CNMV
Comisión Nacional del Mercado de Valores

Financial Stability Note

No. 15, July 2020

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

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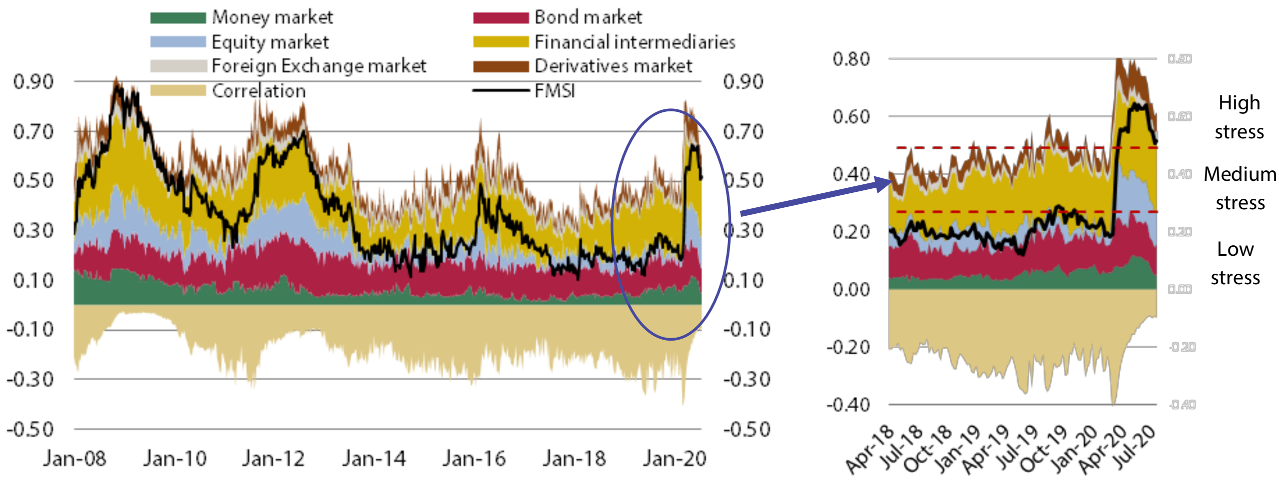
Summary

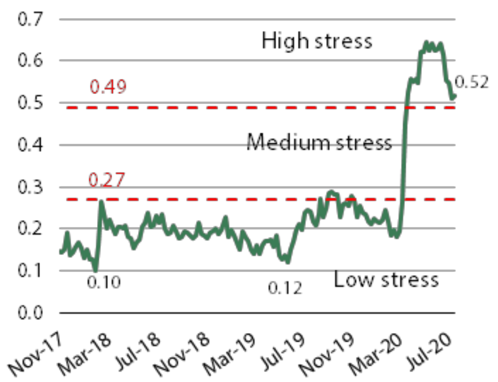
- ✓ The last stability note, in May, covered the coronavirus pandemic, the biggest global crisis in recent years, as well as its impact on the financial markets and the vulnerabilities that it has exposed. This crisis gave rise to the fastest and most intense single month increase ever in the Spanish financial markets' stress indicator, which peaked at 0.65, the third highest level in its history. The indicator remained at these levels during May and much of June, a period in which the slight decrease in the stress level of the individual indicators was offset by the increase in the correlation of the system. In recent weeks we have seen a decline in the general indicator to 0.52,[1] which is still slightly above the threshold that determines a high stress level (0.49). Within the individual segments, the high level of stress for financial intermediaries (banks) continues to stand out, due to the sharp decline in their quoted prices and renewed outbreaks of volatility.

Stress indicator of the Spanish financial markets

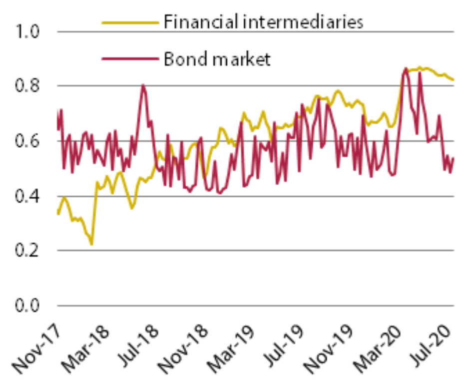
FIGURE 1



Total stress indicator



Stress indicators in the financial intermediaries and bonds segment



Source: CNMV.
For more detail on the recent movements in this indicator and its components, see the statistical series of the CNMV (Market stress indicators), available at http://www.cnmv.es/Portal/Publicaciones/SeriesWeb/Inicio.aspx?codrama=1295&lang=en. 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 Document No. 60 available at http://www.cnmv.es/DocPortal/Publicaciones/MONOGRAFIAS/Monografia_60_en.pdf.

[1] The closing date of this note is 15 July, except for the stress indicator which stretches to 17 July and certain other specific data.

- ✓ The macroeconomic situation in Spain remains very complex in the context of the crisis. According to the latest estimates, GDP, which had already fallen by 5.2% in the first quarter of the year when the isolation measures had only been applied for less than one month, fell by 18.5% in the second quarter. Full-year forecasts put the fall in activity at over 10%. The appearance of new outbreaks of the virus in various parts of Spain and, consequently, the potential renewal of some restrictive measures introduce a high degree of uncertainty to these forecasts, which also point to a substantial deterioration of the public accounts: the public deficit is expected to increase this year to between 10% and 14% of GDP depending on the institution making the forecast, and public debt is slated to increase to between 115% and 124% of GDP. The main challenges in these circumstances are related to the need to minimise the number of unemployed people and to preserve the sustainability of public accounts in the medium term after the demanding effort in terms of spending.

