an emerging source of political uncertainty regarding the alleged actions of various members of the European Parliament in matters related to Qatar.[26] In a very complex geopolitical context, this news raises the risk of political and economic tension in Europe, not only due to the mistrust it could generate in the general population towards the European Parliament, but also because Qatar is a major exporter of liquefied natural gas and thus its supply to Europe could be affected.

  With respect to Brexit, which occurred two years ago, there are still discrepancies between the United Kingdom and the EU related to different matters today. In addition to those that focus on the relationship between the United Kingdom and Ireland regarding the status of Northern Ireland, more recent issues involve Spain, as talks regarding Gibraltar have not yet concluded in agreement, especially with regard to police control of the port and airport. This situation opens the possibility of tension between the two partners in the future and is seen as a potential source of instability.

- **Uncertainties arising from the economic and commercial relationship between China and the United States are still present.** Almost three years ago, the first phase of the trade agreement between the two powers was agreed upon. Nevertheless, its negotiation and implementation are still pending. Although serious tensions persist between both economies,[27] a meeting of the respective leaders in November saw the announcement of a joint commitment advocating for conflict prevention and peaceful coexistence.

- **In Spain, there are risks of a political nature that could lead to certain instability**, given parliamentary fragmentation, especially in an election year. Another possible element

[23] At the end of September, the European Systemic Risk Board (ESRB) issued a warning regarding vulnerabilities in the EU financial system. In it the Board indicated that recent geopolitical events have led to an increased probability of risk scenarios materialising and called for greater awareness of the risks to financial stability.

[24] One of the measures agreed by EU Member States in June was to increase gas reserves in the short term, to guarantee a sufficient supply for Europeans. In December 2022, the average gas storage fill level across all Member States was 88%.

[25] In order to achieve this target, different measures were adopted throughout the year, the most recent being the agreement on the temporary limitation of gas and oil prices originating in Russia or exported from the country (December), those that seek to guarantee and share the gas supply in the EU (November) and the reduction of gas demand by 15% (August). At the end of December, the Russian response to these measures was the signing of a decree that prohibits the export of oil to those countries that apply a ceiling to its price, which include members of the European Union.

[26] The European Parliament approved prohibiting access to Qatari representatives until investigations in this matter are concluded, as well as suspending all other issues related to this country, such as the relaxation of visas for Qatari citizens or the aviation agreement with Qatar Airways.

[27] The main tensions between China and the United States relate to Taiwan, as well as the upholding of the sanctions policy and the veto of Chinese companies by the Americans.

of uncertainty may stem from the delays and the effective execution of projects financed with funds allocated to Spain within the framework of the Next Generation EU programme.

- **Lastly, and more generally, there are risks related to political tensions in several South American countries. Although the case of Peru merits special attention,[28] there is also significant unpredictability in Argentina[29] and Brazil.[30]** Within the context of the current macroeconomic vulnerability, the worsening political situation in this region, in which some Spanish companies carry out a significant part of their operations, could have a negative impact on financial markets, both in Spain and worldwide.

Other sources of uncertainty

- **New spikes in COVID-19 cases could pose risk elements for the global economic recovery.** Despite the fact that in the last year this risk has been reduced, with most countries lifting restrictions imposed to stop the spread of the virus, the appearance of new variants together with the upswing in infections in China after the abandonment of its COVID-zero policy could lead to the reimposition of restrictive measures,[31] with the economic repercussions that this entails.

- **In the current environment of interconnection and continuous technological changes, cybersecurity is seen as a key element for risk prevention in organisations of all types.** The increase in cyberattacks on companies and infrastructures, especially because of the current geopolitical situation, favours the emergence of this operational risk, which could have very harmful consequences.[32] In the event of a cyberattack on entities in the financial sector, the effects could be especially worrying due to the possibility of contagion to other sectors due to their high degree of interrelationship which ultimately poses a threat to financial stability. Appropriate management of this risk requires substantial investment to ensure a high degree of coordination between the different sectors and authorities in order to prevent and reduce the possible systemic consequences of a cyber incident.[33] At a regulatory level, in November the EU reinforced cybersecurity and resilience in the European Union with the European Parliament's approval of the new NIS 2 (Network and Information Systems) Directive which replaces the current approach to the security of networks and information systems and seeks to consolidate the digital security of the public and private sector within the framework of the EU.[34] In late November, the regulation of the European Parliament and of the Council on digital operational resilience for the financial sector, also known as the

[28] A state of emergency has been in place in Peru since the attempted internal coup in December 2022 and the consequent dismissal of its president, who is now in prison awaiting trial.

[29] The difficult economic, political and social situation in Argentina has been aggravated by the ruling of a federal court sentencing the country's vice president to jail and disqualification from holding public office.

[30] The country is deeply divided after the elections won by Lula da Silva and the allegations of fraud by supporters of the former president. At the beginning of January 2023, Jair Bolsonaro's followers stormed the Congress, the Supreme Court and the headquarters of the executive branch in Brazil with the intention of staging a coup and overthrowing Lula da Silva just days after his inauguration.

[31] In fact, some countries are already requiring negative tests for passengers arriving from China.

[32] In a 2021 European Commission impact assessment report, data breaches were estimated to cost at least €10 billion per year, while the annual cost of malicious attempts to disrupt traffic on internet is at least €65 billion: https://single-market-economy.ec.europa.eu/system/files/2021-10/SWD%282021%29%20302_EN_impact_assessment_part1_v3.pdf

[33] In January, the European Systemic Risk Board (ESRB) published a recommendation for the establishment of a pan-European systemic cyber incident coordination framework (EU-SCICF) to strengthen coordination among the various financial authorities in the EU as well as with other authorities in the EU and major international players.

[34] This new Directive, which must be approved by the Council of the EU, lays the foundations for cybersecurity risk management measures and notification obligations in all the sectors it covers (energy, transport, health and digital infrastructure). Its purpose is to harmonise cybersecurity requirements and the application of cybersecurity measures among Member States. In addition, it will create the CyCLONe network of national liaison organisations for large-scale cyber-crisis management.

Digital Operational Resilience Act (DORA), was passed.[35] Earlier, in September, the European Commission presented draft legislation for a new Cyber Resilience Act, which establishes cyber security standards for products with digital components to try to make them less susceptible to cyberattacks.[36]

In Spain, it should be remembered that in January last year the CNMV, the Bank of Spain and the General Directorate of Insurance and Pension Funds (DGSFP) jointly presented a series of guides for carrying out advanced tests in cybersecurity referred to as TIBER-ES.[37] In addition, at the end of March the National Cybersecurity Plan was approved, for which a reinforcement is currently being prepared.[38]

- **The growth of the crypto-asset industry could pose a threat to financial stability** if a special interconnection with the regulated financial sector was observed or there was a high rate of expansion affecting retail investors, something that for the moment has not been verified. From the point of view of investor protection, the risks associated with these assets are numerous and wide-ranging in their nature. For this reason, on several occasions the CNMV has stressed the importance of ensuring that the public is aware of them and of carrying out effective protection retail investors.[39, 40] A recent CNMV study reveals that less than 7% of Spanish investors have ever invested in cryptocurrencies and that most of these dedicate less than 5% of their capital thereto. According to these figures, investment in Spain in cryptocurrencies is currently low, as is the knowledge that the population has regarding these assets. The EU is making progress in regulating this type of asset. If its expansion or the interconnection between this market and the traditional financial sector is accentuated, risks could arise for the financial system as a whole.[41, 42] The Financial Stability Board (FSB) has therefore highlighted the urgency of addressing the risks presented by the sector and will formulate short-term recommendations for its regulation.[43]

- **Although the pandemic accelerated the importance and specific weight that agents give to risks related to climate change in their financial decisions, the effects of the war in Ukraine and the energy crisis have accentuated the difficulties in advancing in the transition towards a decarbonisation of the economy.** This was revealed at the recent COP27 climate summit in Egypt, in which geopolitical decisions took precedence

---

35 It seeks to establish a common framework of obligations, principles and requirements in the area of cybersecurity to ensure that all financial institutions are subject to a set of standard regulations that mitigate and manage the security risks affecting networks and information systems.

36 This Law, which must be passed by the European Parliament and the Council of the EU, will require companies to comply with cybersecurity requirements under penalty of a fine, as a result ensuring that digital products (for example, televisions, computer programs, toys and telephones) are safer for consumers. It will also force manufacturers to provide security support and software updates to try to eliminate the vulnerabilities detected, increasing the information that consumers have about the cybersecurity of the products they buy and use.

37 TIBER-ES is the Spanish version of TIBER-EU, the EU framework for "threat intelligence-based ethical red-teaming" published by the ECB, which aims to strengthen the cyber resilience of financial institutions operating in Spain.

38 This plan, with a budget of over €1 billion, features around 150 initiatives over the next three years and include the creation of a national platform for reporting and monitoring cyber incidents and threats and a boost to the start-up of the Cyber Security Operations Centre of the General State Administration.