- ✓ After the turmoil in March, equity markets stabilised and even showed some bullish behaviour in May, as economic activity resumed. However, this trend was brought to a halt by the publication at the beginning of June of new, more negative forecasts regarding the severity and duration of the recession at global level, although there were advances in the second quarter as a whole. Year to date, the main Spanish market index shows a decline of 21.6%, considerably more pronounced than that of other European indices (Euro Stoxx 50: -9.8%, Mib 30: -13.7%, Cac 40: -14.5% and Dax 30: -2.4%). This difference is partly explained by the relatively greater weight in the Spanish market of consumer service companies (leisure, tourism and hospitality) and banks, and their worse performance compared with similar companies in other European countries. As regards the measures restricting the taking or increasing of net short positions, which were lifted on 18 May, the CNMV has not found any significant effect on returns, volatility or trading of the securities affected by these measures; the only effect it has identified is a certain loss of liquidity (measured through bid-ask spreads), which has tended to diminish over time.[2] In the debt markets, asset purchases by the European Central Bank (ECB) have led to lower in yields and risk premiums on debt assets during the second quarter, although greater disparities are seen in the case of corporate fixed income, since not all assets are eligible for purchase by the ECB.

- ✓ The collective investment industry has also recovered gradually after the uptick in withdrawals at the most turbulent times in the first quarter. These withdrawals, which in March were close to €5.5 billion and were catered to without significant difficulties, decreased in April and May to €400 million, with net inflows being recorded in June and early July. Over these past few months the CNMV has stayed in constant touch with management companies, focusing on valuation and assessing asset liquidity and reminding them of the tools available to manage the liquidity of these schemes as well as of the appropriateness in certain cases of valuing assets at the bid price or applying swing pricing schemes.

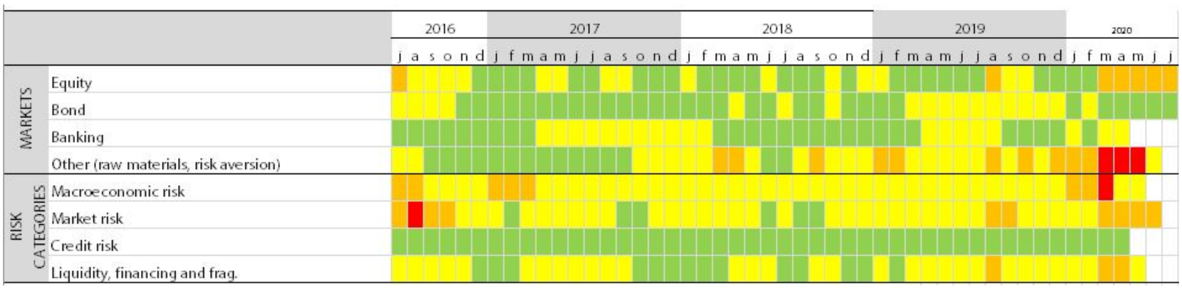
- ✓ The sources of risk in the current context remain many and varied. In the financial sphere, liquidity and market risks continue to be concerns, although the former is being alleviated by the various fiscal and monetary measures implemented by governments and central banks. Trends in agents' credit risk also remain worrying, in a macroeconomic context of difficulties for companies, which may translate into credit rating downgrades. These downgrades – which so far have not been numerous, but should be monitored

[2] See CNMV (2020). *Analysis of the effect of restrictions on short selling Spanish shares between March and May 2020*, report prepared by Ramiro Losada and Albert Martínez. http://www.cnmv.es/DocPortal/Publicaciones/OTROS/Informe_ventas_en_corto_23072020_enen.pdf

constantly – can have significant consequences for the companies concerned, the financial markets and, in certain circumstances, financial stability.

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

FIGURE 2



Source: CNMV. See article 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 Data to 15 July.

Sources of risk

Macroeconomic environment

- During the first quarter of the year, Spain's GDP contracted by 5.2% (4.1% year-on-year, see Figure 21), already showing the effects of the coronavirus crisis, which, while it affected only the last part of the quarter, did so to such an extent that household consumption fell by 7.5% for the quarter as a whole. The decline in the second quarter was much greater, 18.5% compared with the first quarter and 22.1% compared with the second quarter of 2019, reflecting the impact of the lockdown measures and the halt in activity throughout practically the entire period. The main institutions' forecasts for the whole of 2020 and 2021 – which are still subject to a high level of uncertainty deriving above all from the possibility of renewed outbreaks – estimate a fall in GDP of between 9% and 14%. For example, in its June report[3] the Bank of Spain estimated that, depending on how the pandemic evolves and whether or not there are renewed outbreaks,[4] GDP would fall this year by between 9.0% and 11.6% (in the April report the range was wider, specifically from 6.6% to 13.6%), while in 2021 it would recover by between 7.7% and 9.1% (5.5% and 8.5% in the forecasts of the previous report).

  The International Monetary Fund (IMF), for its part, published its forecasts at around the same time, taking as a reference the same scenario as in the April document, in which the pandemic was attenuated in the second half of the year. Despite maintaining this scenario, the IMF significantly worsened its forecasts, anticipating a greater impact of the crisis on activity in the first half, as well as a more gradual recovery. In this context, it estimated that the world economy would contract by 4.9% this year (the forecast in April was 3%), before growing by 5.4% in 2021 (5.8% in the previous estimate). In the case of Spain, the forecast for 2020 stands at -12.8%, and +6.3% for 2021 (-8.0% and +4.3% in April, respectively). These figures are worse than the full-year projections for the euro area as a whole, which it expects to contract by 10.2%, but slightly better than those for 2021, for which it forecasts 6% growth for the euro area as a whole. In the first few days of July, the European Commission published GDP contraction estimates for Spain of 10.9% of this year (-8.7% for the euro area as a whole), which represents an increase in contraction of one and a half percentage points compared with that forecast a few months ago and places Spain's economy as the second worst affected EU economy after Italy's (-11.2%). The expected recovery for 2021 would be 7.1%.