39 In March 2021, the European authorities for the supervision of the financial system (EBA, ESMA and EIOPA), published a warning regarding the risks that crypto-assets pose to consumers in the EU. This warning was in turn endorsed in a joint statement by the Bank of Spain, the DGSFP and the CNMV (see the 17 March 2022 press release). Available at: https://www.bde.es/f/webbde/GAP/Secciones/SalaPrensa/NotasInformativas/22/presbe2022_19en.pdf

40 In January 2022, the CNMV published a Circular that regulated advertising on crypto-assets presented as an object of investment and that defines the rules on the content and format of messages published in promotional campaigns for this type of asset. Available at: https://cnmv.es/DocPortal/Legislacion/Circulares/Circular_1_2022_EN.pdf

41 In October 2022, the Council of the EU approved the final text of the Regulation on Markets in Crypto-Assets (MiCA). The next step consists of the approval of the European Parliament, in principle in April. This is expected to come into force some time in 2024 and will provide a common framework at the European level to regulate the crypto-asset market and thus provide legal security.

42 In its August ***Supervisory Newsletter***, the ECB expressed its intention to issue harmonised criteria to evaluate authorisation requests that incorporate crypto-asset activities or services.

43 These measures were adopted as a result of the bankruptcy of FTX due to lack of liquidity, which in turn led to contagion that led to other companies filing for bankruptcy (BlockFi, Voyager and Celsius).

over climate and even economic considerations. As has been covered in previous notes, the effects of climate change and the measures adopted for its mitigation and adaptation to a low-carbon economy are all going to entail a significant transformation both for the economy (and the financial markets associated with the direct costs)[44] and in terms of transition costs,[45] which have now been affected by the economic and energy-related impact of the Russian invasion of Ukraine.

- **War and high inflation are causing a redistribution of economic and financial resources,[46] as well as an acceleration of plans to replace fossil fuels with renewable energies, although there may be a temporary setback in this regard.[47]** The extent of the cost will largely depend on the preventive measures implemented to alleviate them and the speed of the transformation process, and will affect economic sectors that generate a significant part of current employment and GDP.[48] It will also require significant volumes of financial resources[49] to finance these changes. Financial markets play a key role in this scenario terms of channelling the necessary resources. Of additional relevance is the considerable investor interest in sustainable assets and investments, which continues to increase.
- **Concern about the impact of climate risk has been consolidated in the financial markets, in which a large part of the economic agents redirect their activity towards assets and investments that meet sustainability criteria (ESG).[50]** The demand for this type of asset has given rise to a specific segment of investment and sustainable assets, which has a growing group of economic agents linked to it (investors, issuers, asset managers, credit rating agencies, managers of indices and investor relations offices that are progressively expanding their offer of products, services and business models). Investor interest in the social aspect of sustainability is also gaining weight and the importance of governance-related aspects is being consolidated as a consequence of the attention paid by investors to the transparency and quality of corporate information in the face of regular instances of financial fraud.

---

44 The direct costs (also referred to as physical risks) of climate change are clearly seen as a consequence of the associated events, with constant growth in these costs observed in recent years as a result of losses linked to disasters and extreme weather events (floods, fires, heat waves, drought etc.) In Spain alone, the insurer Agroseguro, the Insurance Compensation Consortium and the insurers belonging to the Spanish Union of Insurance and Reinsurance Entities (UNESPA) dealt with more than 2.4 million weather-related claims.

45 These are associated with costs of mitigation, adaptation and substitution to achieve a low-carbon economy (replacement of cars, energy systems and changes in production processes and supply sources).

46 According to data from the Climate Bonds Initiative, green bond issues reached a total of US$459.9 billion up to December 2022, compared to US$509 billion in 2021, reflecting the effect of volatility in the fixed income market following interest rate rises by the main central banks as a result of inflation.

47 In the current context of high energy prices, some regions have chosen to relax restrictions on the use of fossil fuels such as coal in order to be less dependent on suppliers. This has meant the reactivation in Europe of coal mining activity and of some thermal power plants that were in the process of being closed.

48 Reducing high-emitting activities and increasing low-emitting ones will imply high capital expenditure on physical assets and require reallocation of labour, allowing the creation of new direct and indirect jobs, while others will be lost due to the transition to a zero-emissions economy. The most exposed sectors will be those with high-emission products or operations (such as energy, industry, agriculture and mobility, among others), which currently represent 20% of world GDP, while another 10% corresponds to sectors whose supply chains have high emissions, such as construction. Likewise, the costs of the energy transition will be lower for those economies based on services – including Spain – and with a higher GDP per capita, while low-income households may be among the most affected due to the increase in the price of electricity in the short term and the cost of purchasing low-emission products such as new heaters or electric cars.

49 In public resources alone, the Sustainable Europe Investment Plan envisages the mobilisation of €1 trillion in sustainable investments over the next decade from the EU budget with the goal of achieving a carbon-neutral economy by 2050.

50 Pursuant to environmental, social and corporate governance criteria (ESG).

- **Sustainable assets are in full expansion – an increasing number of bond issuers are joining this market[51] and sustainable investment funds that have declared that they comply with ESG standards.** In the case of Spain, the number of sustainable CISs[52] continued to grow significantly in 2022. By the close of 2022, a total of 300 CISs of this type had been registered (291 investment funds, six open-ended collective investment companies and three hedge funds), of which 286 had signed up to Article 8 of the SFDR and 14 to Article 9. The volume of the assets held by these institutions, in excess of €116 billion, represented more than 35% of the total assets of Spanish CISs.[53]

- **The most significant risks to financial stability identified are related to the continuing difficulty of correctly evaluating the risks associated with climate change, the imbalance between the demand for these products and the available supply and the emergence of greenwashing.** These elements can cause distortions in the price formation process, meaning that future episodes of valuation adjustments cannot be ruled out. Similarly, from the point of view of investor protection, one of the most important focuses of regulators and supervisors is on avoiding greenwashing,[54] which could have a negative impact on the credibility of markets and companies.

[51] Many of the issuers of these assets carry out issues on a recurring basis. An increasing number of countries and institutions are joining them, including Spain and the European Union. The EU is expected to become the world's largest green bond issuer, as its debt issues to finance the NextGenerationEU programme are expected to reach €250 billion by the end of 2026.

[52] CISs covered by Articles 8 and 9 of the European Sustainable Finance Disclosure Regulation (SFDR).

[53] This percentage is estimated at 53% for the whole of the EU.

[54] Greenwashing refers to a set of mechanisms whereby companies try to make their products or activities appear sustainable when in fact they are not, with the aim of attracting the interest of potential investors or clients.

Risk categories

Market risk: orange

- **The international equity markets, which had accumulated notable losses in the first three quarters of the year, showed a positive trend in the latter part of the year, given the prospect that the main central banks would ease tightening of their monetary policy.**[55] This allowed the stock markets to moderate their initial falls and closed the year with more modest losses, which were somewhat more intense in the case of the US markets.

  Most markets showed positive behaviour in the fourth quarter, which accelerated in the final stretch of the year after the rate rises by both the Federal Reserve and the ECB in which the extent of the increases eased, in addition to announcements that the rate of increase for 2023 would be slower. Despite the uncertainty and the expectation of a recession in some areas, the markets welcomed these developments and adjusted valuations upwards.

- **All the relevant international indices presented falls in the third quarter,**[56] **recovering strongly in the fourth quarter**[57] **and partially tempering the accumulated losses over the first part of the year.** The best performance corresponded to the markets of the euro area, while US markets felt the impact of the highest interest rate rises. With the exception of the British FTSE 100,[58] which presented increases of barely 1%, the evolution over the year as a whole was negative for all, albeit uneven, with notable falls in the case of the more tech-based US indices, such as the Nasdaq and the S&P 500 indices. Meanwhile, despite the falls, the best relative performance corresponded to the Spanish Ibex 35 and the British FTSE 100.

  All US indices experienced losses over 2022 as a whole, ending the period of three consecutive years of revaluations until reaching levels from early 2021 and even at the close of 2020 in the case of the tech-based Nasdaq, where falls were more marked. The Dow Jones, with the greatest weight of companies in the traditional economy – banks and industry – fell by 8.8% due to the positive effect of the rate rises for financial companies and the better relative performance of large industrial companies. The most marked falls corresponded to the more general S&P 500 index (-19.6%)[59] and, above all, the Nasdaq[60] which fell 33.1%.[61] The latter fell throughout the year as a result of expectations of successive interest rate rises and expectations of further increases, in a context of a significant downward adjustment in forecasts for expected growth and a slowdown of the

[55] See the "Interest rate context: tightening of monetary policy" section.

[56] US indices accumulated decreases ranging between 4.1% for the Nasdaq and 6.7% for the Dow Jones, while the European indices presented falls in the same period of between 9% in the case of the Spanish Ibex 35 and 3% for the Italian FTSE Mib. The European Eurostoxx 50, the German Dax 30 and the French Cac 40 fell by 4%, 5.2% and 2.7% respectively.

[57] With the exception of the US Nasdaq, which fell 1%, all the major indices posted gains in the fourth quarter: 15.4% and 7.1% for the US Dow Jones and S&P 500 indices respectively, while euro area indices ranged between 11.7% in the case of the Spanish Ibex 35 and 14.9% for the German Dax 30. The European Eurostoxx 50, the French Cac 40 and the Italian FTSE Mib fell by 14.3%, 12.3% and 14.8% respectively. Elsewhere, the British FT gained just 8.1%.

[58] The UK FTSE 100 index rose by 0.9% in 2022, favoured by the high presence of mining and raw material companies in this market.

[59] The S&P 500 index is the most representative of the US economy and includes all sectors, from technology to manufacturing. Tech companies in this index represent almost 26% of capitalisation, compared to more than 28% at the end of the first half of 2022 – the highest percentage in the index's history. Of the top ten companies in terms of weighting in the index, five are technology companies that represent more than 16.5% of the total, although six months ago there were six technology companies that accounted for more than 21% of the total.

[60] A significant portion of Nasdaq stocks fell by more than 50% and up to nearly 75% throughout the year. These include companies such as Netflix, Zoom, Peloton, Shopify and Tesla, whose prices had recorded strong growth with the onset of the pandemic.

[61] The Nasdaq index appreciated by 35.2% and 21.4% in 2019 and 2021 respectively.

positive impact on these companies of changes in consumer habits and leisure[62] as the pandemic situation has normalised.

The trend was similar in the main European stock markets,[63] although the extent of the falls was more moderate thanks to strong performance in the last quarter. This period saw gains of between 8.1% in the case of the British market and close to 15% of the German and Italian stock markets. Over the year as a whole, the best performance was for the British FTSE 100 index, which advanced 0.9%, as well as the Spanish Ibex 35, which presented the smallest losses (5.6%) among the major euro area indices. The British index was helped by the significant presence of mining and raw materials companies among its components, while the Spanish index benefitted from banks and energy companies.

- **In Spain, the Ibex 35 also fell, although, as mentioned, it did so less (-5.6%)[64] than most European indices**, most of which doubled their losses. After falling in the third quarter (-9%), the index recovered in the fourth quarter (11.7%) to stand at 8,200 points, a similar level to early 2021. The Spanish index benefitted from the relatively greater weighting of the financial and energy sectors, which have performed better than most sectors, as well as from the lower presence of cyclical companies and technology companies, which performed notably less well as their value was more affected by the prospects of an economic slowdown and even recession. Even so, the improved relative performance of the Spanish index over the course of the year was not sufficient to close the yield gap that opened up with respect to other European indices in recent years. Despite the slight increase in share prices in the second part of the year, the good performance of corporate profits caused the price-earnings ratio (PER) to decrease[65] from 11.9 from mid-June to 10.8[66] in December – the historical average is 13.5 (see Figure 4).

- **All sectors presented a negative evolution in the third quarter that reversed in the fourth. Most of them experienced a negative evolution in the whole of 2022, with advances limited to the financial and oil sectors.** The best performance corresponded to the financial sector (7.9%), benefitting from the positive effect of the rise in interest rates on their margins, as well as oil companies (42.3%), which were helped by the increase in the price of oil. Besides, the renewable energy companies and the chemical sector presented a more discreet positive evolution. Also noteworthy were the moderate falls – less than 5% – in electricity and gas companies, food companies and those in the aerospace industry, which benefitted from the greater stability of their businesses and the recovery of the aviation sector. Meanwhile, the largest falls were concentrated in the technology and telecommunications sector, real estate services and consumer goods and services. Setbacks in the telecommunications and real estate sectors were notable, buffeted by the rise in interest rates, as well as in companies in the textile, commerce and industry sectors, due to falls in consumption and investment. We should also point out the setbacks of companies in the tourism, leisure, hospitality and transport sectors, due to doubts about the evolution of their businesses in an environment of rising costs and economic slowdown, as well as small and mid-cap companies, which suffered more than large companies.

---

62 In 2022, the shares of the main US technology companies, known as FAANG (Meta – formerly Facebook, Apple, Amazon, Netflix and Google) accumulated falls of 64.2%, 26.8%, 49.6%, 51.1% and 39.1% respectively.

63 In the euro area, decreases ranged between 5.6% in the case of the Spanish Ibex 35 and 13.3% for the Italian FTSE Mib. Meanwhile, the European Eurostoxx 50, the French Cac 30 and the German Dax 40 fell by 11.7%, 12.3% and 9.5% respectively. Outside the euro area, the UK FTSE 100 rose 0.9%.

64 The Ibex 35 registered a revaluation of 7.9% in 2021, after accumulating losses of 15.5% in 2020.

65 The PER ratio reached a value of 9.5 times in December, its lowest level since 2022.

66 In the same period, the PER of the US S&P 500 stock index increased to 17.5 times, while that of the European Eurostoxx 50 fell back to 11.9 times.

- **The international debt markets maintained their upward trend in the return on assets that began in the first half of the year, consolidating the increases over the second six-month period.** Spanish public debt interest rates accelerated the increases in the last quarter of the year until reaching values of around 3% or higher for all the terms of the curve from three years onward,[67] as was the case with the rates of corporate debt,[68] which showed a similar evolution. Public debt yields in all European economies[69] closed 2022 with significant increases for all the terms of the curve,[70] which at 10 years were between 274 bp in Germany and 328 bp in Greece – on average they exceeded 300 bp At the end of 2022, only the 10-year debt yield had values below 3% in Germany (2.56%) and the Netherlands, while it was slightly above this figure in Austria, Belgium, Finland and France. Spain and Portugal recorded values slightly above 3.5%, while Italy and Greece exceeded 4.5%.

- **Corporate debt yields also increased across all sections of the curve**, concentrating to a greater extent on the medium and long tranches, which were those that benefitted most from ECB purchases. This type of asset shows a greater dispersion in its yields,[71] although they still remain at levels close to those seen in public debt. However, its possible greater dispersion will be an element to take into account in the coming months, depending on its rating and the degree of subordination, which could be more significant in those with the worst credit risk. The scenario of low interest rates, as was the case until early 2022, favoured a situation where high credit risk assets saw sharp price increases that benefitted from the search for yield, which pushed their yields downwards due to the lack of return on risk-free assets. However, the normalisation of asset rates may favour a reversal of this trend, meaning that there is a risk that these assets may suffer significant adjustments in their prices.

- **The intense tightening of monetary policy throughout the year significantly increased the market risk of debt assets, which could ease in the coming months if expectations pointing to a slowdown in interest rate increases are fulfilled.** Even so, this risk is still very relevant in the case of high yield corporate debt, with the worst credit rating, and subordinated debt. Also, the financial structure of some companies – especially the most vulnerable SMEs, which had already been significantly weakened by the pandemic and had not yet fully recovered – could be further affected by rate increases and the possible economic slowdown. As a result, companies that find it difficult to maintain their levels of activity, with relatively weak financial structures and high leverage, could have problems obtaining financing at a reasonable cost. A similar situation could occur in the most vulnerable economies, with higher levels of debt and significant fiscal imbalances, as a rise in interest rates would cause a significant increase in debt servicing requirements.

---

67 The yields of the Spanish debt curve presented positive values from the six-month term onward. In the primary market, the last treasury bill auctions of 2022 (December) showed an average yield of 1.617%, 2.041%, 2.366% and 2.449% in three, six, nine and twelve month terms respectively. Likewise, in the primary market, all auctions presented positive rates, except for three-month bills. For the first time in recent years, six-month bills posted a positive average return of 0.117% in the auction of 5 July.

68 Corporate debt ceased to show negative returns in the secondary markets from the end of 2021 onward.

69 In the case of the United States, 10-year rates increased by almost 220 bp for the year until ending it at 3.83%, although over the course of the year they exceeded 4%.

70 In the case of Spanish debt, 10-year rates reached their highest level since 2014, while in the case of German debt they stood at values not seen since 2011.

71 Corporate debt shows greater dispersion in yields depending on the type of asset (senior or subordinated debt), its credit rating and whether or not it is eligible for purchase by the ECB.

Credit risk: green

- **The risk premiums of both the public and private sectors, which increased significantly in the first half of the year after the end of the support from ECB purchase programmes,[72] remained stable and even showed slight decreases in the second half of the year.** This stability could be attributed to the introduction by the ECB at the end of July of the Transmission Protection Instrument (TPI),[73] which is designed to prevent financial fragmentation in the euro area and facilitate the transmission of monetary policy, which will ease tension in the debt markets. The Spanish risk premium – measured as the difference between the yield on the 10-year public debt in Spain and Germany – stood at 108 bp in mid-February, above both the 77 bp at which the year ended and the 109 bp registered at the end of 2020 (see Figure 11).

- **The risk premiums of private sector companies showed similar behaviour, with the greatest decreases concentrated on the financial sector.** Despite the prospect that the economic situation may become more complex in the coming months, a factor which might favour a rise in non-performing loans by financial institutions, the banks' risk premium benefitted from improved margins in the second half of the year. The average CDS of banks stood at 104 bp at the end of June, 40 bp above the values at the beginning of the year, while the average CDS of non-financial corporations stood at 82 bp, 28 bp more than at the beginning of the year and a similar level to that of the first half of 2020 at the start of the pandemic.

- **The credit quality of Spanish private issuers did not show significant changes in the first quarter of 2022, while the majority of Spanish debt continued to be of high quality.** In September, 90.1% of debt was investment grade, practically the same as in June (90%), the credit quality of financial sector debt being noticeably better than that of non-financial companies[74] (92.1% of the total outstanding balance of the former is investment grade, while in the non-financial sector it stood at 79.6%). In financial entities, the proportion of high-quality debt increased slightly in the third quarter of the year, while in non-financial companies it fell, driven by a greater number of amortisations. In addition, several credit reclassifications were detected with respect to June, both from high credit quality to high yield and in reverse. The former reclassifications occurred in non-financial corporations while the latter were seen in monetary and non-monetary financial institutions. As a result, the relevant importance of high-yield debt fell to 9.9% of the total in September 2022 (10% in June).