- According to EPA (Labour Force Survey) data[5] for the second quarter of the year, the number of persons in employment fell by 1,074,000 from the previous quarter. This figure does not include those affected by ERTEs (furlough procedures), since the methodology applied in the EPA by the Statistical Office of the European Union (Eurostat) and the International Labour Organisation (ILO) considers them as being in

[3] See Bank of Spain (2020). *Macroeconomic projections for the Spanish economy (2020-2022): The Bank of Spain's contribution to the Eurosystem's June 2020 joint forecasting exercise*, available at: https://www.bde.es/f/webbde/SES/AnalisisEconomico/AnalisisEconomico/ProyeccionesMacroeconomicas/ficheros/be08062020-proye.pdf

[4] In this report, published on 8 June, two possible scenarios are established (in the April report, when the uncertainties were more numerous, three scenarios were established): one corresponding to an early recovery, in which there would be no significant outbreaks and economic policy measures would avoid the destruction of companies, and another for gradual recovery, in which new outbreaks could take place (less virulent than the initial one) and there would be some lasting damage to the productive fabric.

[5] Data from the EPA (Labour Force Survey).

employment.[6] Most of the people who lost their jobs were considered to have become inactive, because the closure of companies during the lockdown prevented them from seeking employment under the conditions determined by the ILO to be considered as active. In total, the number of inactive persons increased by 1,062,000 while the number of unemployed persons increased by just 55,000, bringing the unemployment rate to 15.3% of the active population in the second quarter (0.9 pp more than in the previous quarter). As for affiliation to the Social Security system, data for June show a slight monthly increase of 0.4% in the number of members, to just over 18.6 million, which represents a decrease of 4.6% in year-on-year terms. The Bank of Spain's forecasts for the end of 2020 indicate an unemployment rate, depending on the various scenarios, of between 18.1% and 18.8% of the active population.

- The inflation indicator for June reflected an increase in prices of 0.5% during the month, which kept the year-on-year inflation rate in negative territory at -0.3%, albeit with a smaller absolute value than in April and May (-0.7% and -0.9% respectively). The goods and services referred to as the *special COVID-19 group*, which are those that have been consumed in the lockdown,[7] continued to be analysed by the National Institute of Statistics (INE) on an individual basis; prices of goods belonging to this group increased by 2.3% year-on-year, 0.5 pp less than in May,[8] while those of services fell by 2.4%, representing an increase of almost 2 pp compared with the -4.3% of the previous month. This last increase was a consequence of the increase in the price of electricity. Comparison with the euro area as a whole reveals that Spain's negative differential (in harmonised CPI terms) narrowed in June, from 1 pp in April and May to 0.6 pp in June. As regards the core inflation rate, which excludes the most volatile elements (energy and fresh food), data have shown very stable values since the end of 2019, ranging between 1.0% and 1.2%, and standing at 1.0% in June, 0.1 pp less than in May.

- Information provided by the Ministry of Finance regarding public sector finances shows that the deficit registered in the first four months of the year increased by more than €17 billion compared with the same period of 2019, to almost €24 billion,[9] 2.15% of GDP. The Ministry estimates that €8.87 billion of this increase owed to expenses deriving directly from COVID-19. Looking ahead to the end of 2020, the increase in public spending and the sharp contraction in revenue as a result of the coronavirus crisis could take the public deficit to above 10% of GDP. The Bank of Spain's forecasts would place it between 9.5% and 11.2% of GDP, while the IMF's calculations point to an even higher figure of 13.9%. At the same time, estimates of the level of public debt, which have been revised upwards slightly, indicate a range of 114.5-119.3% of GDP according to the Bank of Spain and 123.8% according to the IMF.

- As for households' financial decisions, data from the Financial Accounts for the first three months of the year reflect the effects of the onset of the pandemic on retail investors. Specifically, there was a slight change in household investment patterns, which manifested in increases both in the rate of savings – attributable to precautionary saving,

[6] The number of these workers, specifically those receiving benefits from the State Public Employment Service (SEPE), peaked in May at almost 3.4 million. In June, this figure fell by 16% to 2.8 million in the total for the month, although by the end of the month the number of workers still receiving benefits had fallen to around 1.5 million.

[7] The goods belonging to this special group are: food, beverages, tobacco, household cleaning products, pet food and personal care products. Services are those related to housing (rent, supplies…), insurance, bank fees and funeral services.

[8] Among these goods, unprocessed foods have a particularly great influence: prices of these increased by 4.1%, almost 1.5 pp less than in May.

[9] These data correspond to the combined deficit of the central government, the autonomous regional governments and the social security system. Therefore, they do not include the balance of local authorities or the amount of aid to financial institutions.

as was observed in the middle part of the financial crisis that started in 2008 – and in the acquisition of financial assets. Thus, the household saving rate stood at 8.8% of disposable income in March, compared with 7.4% at the end of 2019 (see Figure 29), while the acquisition of financial assets reached 3.5% of GDP[10] in net terms, the highest figure since 2007 (Figure 27). The breakdown of the acquisition of assets shows that the divestment of time deposits and fixed income securities continued (-2.2% of GDP), as did significant investment in means of payment[11] (5.1% of GDP).