  Although credit ratings do not indicate relevant changes in credit risk, it is necessary to continue to emphasise certain circumstances that could give rise to changes in the coming months. The decrease in the amounts reinvested from the maturities of the debt purchases made by the ECB could affect the size of the risk premiums of all issuers in the euro area. In addition, it is possible that a certain degree of fragmentation between the different bond issuers based on their credit ratings will reappear, a consequence that would have a greater impact on high yield issuers. It should also be borne in mind that the ratings and risk premiums analysed mostly correspond to large or medium-sized companies, which have greater financial capacity to face complex situations. A notable deterioration in activity would have a considerable impact on smaller companies such as SMEs and would

[72] The PEPP purchasing programme ended in June, while the PSPP programme finished in July. The ECB, which acquired Spanish public debt through its PSPP and PEPP asset purchase programmes, accumulated a balance of close to €500 billion by the end of November, over 42% of the outstanding balance of long-term government debt.

[73] See the "Interest rate context" section.

[74] Since the COVID-19 crisis, there has been a progressive deterioration in the credit quality of the debt of non-financial issuers: the proportion of investment grade debt fell from 90% of the total balance in March 2020 to 79.6% in September 2022.

worsen the financial problems caused by the pandemic, from which many are yet to fully recover. A growing credit risk has been identified for the coming months[75] which may increase delinquency and force some companies to carry out financial restructuring.

- **The financing of non-financial sectors of the economy,[76] which started the second half of the year recovering, slowed down again toward the end of the year to stand at 0.6% in November.** This evolution is explained by the notable deterioration in the financing of non-financial corporations in the last part of the year, together with the slowdown in financing for households. Financing to non-financial companies, which grew at rates in excess of 1% over much of the year, fell off to close the year at 0.4%. This evolution had its origin in the drop in financing via debt securities, which fell by 5% – the largest decrease in the past 15 years – although this was partially offset by the strong performance of credit in the second half of the year, which grew at rates above 2%, due to the recovery of external loans which once again increased.[77] Financing to households slowed down to 0.9%, both in terms of residential mortgage loans, where growth fell to 0.4% as a result of the increase in interest rates, and of consumer credit, in which expansion slowed significantly to stand at 2.5%, well below the values close to 6% and even higher in the first six months of the year.

Liquidity, financing and fragmentation risk: yellow

- **Fixed income issues registered with the CNMV in the second half of 2022 reached €43.281 billion, 5.1% more than the figure for the same six-month period in 2021.** This progress had its origin in the strong growth in the issuing of commercial paper, which made it possible to offset the notable drop in the issuing of other assets, especially covered bonds. Thus, the issues registered in the year as a whole reached €99,1 million,[78] 23.7% more than in 2021 (€88,1 million) and slightly lower than in 2020. If the fixed-income issues admitted to trading on the Alternative Fixed Income Market (MARF) are added, the fixed-income issues carried out in Spain in 2022 totalled €112.84 billion, almost 20% more than in 2021. As already indicated, this growth can be explained by the increased issuance of commercial paper, which almost doubled in comparison to 2021. The issuances of these assets benefitted from the measures implemented through Law 5/2021, which exempts issuers from the obligation to prepare a prospectus for the issuance of commercial paper with a maturity of less than one year, as well as others adopted by the CNMV to simplify and expedite the issuance process. Meanwhile, fixed-income issues by Spanish issuers abroad stood at 50.1 billion for the second half of the year (with figures to November) to a total of €102.98 billion for the year as a whole, below 2021 levels. This drop in foreign issues was the result of both the decrease in issuance in the medium and long term and the relocation to Spain of a number of commercial paper issues.

  The slowdown in long-term debt issuance from July to December can be explained by the fact that many companies chose to advance their financing over longer terms compared to 2021 and the first six months of 2022, given the prospect of a rise in its cost. Uncertainty and volatility also contributed to postponing the planned IPOs. Only the renewable energy company Opdenergy was incorporated into the continuous market through an initial public offering with a valuation of close to €500 million. Even so, the BME Growth alternative

[75] Resident private credit non-performing loans stood at 3.77% in October.

[76] Source: Bank of Spain economic indicators.

[77] The year-on-year rate was positive in November, when it reached 0.9%.

[78] To this amount we should add €25.283 billion corresponding to four SAREB issues that were registered with the CNMV, but are considered public administration debt.

market showed significant dynamism with the incorporation of 15 new companies (ten growth companies and five listed real estate investment PLCs), which raised capital totalling €863 million.

- **The size of green, social, sustainable or sustainability-linked (ASG) issues made by Spanish issuers in the private sector increased compared to 2021 due to the dynamism observed in the second half of the year.** These issues totalled €15.03 billion in 2022 (close to 14% of long-term debt issues), 10.4% more than in 2021.[79] However, in the first half of the year there was a fall of almost 25% in these issues compared to the same period in the previous year, mainly due to the decrease in the amount of green emissions. In contrast, in the second half of the year there was an increase of 87% compared to the same period in 2021, owing to the promotion of green and social issues (up 133% and 50% respectively), which gave rise to the aforementioned increase over the year as a whole. Financial institutions were responsible for 69% of ESG issuances during 2022, while the remaining 31% corresponded to non-financial corporations – which meant a decrease in the relevance of the latter, which the previous year had accounted for 39% of the total. Prominent among the latter were issues by companies in the energy and utilities (68%) and telecommunications (21%) sectors.

  In terms of the type of issues, although the proportion of green bond issues continued to be the majority, the decrease in their relative importance should be noted (dropping from 79% of the total issued in 2021 to 73% in 2022) in favour of social and sustainable ones, at 17% and 7% respectively (15% and 6% in the same period of 2021). Finally, it should be mentioned that the bulk of these issues, around 80%, are made in foreign markets.

- **The financing capacity of the Spanish economy reached €3.5 billion in October,[80] which placed it below the €4.3 billion registered in the same period of 2020.** This mainly had its origin in the surplus of €2.7 billion in the current account balance as a result of the positive evolution of the balance of goods and services, whose surplus stood at €3.7 billion (compared to the €3.8 billion from the previous year). The evolution of the latter is a result of the good performance of the tourism sector, whose positive balance reached €5.1 billion – the highest level recorded for October – (compared to €3.6 billion the previous year), which made it possible to offset the deficit of €1.5 billion in non-tourism goods and services[81] (compared to a surplus of €300 million in the same period in 2021). Primary and secondary income recorded a deficit of €1 billion (compared with €300 million a year earlier), while the capital account improved its surplus to €800 million. Meanwhile, in accumulated 12-month terms, the financing capacity of the economy stood at €19.1 billion, below the €23.5 billion for the same period in 2021, reflecting the deterioration of the balance of non-tourism goods and services.

- **The balance of household deposits grew by 4.8% year-on-year in November, while that of non-financial companies did so by 2.2%** to stand at €989.1 billion and €312.6 billion respectively, slightly below their all-time highs recorded in the months of July and September. Both households, whose deposits grew every month until July, and companies have been forced to dispose of part of the liquidity accumulated in deposits over the last two years to face the rising cost of living. The slowdown or delay in their consumption and investment decisions as a result of high uncertainty has been aggravated

79 Meanwhile, the total volume of ESG issues made by Spanish public sector issuers stood at €5.832 billion in 2022, 40% less than in 2021.

80 According to the Bank of Spain, monthly advance balance of payments data.

81 Exports of non-tourism goods and services grew at a rate of 18% year-on-year, while imports did so at a rate of 23%.

by the need to allocate a part of available savings to meet their usual consumption and financing needs as a result of the higher cost of the shopping basket[82] and financial expenses.

- **Consolidated household and corporate debt decreased to 128.6% of GDP in the third quarter of 2022,[83] up to a total of €1.67 trillion. These are levels similar to those registered a year before,** but still 3.9 pp above the debt level at the close of 2019. Household debt accounted for 54.4% of GDP, while corporate debt stood at 74.3%. The financial wealth of households and non-financial companies amounted to €2.62 trillion (201.2% of GDP), 0.5% less year-on-year, standing at €1.86 trillion (142.8% of GDP) in net terms. In relation to GDP, financial wealth fell 17.1 pp compared to the same period in 2022 due to the increase in GDP and, to a lesser extent, the drop in net financial assets (-1.1% year-on-year).

- **Average daily trading on the continuous market fell significantly in the second half of 2022**, reaching €1.13 billion (the lowest volume in the last decade). It was weighed down by a moderate level of volatility that discourages algorithmic and high-frequency trading, as well as by competition from other rival BME trading venues. This level is 20.8% lower than the same period of the previous year and is also below the 2022 average for the whole year (€1.39 billion).

  Total trading of Spanish shares in the second half of the year stood at €307.8 billion, 10.2% down on the second half of 2021 and 28.5% less than that achieved in the first half of the year. Of this amount, €145.908 billion were traded on the BME (down 20.5%) and the rest at non-BME trading venues.[84] The fact that trading in the latter grew slightly (+1.7%) while the BME fell caused the market share of alternative trading venues to increase to 50.5% of total securities trading[85] in the last quarter of the year, reaching a record high of 52% in 2022 as a whole (47% in 2021).[86]

  Meanwhile, the trading of Spanish shares carried out through systematic internalisers stabilised in the second half of the year at close to 5% of total trading, a similar level to the first half. Across 2022, this contracting modality concentrated 5.4% of the total, slightly below the figure for 2021 (6.5%) and much lower than in the three previous years (2018-2020), when it was close to 15%. This trend represents a significant advance in fulfilling one of the objectives of the MiFID II regulation, which was to displace part of the trading carried out under discretionary rules governing multilateral trading venues that use non-discretionary rules.