It was also observed that during the first quarter of 2020, household net withdrawals from investment funds amounted to €2.11 billion (this negative figure corresponded entirely to March, when redemptions totalled around €5.5 billion). On a cumulative basis for the past 12 months, net inflows were positive (€766 million). The largest redemptions between January and March were from fixed income funds, which posted net outflows of €3.19 billion. In general, management companies did not have significant difficulties in meeting these redemptions. As previously mentioned, the work of the CNMV has been focused on the liquidity conditions of the assets, their valuation and the monitoring of redemptions, maintaining close contact with the sector. The CNMV also reminded the entities of the available liquidity management tools[12] and the appropriateness in certain cases of valuing assets at the bid price or of applying swing pricing schemes.[13, 14]

Data for April and May show, firstly, that in these two months net outflows from investment funds were much lower than in March (€400 million). In fact, in June and the first few days of July, it is estimated that there were positive net subscriptions for a value of around €900 million, thus reversing the trend of the previous three months. At the same time household deposits increased in May by 1.1% compared with the previous month, to exceed €882 billion, which is 7.2% more than one year earlier. In the coming months, the most financially vulnerable households' need of liquidity could lead to a certain amount of divestment in the asset portfolio.

Context of low interest rates

- Monetary policy in the euro area in the first half of the year has inevitably been conditioned by the effects of the coronavirus on the economy. Although the initial measures (asset purchase programmes) helped to ease the tensions in European debt markets, at least partly, and to facilitate the transmission of monetary policy to the real economy, more recent decisions seem to be aimed more at stimulating economic recovery. In this regard, measures aimed at establishing more favourable financing conditions for the real economy have taken on greater prominence: cutting the rate of the deposit facility to -0.50%, a third round of financing for banks – TLTRO III,[15] extension of

[10] Accumulated data for four quarters, up to Q1 2020.

[11] Cash and sight deposits.

[12] As regards the macroprudential tools available, it is worth noting the inclusion, by virtue of Royal Decree-Law 11/2020, of 31 March, adopting urgent complementary measures in the social and economic area to deal with COVID-19, of a new tool consisting of the possibility of establishing prior notice periods for redemptions without these being subject to the requirements that are normally applicable regarding term, minimum amount and being provided for in the management regulations. These terms can be established by the manager or by the CNMV itself.

[13] Swing pricing allows portfolio assets to be valued at the bid price (the lower part of the range), instead of the mid price (normally used) when the volume of redemptions exceeds a certain threshold, which must be established objectively in the procedures of the management companies.

[14] For more details on movements in CIS in the context of the crisis and a comparison with the European Union as a whole, see the exhibit "The use of risk management tools in the field of collective investment during the COVID-19 crisis" in the CNMV report (2020). *Non-bank financial intermediation in Spain*, published in July.

[15] Targeted Longer-Term Refinancing Operations.

the term of operations from 2 to 3 years[16] and start of the programme called PELTRO,[17] which will consist of seven long-term refinancing operations for banks, providing them with abundant liquidity at a cost of -25 bp to allow them to grant loans to businesses and households. Thus, the ECB awarded €1,308 billion to 742 financial institutions in the fourth TLTRO III liquidity auction held in mid-June, the highest amount awarded in its history for refinancing operations. The liquidity granted over three years has a cost of -0.5% p.a., which can reach -1% for banks meeting certain requirements for maintaining credit volumes.

All these measures, along with debt purchases, have allowed interest rates to remain at low levels along the entire interest rate curve in Spain and even at negative values up to terms of just over 5 years. Short-term corporate rates have also remained low. In the United States, the Federal Reserve has followed a similar policy, which has included purchases of corporate debt in the primary and secondary markets, as well as liquidity facilities and loans for businesses and households.

- In this environment, the risks already mentioned in previous notes continue to apply, some of them even intensifying: i) persistence of search for yield strategies, which accentuates investors' propensity to acquire assets with higher expectations of performance given the lack of profitability of risk-free assets, but for which volatility, credit risk and low credit ratings (subordinated debt and high-yield) can be exacerbated, in addition to the absence of liquidity (private equity funds) and ii) greater difficulties for the banking sector to maintain its margins and consequently its profitability in a context of increasing non-performing loans and rising risks, which is an incentive to assume greater risks in search of higher yields. Despite all this, some vulnerabilities are being moderated by the difficulty experienced by some agents in obtaining credit and the removal of incentives to borrow in a context of economic recession, while the low cost of financing of the indebted agents favours the control of delinquency.

Sources of political uncertainty

- Brexit remains one of the main sources of political uncertainty in Europe today. It finally took place on 31 January and, although the UK's leaving the European Union without agreement was avoided, the framework that will govern relations after 31 December 2020 when the transition period ends has still not been established. As a result of the coronavirus outbreak, the negotiations to draw up the framework to regulate trading and economic relations between the parties were delayed and the time left in which to reach agreement is tight, since the deadline for requesting an extension of the transitional period expired on 1 July[18] The European Commission demands a level playing field to ensure that United Kingdom will not compete unfairly with the European Union by enacting advantageous taxation, lowering environmental standards or making public assistance more flexible and so possibly encouraging European companies to relocate. Although negotiations have intensified, there are still serious disagreements between the two parties, especially on key issues such as fisheries and judicial and police cooperation in criminal matters and in the areas of competition and unfair practices. Failure to reach an agreement in the coming months could lead to a disorderly exit by the United Kingdom, which would end up trading with the European Union under World Trade Organisation (WTO) rules. In addition, the transition period and the progress of

[16] It was also decided to reduce the interest rate on these operations during the period from June 2020 to June 2021 to 50 bp below the average rate applied in the Eurosystem's main refinancing operations over the same period.

[17] Pandemic Emergency Longer Term Refinancing Operations (PELTRO).