- **The Ibex 35 liquidity indicator (measured through the size of the spread bid-ask) remained at satisfactory levels in the second half of the year**, even recording a certain improvement, favoured by the moderate levels of volatility. In the case of the 10-year sovereign bond, although its spread continues at very low levels both in absolute and relative terms, a slight increase was recorded during most of the six-month period due to the high volatility of debt prices in 2022 (see Figure 15).

- **Interest rate spreads between loans to Spanish companies and loans to companies in the euro area as a whole decreased over the second half of the year, both for loans amounting to less than €1 million and for higher amounts.** In the former case, the

[82] See data on the situation of households described under the heading "Macroeconomic environment".

[83] Source: Financial Accounts of the Spanish Economy, published by the Bank of Spain.

[84] Information calculated with data obtained from the financial information provider Bloomberg.

[85] Total trading, understood as trading subject to non-discretionary market rules.

[86] Other alternative sources of information, in particular that provided by the BME based on Liquidmetrix data, point to the BME exchange having a higher market share in securities trading in September – 61.4% (66.9% in June). The difference is explained by the trading volume in foreign centres, which is considerably lower in the information provided by Liquidmetrix.

spread went from -18 bp in June at -10 bp at the end of the year, while in the latter, it went from -53 bp to -9 bp over the same period. In both cases the differential in negative values tends to close. Meanwhile, the Survey of Bank Loans for the third quarter of the year showed that the criteria for granting loans and their conditions tightened in both Spain and the euro area, with this circumstance more pronounced in residential mortgage loans. Requests for loans also decreased in both areas in a context of rising financing costs, circumstances that anticipate the continuation of these trends, both in terms of the demand and the supply of credit over the coming months.

It should be noted that in Spain the proportion of variable interest rate loans for home purchase is higher than the average for the euro area. Practically all financial institutions have adhered to the new Code of Good Practices,[87] which makes mortgage payments more flexible for the most vulnerable families.[88]

Market risk: red

- **The correlation between the daily returns of the different types of Spanish assets, which had started 2022 with a notable increase associated with the start of the war and fallen afterwards, registered a new period of increase in the second half of the year.** Hence, the half-yearly average value of the correlation stood at 0.38, above the average values for the first half of 2022 (0.33) and the whole of 2021 (0.26). The increases in the correlation were more intense from mid-September, coinciding with a period of new turbulence in the markets, although a slight decrease was observed in the final weeks of the year. The median of these correlations ended December around 0.39, after having reached a value of 0.48 at the beginning of the month. It can be seen that the difference between the minimum and maximum values of these correlations decreased with respect to the beginning of 2022, although they experienced many fluctuations in the second half of the year. The minimums went from values of around -0.43 on some days in January to positive values (close to 0.01) in late December, while maximums fell from 0.81 in January to 0.75 in December. Throughout the year there were fluctuations in the correlation between the different sectors, although the increase in the correlation between sovereign debt and equities, as well as between sovereign debt and private fixed income, was especially noteworthy in the second half. It should be remembered that the probability of contagion increases with higher correlation levels and that, furthermore, high correlations make difficult portfolio diversification.
- **The correlation between the yield of the 10-year Spanish sovereign bond and the other European sovereign bonds remained at high levels throughout the half-year, although there was greater variability with the yield of the Greek and Irish bonds.** The correlation between the yield of the Spanish sovereign bond and that of the core EU countries – the most solid countries in financial terms – remained stable and at high levels, around 0.98 from the end of January (see Figure 32). In contrast, there were fluctuations in the correlation between the profitability of the Spanish sovereign bond and that of peripheral countries. As of June, a decrease was observed from levels close to 0.96 to 0.78 at the beginning of August, due to the decrease in the correlation between the Spanish and Greek bonds and, to a lesser extent, Irish bonds. Since then, the correlation has increased overall to reach values above 0.95, the level at which the year closed.

[87] The new Code of Good Practices, which entered into force on 1 January 2023, introduces measures to make mortgage payments more flexible, including extension of terms, introduction of grace periods and lower rates.

[88] The 1-year Euribor, the main reference index for mortgage loans in Spain, stood at 3.018% in December, its highest level since 2008 and more than 3.5 pp above the value it presented a year ago.

Market risk: orange

Figure 3: Stock market prices

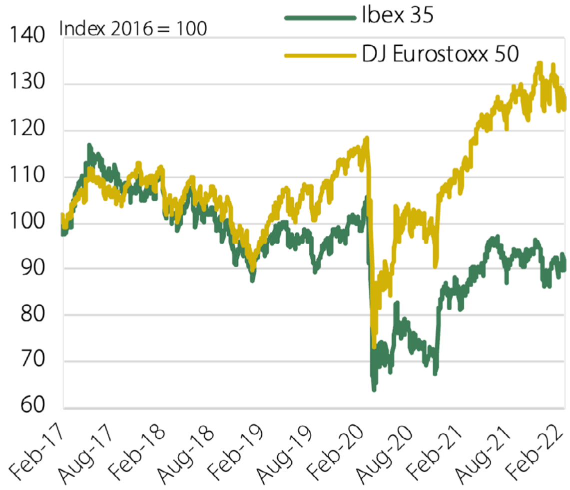
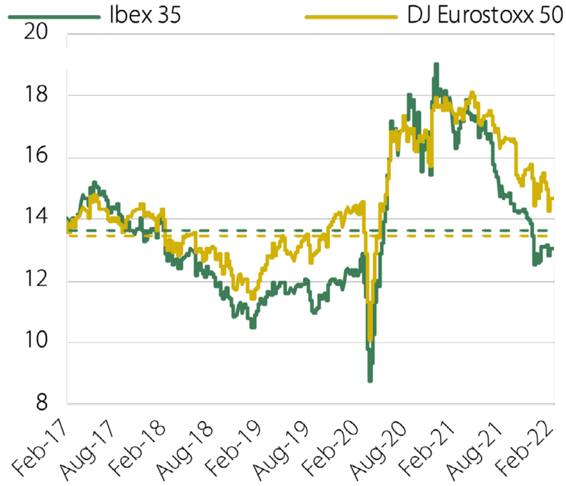


Figure 4: Price: earnings ratio (PER)



The dashed lines correspond to the average P/E ratio calculated since 2000.

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

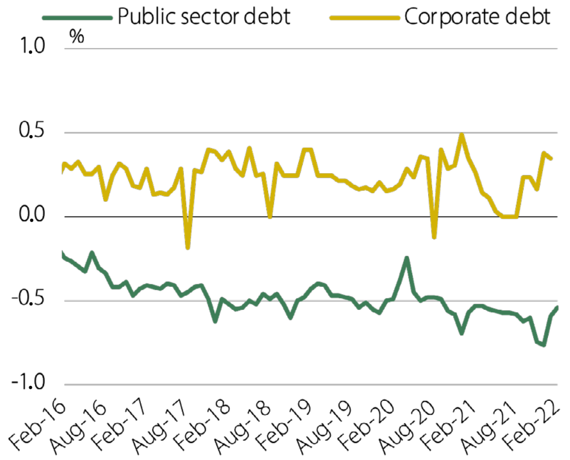


Figure 6: Long-term interest rates (10 years)

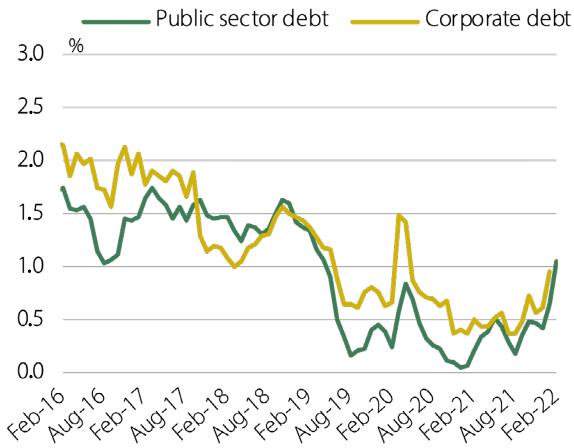


Figure 7: Oil price

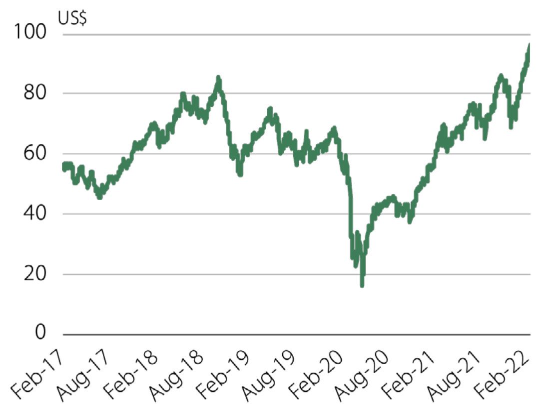
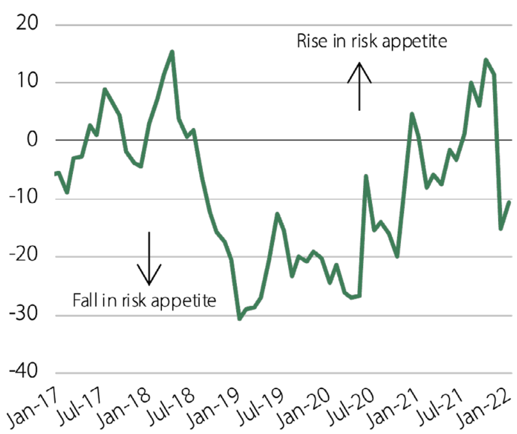