[18] In practice, negotiations on the future treaty must be concluded by around November, since the agreement will need to be ratified in Parliament.

negotiations in the midst of a pandemic, with the added risk that this entails (we are seeing decisions apparently related to the pandemic that could be interpreted in Brexit terms), are sources of uncertainty that could generate turbulence in the financial markets.[19]

- The coronavirus crisis has generated tensions within the European Union about how to curb its economic impact in a coordinated way for the countries that make up the Union. Thus, for months different solutions have been proposed to mitigate the economic crisis, generating controversy among member countries, the most recent related to the so-called reconstruction fund. The main discrepancies arose in terms of its volume and form of distribution. After a long summit of more than four days in mid-July, in which it seemed difficult to reach an agreement, EU members managed to agree on the establishment of an economic reactivation fund endowed with €750 billion to mitigate the damage caused by the coronavirus and to establish a financial budget for 2021-2027 of €1,074.3 billion. The fund will be divided into €390 billion in non-reimbursable direct aid and €360 billion in loans (with a maximum repayment term until the end of 2058)[20] For the first time in the history of the European Union, subsidies will be financed by issuing joint debt. In addition, mechanisms will be established to monitor[21] this assistance. Despite this major agreement having been reached, it remains to be approved by the European Parliament and certain national parliaments, a process that could delay the availability of funds until 2021. Possible delays or difficulties during this process, as well as the introduction of additional economic reactivation measures, could generate new divergences among European partners. For Spain, the agreement is expected to translate into funds for an approximate amount of €140 billion, of which €72.7 million would be obtained as non-reimbursable direct aid and €67.3 billion as loans.

- Trade tensions between the United States and China, which have conditioned the progress of the world economy in recent years, are still present in the current scenario, exacerbated by the health crisis, which has damaged the relationship between the two powers, leading to a certain distancing and increased hostility.[22] In January, the first phase of the trade agreement was signed[23] and despite the US president recently declaring it "fully intact", there is no news about the development of a second phase of the agreement to end the trade war that started more than two years ago. In addition to trade tensions with China, coupled with recent very significant diplomatic decisions, last June the US Department of Commerce announced that it was studying the imposition of new tariffs on EU exports in its legal dispute over state subsidies to Airbus. This information, combined with current European moves to impose a "Google tax" (tax on the activity of large technology companies, most of which are from the United States) could

[19] In Spain, the CNMV has opened a section on its website called "After Brexit: issues relating to the financial sector", which sets out information that may be useful for market participants and investors.

[20] The initial proposal of the European Commission was that this direct aid be €500 billion and the loans €250 billion. After negotiations among the various member countries, the combined amount remains at €750 billion, but its distribution between direct aid and loans is different.

[21] The national reform plans are expected to be approved by qualified majority (in any case without the right of veto). The European Commission will evaluate the authorisation of the disbursement and will request the prior opinion of the Economic and Financial Committee, which could raise objections, and these could in turn be escalated to the European Council. Furthermore, if, exceptionally, a Member State considers that there are deviations from the objectives to which the funds should be allocated, the President of the European Council could be asked to address the matter.

[22] The latest spat between the United States and China relates to the US' withdrawal of Hong Kong's preferential trade treatment, to which China has responded by announcing that it will retaliate.

[23] With the signing of the first phase of the trade agreement, China committed to increasing its purchases of US products, focusing mainly on the agricultural, manufacturing and energy sectors, although due to the coronavirus pandemic international trade has been significantly curtailed. For its part, the United States has frozen the imposition of additional tariffs on Chinese products.

generate more disagreements between the two sides and eventually lead to certain instability in the financial markets in the context of the current crisis.

- At the national level, the risks related to the economic management of the health crisis stand out, particularly the management of renewed coronavirus outbreaks. In recent weeks, new outbreaks of the virus have been recorded in various parts of Spain. The decentralised and differentiated response of the competent authorities, together with the possibility of new lockdowns, even if local or regional, are factors of additional uncertainty for the economy and financial markets as a whole. Of particular concern are the new restrictions imposed by some countries on travel to Spain or some of its regions, due to the negative impact that they will undoubtedly have on an already heavily affected tourism sector.

Other sources of uncertainty

- Exposure to the risk of cyber attacks continues to be high and, given the potential detrimental effects, cybersecurity has become an important issue for organisations and companies. In the current context, in which non-face-to-face activities have increased significantly – especially teleworking (working from home) and contact via telematic channels – preventing this operational risk has taken on even more importance. Preventing confidential data leaks through, for example, fraudulent calls or fake emails and thus keeping the computer network secure can prevent the occurrence of cyber attacks that could affect the operation of companies and quickly spread to other sectors and services. Furthermore, if the contagion spreads and manages to affect a sufficient number of agents, it could affect financial stability. Given the importance of this risk in an increasingly interconnected system, protection and awareness against it are essential for companies and entities.[24]

- In many countries the confinement measures adopted to stop the spread of the coronavirus have been gradually withdrawn in recent months. However, the virus continues to spread and there are places that continue to register a high number of new cases and daily deaths. Currently, the main risk lies in controlling the virus in those countries where the contagion curve has not yet begun to decline and in controlling new outbreaks in the rest. The process of developing a vaccine is still ongoing and, even with significant progress, the time horizon is uncertain. A second wave of infections followed by new confinement measures and the consequent halt in activity cannot be ruled out. In this scenario, the world economy would deteriorate even more and this could cause fresh turbulence in the markets.

[24] According to the *Hiscox Cyber Readiness Report 2020*, Spanish companies have gone from allocating 8.80% of the IT budget to cybersecurity in 2019 to 14.93% in 2020.

Risk categories

Market risk: orange

- The international equity markets, which had ended the first quarter of the year with the biggest quarterly drop in history,[25] as a consequence of the shutdown of economic activity in many regions to halt the advance of the pandemic, and with a scenario of deep recession expected in the coming months, began the second quarter with significant progress thanks to the positive effect of the set of powerful economic and financial measures adopted by the main central banks and governments of the world's largest economies. Thus, with the gradual reopening of economies, investors gradually returned to those markets and companies with the best prospects for recovery, which allowed some markets to post notable increases in the quarter and to offset a significant part of the losses seen in the first few months of the year. For certain indices, there is some concern about the apparent discrepancy between the upward trend in quoted prices and the downward trend in corporate earnings forecasts. Price rises started to moderate from June when both the Federal Reserve[26] and the IMF[27] predicted a more intense contraction and a weaker recovery than expected, which put paid to any expectation of a V-shaped recovery, which was also complicated by the appearance of new outbreaks of the virus.

- In this complex context, the main international stock market indices posted notable recoveries in the second quarter,[28] and these continued in July, although most of them still show losses on a year-to-date basis, particularly European markets and most especially those of Spain, Italy and France, where the impact of the crisis on economic activity is expected to be heaviest.

  All US indices showed significant gains in the second quarter, and this lasted until mid-July, allowing the Dow Jones and the S&P to recover most of the losses accumulated in the first quarter and the technology-heavy NASDAQ to rise substantially to new all-time highs. The Dow Jones index, which is relatively manufacturing-heavy, has lost 5.8% so far this year, after staging its strongest rally since 1987 in the second quarter, while the more general S&P 500[29] index showed levels similar to those at the beginning of the year after accumulating a 20% rise in the same period, its biggest advance in a quarter since 1998 during the dotcom boom. For its part, the NASDAQ has gained 17.6% so far this year, after advancing 37% from April to mid-July, when it reached its new all-time highs thanks to the substantial gains of technology companies.[30] These companies have benefited from the new forms of consumption, work and leisure adopted as a result of

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[25] The main world stock indices showed falls in the first quarter of the year ranging between 14.2% and 23.2% in the US markets, over 25% in the main euro area markets and close to 20% in Japan.

[26] The Federal Reserve has estimated that the US economy will contract by 6.5% in 2021 and indicated that it will keep its rates close to zero throughout 2021 and 2022.

[27] The IMF forecasts (WEO report) show a global contraction that is greater than expected (-4.9% compared with -3% in April) and a more moderate recovery of 5.4% in 2021, which implies that at the end of next year, world GDP will be 6.5 pp lower than the forecasts published in January 2020. The advanced economies will suffer the greatest impact (-8% compared with -6% in April), with the setbacks in Spain, Italy and France standing out (12.8%, 12.8% and 12.5% respectively), compared to the more moderate falls in the United States (8%), Germany (7.8%) and Japan (5.8%).

[28] The US indices posted increases in the second quarter, ranging from 17.8% for the Dow Jones and 30.6% for the NASDAQ and extending with advances of more than 4% in the first half of July; while in the same period the European indices posted gains ranging from 6.6% for the Ibex 35 and 23.9% for the Dax 30 and in turn extending into July at between 3.5% and 5% respectively.

[29] Shares of the leading US technology companies – known as FAANG (Facebook, Apple, Amazon, Netflix and Google) – account for nearly a fifth of the capitalisation of this index, their largest ever proportion.

[30] Shares of the FAANG companies gained 36%, 43%, 41%, 21% and 22% respectively in the second quarter, and 17%, 33%, 63%, 62% and 13% year-to-date 15 July.

lockdowns and from their higher growth prospects due to their greater flexibility in adapting to consumer demands.

In Europe, price rises were more discreet and gains in the indices from April ranged from 10.3% for the Ibex 35 and 30.1% for the Dax 30, with year-to-date losses to 2.4% for the German index and 21.6% for the Spanish one. European markets are burdened by their greater dependence on companies linked to the traditional economy and the lower weight of technological companies in their indices, all in a context of larger expected falls in GDP.

- In Spain, the Ibex 35, which had accumulated losses of 28.9% in the first quarter of the year – the highest among the European indices together with those of Italy's Mib 30 – also presented a more discreet recovery from April on. This development was fundamentally influenced by the negative outlook for the economy and the scenario of notable uncertainties for the coming years. It is also worth noting the repercussions deriving from the significant investments held by Spanish companies in Latin America, where the virus is spreading with a great deal of intensity. So far this year, this index has lost 21.6%,[31] much more than the European benchmark indices, which have lost between 2% and 14%. The sectors with the greatest weight in the Spanish index, namely the finance sector (banks) and consumer services, which include leisure, tourism and the hospitality industry, are in general performing worse than other similar European sector indices, since they are more severely affected by the crisis.

- With the exception of oil and textiles, all sectors showed progress from April on, although the intensity of the recovery was very uneven among them and among the companies themselves in each sector depending on their business and the prospects for recovery of activity. The most notable recoveries corresponded to companies in the energy, industry, construction and telecommunications sectors, which have been less affected by the duration of the lockdown, as well as some companies in the food sector and in the transport sector, such as Aena, which has been favoured by the resumption of airport activity. The weakest advances corresponded to stocks in the tourism and leisure sector, due to doubts about the partial recovery of the tourist season as a consequence of new outbreaks and the social distancing measures; and to banks, where the outlook is overshadowed by an even more intense and prolonged scenario of shrinking margins. Prominent among stocks that lost ground were those in the consumer goods sector, which suffered from the shutdown of retail activity and the fall in demand, as well as the main oil company (Repsol), whose income continues to be affected by the fall in oil prices.[32] Likewise, between April and July, the smallest companies showed greater gains (22.7%) than the market as a whole (10.3%) and mid-cap companies (11.8%), thanks to the greater presence of companies in the pharmaceutical and renewable energy sectors, for which there are more positive expectations.