Figure 8: Risk appetite (State Street)



Credit risk: green

Figure 9: Financing of the non-financial sector

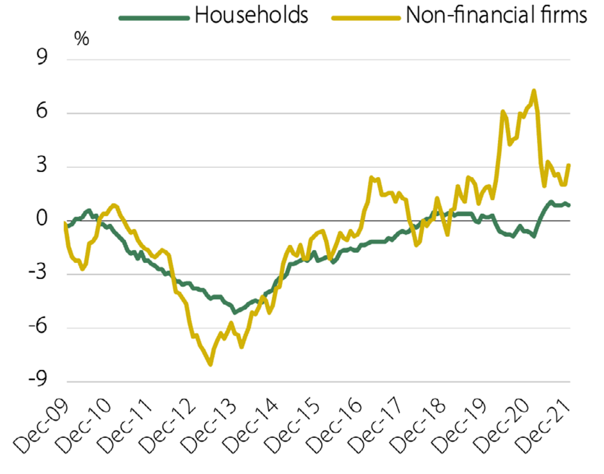


Figure 10: NPL (delinquency) ratio and unemployment rate

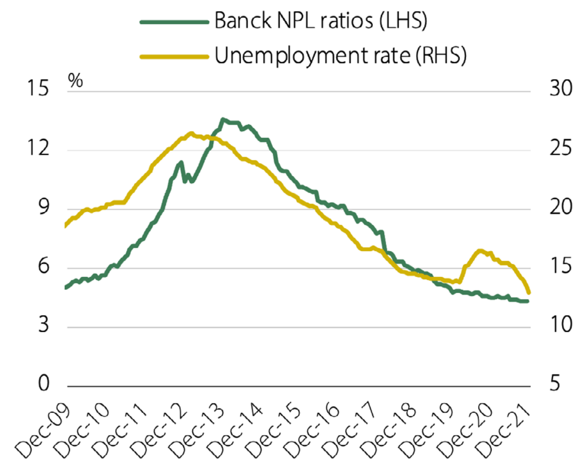


Figure 11: 10-year government debt risk premium (rate differential with Germany)

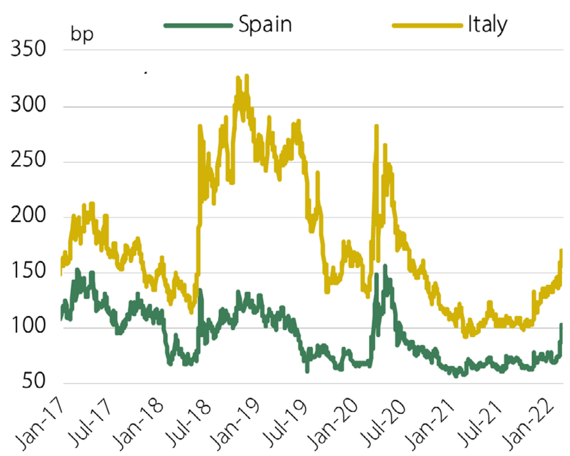


Figure 12: Private debt risk premium (5-year CDS)

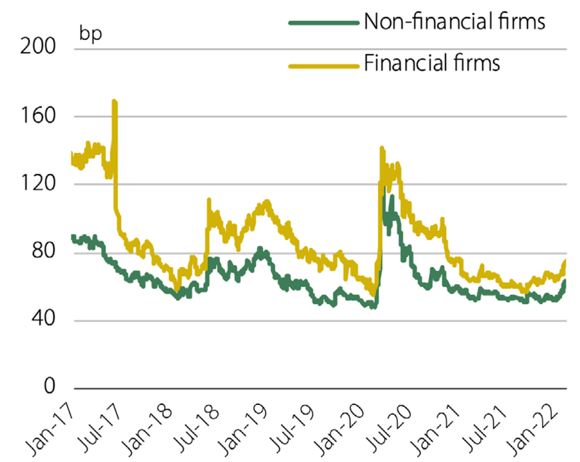


Figure 13: Housing prices (year-on-year change)

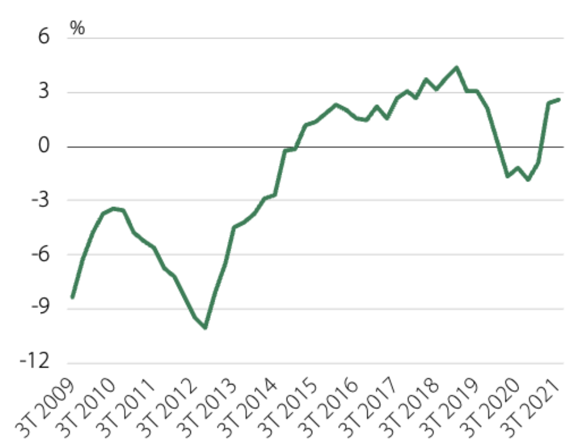
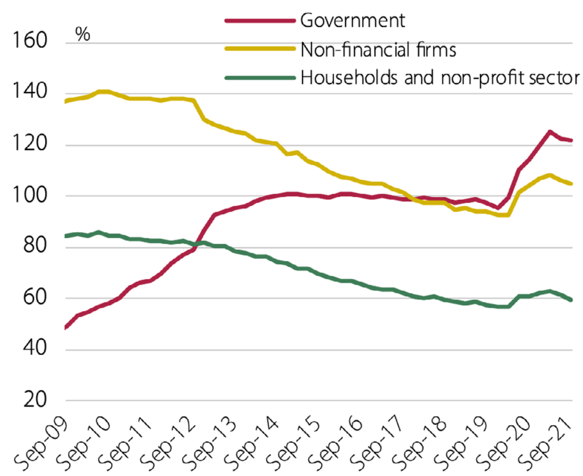
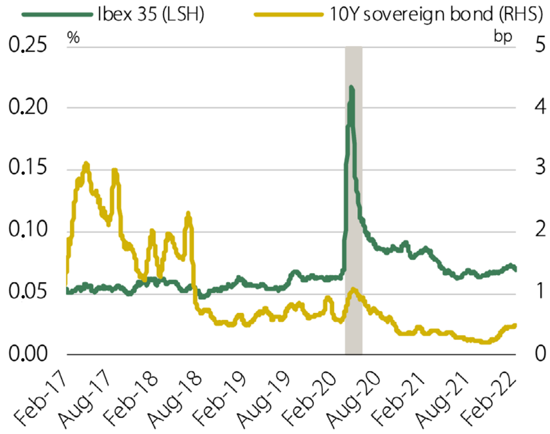


Figure 14: Indebtedness (% GDP)



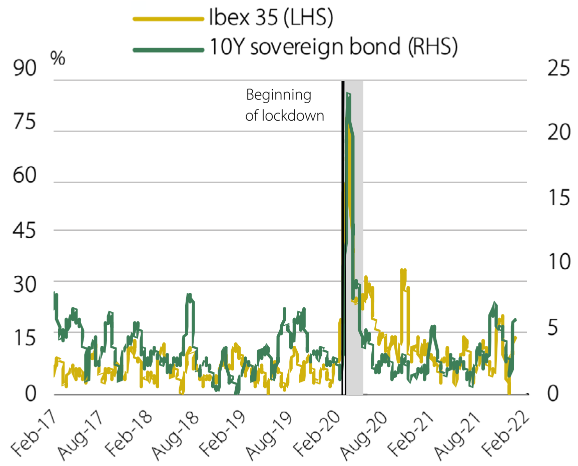
Liquidity, financing and fragmentation risk: yellow

Figure 15: Liquidity (bid-ask spread)



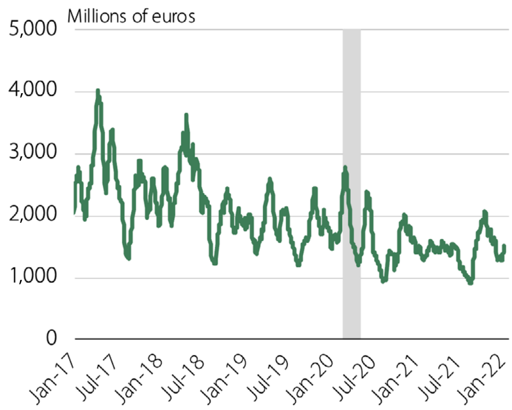
The shaded area corresponds to periods when short selling was banned.

Figure 16: Volatility (1-month moving average)



The shaded area corresponds to periods when short selling was banned.

Figure 17: SIBE trading (1-month moving average)



The shaded area corresponds to periods when short selling was banned.