- The slight recovery in prices, which was accompanied by a significant drop in corporate earnings forecast for the coming months, led to a significant growth in the price-earnings ratio (PER) of the Ibex 35, which went from 11.3[33] in mid-April to 16.8 in July[34] (its historical mean is 13.4). This last value is the highest since 2002 (Figure 4).

[31] With data to 15 July.

[32] Brent oil was trading at around US$43 a barrel in mid-July, down from US$66 at the beginning of the year.

[33] In the same period, the PER ratio of the US S&P 500 and the European Euro Stoxx 50 indices grew to 21.9x and 16.8x, their highest levels since 2001 and 2002 respectively.

[34] The PER ratio reached 17.2x in June.

- The international debt markets, which initially suffered temporary tensions that were reflected in the replacement of higher risk debt assets by better credit quality debt and in increases in risk premiums on sovereign and corporate debt of financially vulnerable countries and companies, saw rates of public and, to a lesser extent, corporate debt, return to pre-COVID-19 levels. Debt rates benefited from the exceptional monetary easing measures adopted by central banks,[35] which include substantial purchases of both public[36] and private debt in secondary markets,[37] as well as statements by members of the various central banks indicating that rates will remain at very low levels in the long term.

  However, despite the ECB's support measures and the prospects for their extension over time, the market risk of debt assets remains at high levels, especially in the case of corporate debt with the lowest rating and subordinated debt, since, in principle, these instruments do not have the direct support of the ECB and tend to have lower liquidity, so that in a context of sharp deterioration in activity there could be notable increases in their risk premiums. These rate increases would be more intense for the most indebted companies, but could also be transferred to the most vulnerable economies, those with higher levels of indebtedness and greater fiscal imbalances. In this regard, it is worth considering the effects that a possible uptick in risk premiums and therefore a decrease in the prices of riskier assets could have on the portfolios of some fixed income investment funds, which are sometimes exposed to illiquid, complex and non investment grade assets. Exposures to assets with very long maturities, prices of which are highly sensitive to increases in yields, are also a concern.

- In this context, yields on European public debt remained at very low levels in the middle of the year and in many cases at or close to all-time lows. Specifically, in mid-July they were in negative territory in Germany, France, Belgium, the Netherlands, Austria, Finland and Ireland; below 0.5% in Spain and Portugal, and above 1% in Italy and Greece. With the exception of Portugal, where it remains unchanged, the yield on the long-term debt of the European economies shows declines in the year that range from 4 bp in Spain to 25 bp in Germany, France and the Netherlands and even more in the case of some northern European economies. The volume of Spanish government bonds held in the ECB's portfolio stood at €281,396[38] million at the end of April.

  Yields on corporate debt varied widely depending on the type of asset, the issuer's rating and whether or not the instruments were eligible for the ECB purchase programmes. In this regard, issues with relatively poor credit ratings or high degrees of subordination are seeing significant increases in the returns demanded by investors. These increases are especially marked in the case of assets that present a higher risk, that are subject to downgrades to their ratings[39] or outlooks.

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[35] In June, the European Central Bank (ECB) approved an extension of its PEPP (Pandemic Emergency Purchase Program) amounting to €600 billion (making a total of €1.35 trillion) and announced that it will maintain the programme until June 2021 or beyond if necessary.

[36] At the end of the second quarter the ECB held around 27% of the public debt of the four largest euro area economies on its balance sheet, compared with 19% in December 2019.

[37] The ECB's asset purchase programme (APP) had assets amounting to €2.79 trillion in mid-July, including public debt (€2.25 trillion), corporate debt (€224 billion), mortgage backed securities (€285 billion) and securitisations (€30.5 billion). This is in addition to the €403 billion of the PEPP at the same date, corresponding to both public and private debt, of which almost €50 billion were acquired in the first part of July.

[38] This amount reflects purchases of public debt under the Public Sector Purchase Programme (PSPP). To this amount must be added the purchases of public debt of the PEPP that the ECB does not detail by region, so it is very likely that Spanish public debt in the hands of the ECB represents close to 30% of the balance of long-term government bonds.

[39] Over the quarter various companies in both Europe and the United States have had their credit ratings downgraded, in some cases to below investment grade.

Credit risk: green

- As mentioned previously, the stimulus packages approved by the ECB to overcome the COVID-19 crisis have favoured the progressive reduction of sovereign risk premiums and risk premiums of Spanish private sector issuers since the end of March. The sovereign risk premium – the difference between the yield on 10-year public debt in Spain and in Germany – stood at 87 bp when this note closed, above the 66 bp at which it started 2020 but significantly below the 156 bp it reached in mid-April, coinciding with the worst moments of the pandemic and before the measures adopted by the ECB regarding the intensification of its debt purchases were known (Figure 11).

  Risk premiums in the financial sector behaved similarly to those of public debt, falling on average from the maximum of 142 bp registered in March to 97 bp in mid-July. Banks are facing a scenario of increasing uncertainties and risks as a consequence of the expected recession after the pandemic. The extension of the current interest rate situation will continue to squeeze margins and the worsening economic situation will increase the levels of non-performing loans. To all this we must add the current recommendation of the European Systemic Risk Board (ESRB) not to distribute dividends in 2020, which is expected to last until 2021. As indicated in previous editions of this note, the improvement in financing of these entities should be highlighted as a positive factor, deriving from the measures adopted by the monetary authority[40] and the containment of delinquencies generated by low interest rates.