Figure 18: Interbank spread (LIBOR-OIS)

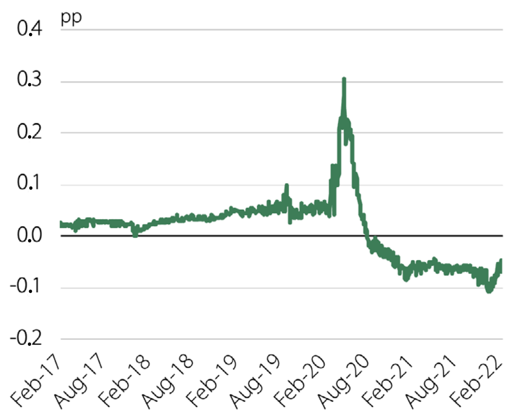


Figure 19: Spread (Spain-EMU) on corporate lending rates

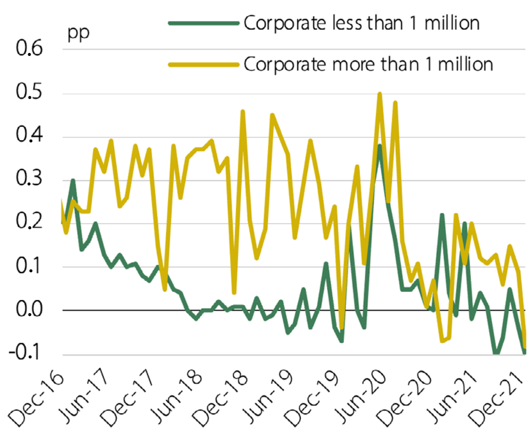
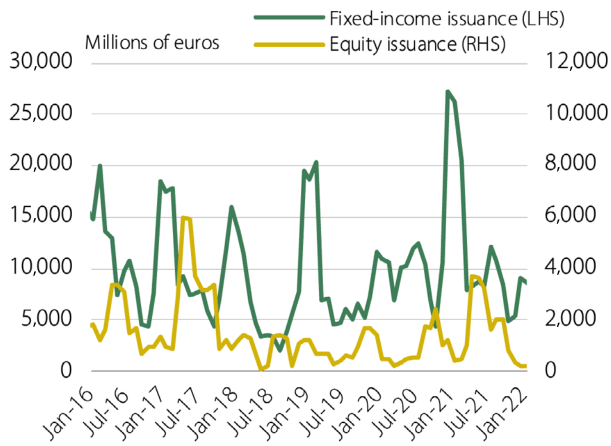


Figure 20: Issues (3-month moving average)



Macroeconomic risk: orange

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

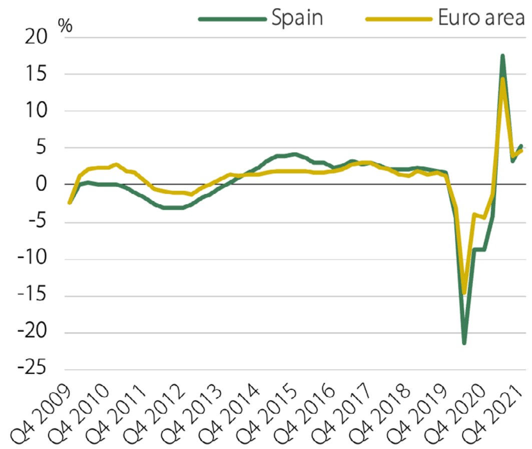


Figure 22: HCPI and core CPI (year-on-year change)

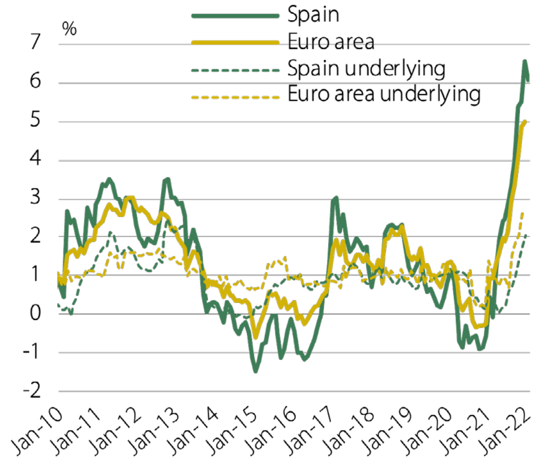


Figure 23: Employment (year-on-year change)

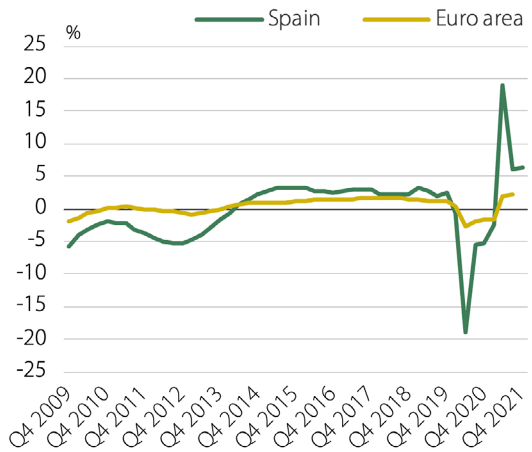
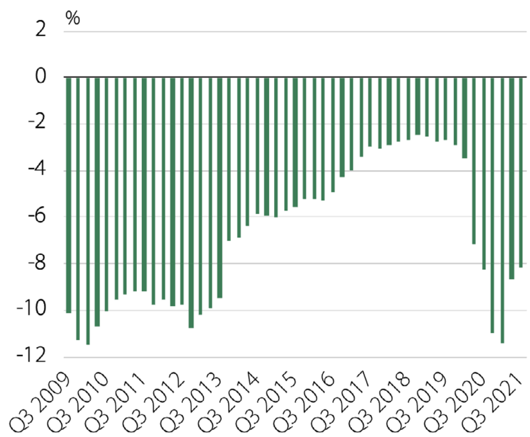


Figure 24: Public deficit (% of GDP)



Cumulative data for four quarters.

Figure 25: Exchange rates

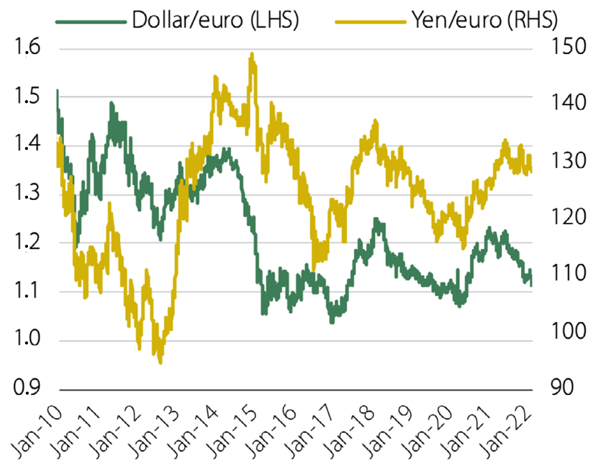
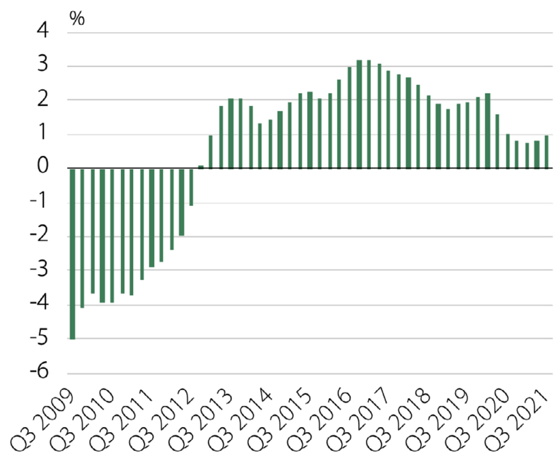
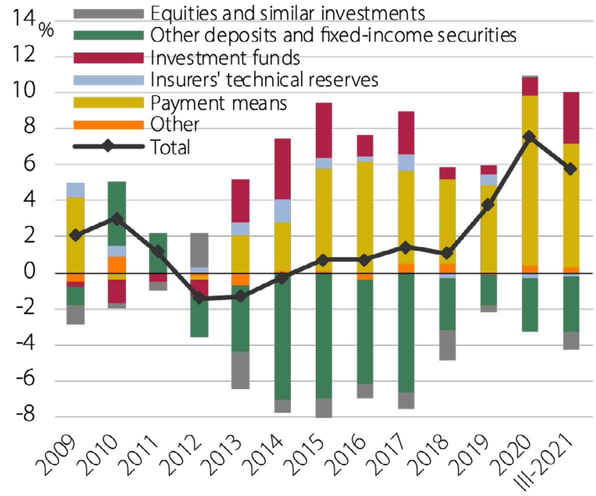


Figure 26: Current account balance (% of GDP)



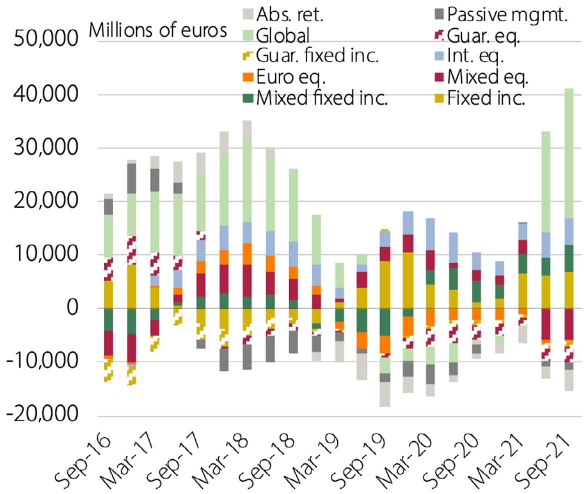
Investors

Figure 27: Households: net acquisition of financial assets (% GDP)



Cumulative data for four quarters.

Figure 28: Net subscriptions to investment funds



Cumulative data for four quarters (millions of euros).

Figure 29: Households: savings (% of disposable income)

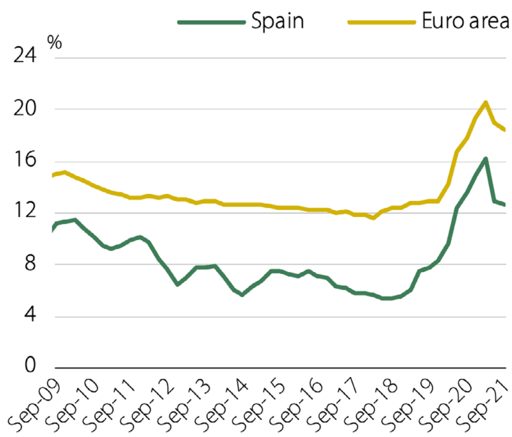
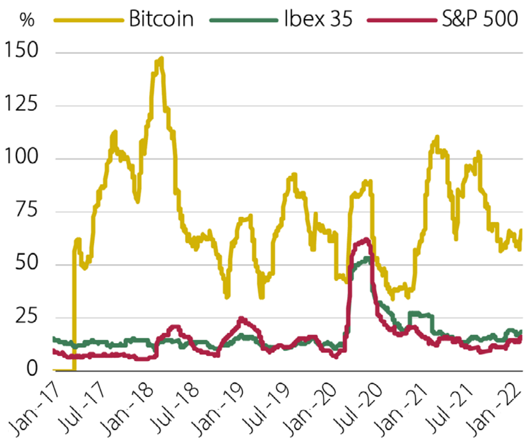


Figure 30: Bitcoin volatility



Market risk: red

Figure 31: Correlations among asset classes

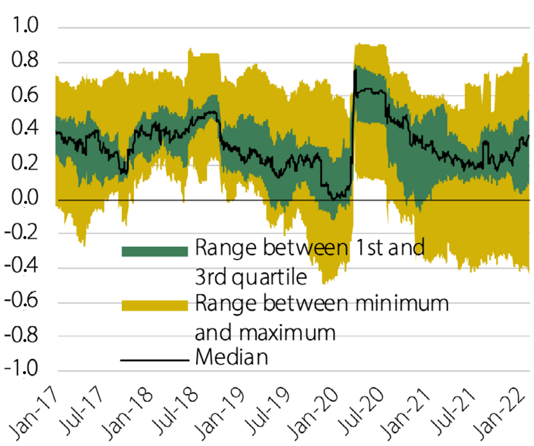
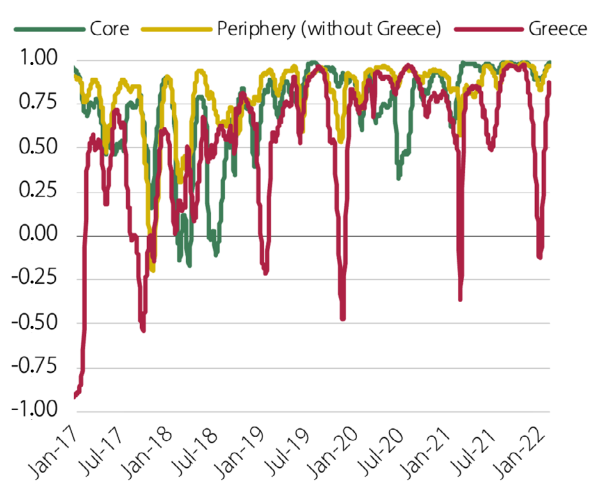
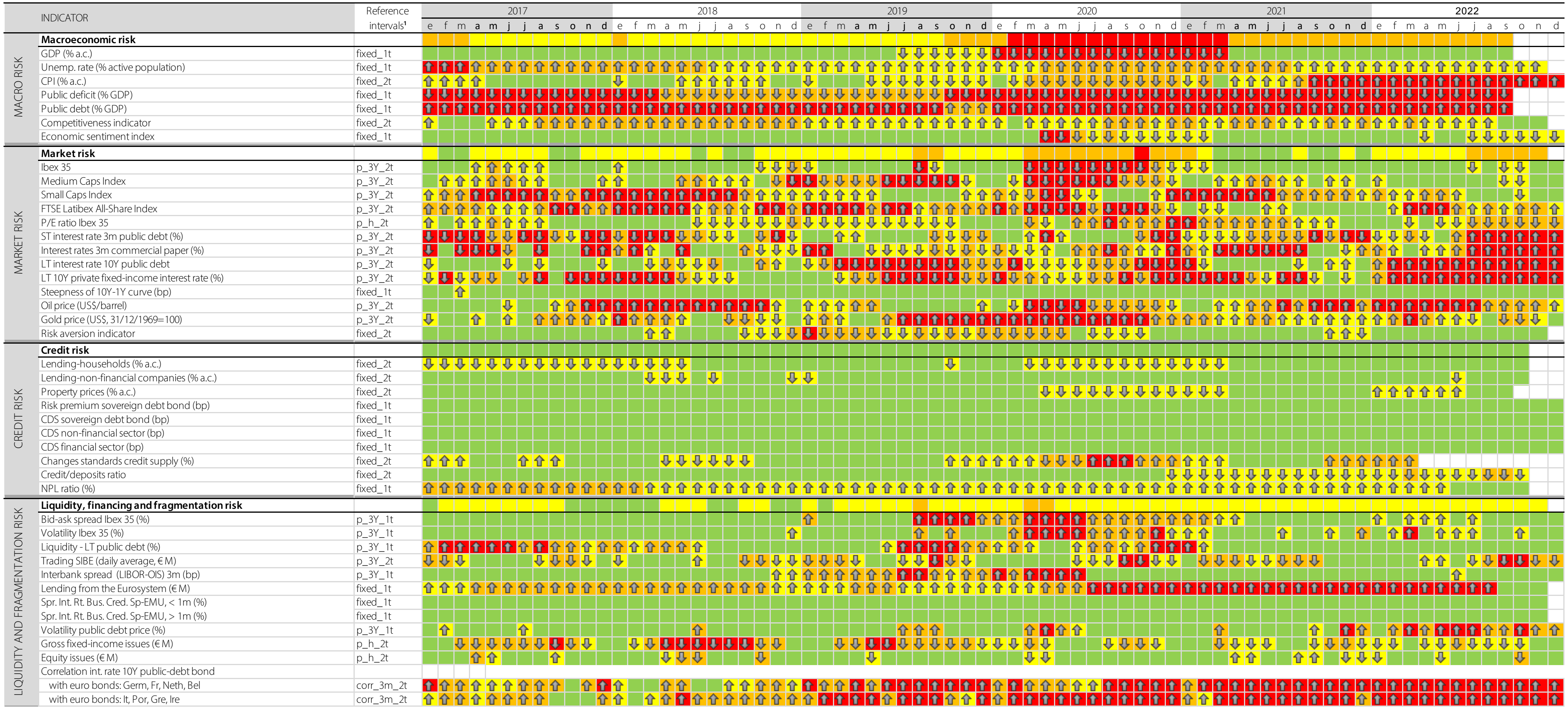


Figure 32: Correlation between the yield on Spanish and other European 10-year bonds



Heat map: risk categories



Source: CNMV, Bloomberg and Refinitiv Datastream.

1 Reference intervals could be: i) "fixed": predetermined numerical tresholds, one (1t) or two-tailed (2t); ii) "corr_3m": 3-month 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.

Explanatory notes

Spanish financial markets stress index (Figure 1): The stress index provides a real-time measurement of the systemic risk facing the Spanish financial system, ranging from zero to one. To this end, stress is evaluated in six segments of the financial system (equities, 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, with the subsequent aggregation taking into account the correlation between segments. In this way, 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) 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, who proposed 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 indicators", 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*, Vol. 14, No. 1, pp. 23-41 or as CNMV Working Paper No. 60 available at: http://www.cnmv.es/DocPortal/Publicaciones/MONOGRAFIAS/Monografia_60_en.pdf.

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 certain 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 certain 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. Instead, it indicates a movement towards an extreme value (very high or very low) over 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 includes 43 indicators,[89] 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 shown 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 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 detail on the methodology and analysis of these maps, see Cambón, M.I. (2015). "Identification of vulnerabilities in the Spanish financial system: an application of heat maps". *CNMV Bulletin*, Quarter I, pp. 109-121.

Bitcoin historical volatility (Figure 30): Annualised standard deviation of daily price variations in 90-day windows.

[89] Since June 2017, the heat map has included an additional indicator: the bid-ask spread of the 10-year sovereign debt bond.

Risk of contagion: The indicators that make up this block are of somewhat higher 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 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 Spanish and other European 10-year bonds (Figure 32). The correlation is calculated using daily data in three-month windows. The countries of the core group are Germany, France, the Netherlands and Belgium and the peripheral countries are Portugal, Italy, Greece and Ireland.