  In the case of non-financial companies, the decreases developed in similar fashion, reaching around 71 bp on average in July, well below the high registered in March (126 bp), although above the values at the beginning of the year (around 50 bp). These companies have also benefited from the expansion of the ECB's purchasing programmes.[41]

- One of the issues causing concern regarding credit risk in the context of the crisis is the possibility of a substantial increase in corporate credit rating downgrades in the coming months. Such downgrades can have significant consequences for the companies concerned, which find it harder to finance themselves, for markets, because they can lead to asset sell-offs for example and, ultimately, for financial stability. The reforms introduced in the wake of the global financial crisis sought to reduce excessive reliance on third-party credit ratings, but although progress has been made in this regard, regulations continue to make intensive use of them in many areas. This potential source of vulnerability, which in principle may vary greatly from one jurisdiction to another, would not be particularly significant in Spain at present for the reasons set out below, although it must be constantly assessed.

  On the one hand, information on Spanish companies' credit ratings right at the beginning of the crisis[42] shows that most Spanish debt is high quality, with 96.5% of outstandings being rated investment grade. In addition, investment grade debt in the lowest notch above high yield (BBB- for Fitch and S&P, Baa3 for Moody's) represented only 3.2% of total outstanding debt. This amount is small, and relatively similar to the total balance of high yield debt, which accounts for 3.5% of total outstanding debt. Since March, the

[40] These measures are described under the heading "Context of low interest rates" and in footnotes 35-38 of the heading "Market risk".

[41] This programme (Corporate Sector Purchase Programme, CSPP), includes purchases of corporate debt, which have been extended to all issuers meeting the conditions of the programme (minimum rating BBB-). By mid-July, as previously mentioned, €224 billion of debt had been purchased under this programme, more than 21% of it on the primary market.

[42] Information at the end of March.

various agencies have revised their outlooks for the ratings of financial institutions such as Banco Santander, Banco Sabadell, Bankia and CaixaBank among others from stable to negative. In April, Standard & Poor's downgraded BBVA's rating from A- to BBB +, still within investment grade. Regarding non-financial companies, those related to consumer services are expected to be the most affected,[43] since they have the worst prospects in terms of their activity and, consequently, the highest risk of defaults.

On the other hand, given the way the Spanish regulations treat the consequences of credit rating downgrades in the areas supervised by the CNMV, we do not see any significant risk in this field. In the case of collective investment schemes (CIS) for example, there is nothing in the regulations requiring the immediate and automatic sale of fixed income assets in CIS portfolios in the event of credit rating downgrades, since if the minimum rating established in the prospectus ceases to be met, the regulations provide a period of 3-6 months (extendible for a further 3 months by the CNMV) in which to regularise the portfolio if necessary. Therefore, it is considered that the impact of these downgrades could be limited in the short term since there are buffer arrangements that make it possible to dilute the effects of any sales over time.

- Financing for non-financial sectors[44] of the economy continued to develop unevenly, with a notable expansion of financing to businesses and a decline in lending to households, which once again showed negative values as a result of the effects of the coronavirus on the economy. In the latter case, the contraction reached 0.7% year-on-year in May, with a decrease of 1.6% in loans for home purchases and growth in consumer credit that slowed to 1.8% (as against 3.3% in March and 5.3% in May 2019). The total financing balance of non-financial companies increased considerably (6.0% in May), basically due to the increase in financing via loans[45] (8.7%), which reflects the liquidity needs of many companies to meet their payments during the suspension of economic activity, as well as banks' having available funds to lend thanks to Eurosystem financing. Financing of companies through debt issuance expanded again in May (by 4.3% year-on-year compared with a contraction of -0.7% in April), although at a slower rate than that registered before the crisis (close to 14%). Lastly, the balance of foreign loans showed a 2.3% increase.

Liquidity, financing and fragmentation risk: yellow

- The situation of abundant liquidity and the greater ease of placing debt thanks to the ECB's asset purchases have significantly boosted fixed income debt issues by Spanish issuers. Specifically, fixed income debt issues registered with the CNMV in the second quarter totalled €35.83 billion, well over double those made in the same period of 2019 (€14.33 billion).[46] The issue of mortgage-backed securities and commercial paper stood out, representing 28% and 22% respectively of total issues. The latter are favoured by two events of different natures. On the one hand they benefit from the return to Spain of some Spanish companies' foreign commercial paper issuance programmes[47] and on the

[43] In fact, companies like Codere, NH Hoteles and Amadeus saw their credit ratings downgraded during the second quarter.

[44] Source: Economic indicators of the Bank of Spain.

[45] The financial institutions themselves, with loans either of their own or partly guaranteed by the public sector through the Official Credit Institute (ICO), have established a set of specific financing facilities for companies and the self-employed.

[46] Preliminary data corresponding to the first half of July reveal that this trend has continued, since in just a few days more than €10 billion of debt issues were registered, of which almost €6 billion corresponded to securitisation bonds. and about €3 billion to public sector covered bonds.

[47] As in the case of energy company Endesa, which has once again registered its commercial paper with the CNMV.

other from the approval of guarantee programmes[48] for companies subject to the issuance of these instruments and their being traded on the AIAF Market in Fixed Income Securities or MARF, the Alternative Fixed Income Market.[49] Likewise, in the first half of the year, debt issues stood at €56.59 billion, 61% more than in the first half of 2019. Issuances made by companies abroad also increased, although at a slower rate, by 3.8% year-on-year until May (€46.28 billion), with the issuance of commercial paper representing 46% of the total.

- Household deposits grew by 7.2% year-on-year in May, while those of companies increased by 13.8%, reaching €882.1 billion and €287.2 billion respectively. Both households and companies have continued to accumulate liquidity in deposits (between them, €44.7 billion more between March and May) to face the exceptional needs that might arise in the coming months in a context of high uncertainty about their future income and a lack of profitable investment alternatives with low levels of risk.

- Household and corporate debt reached 150.6% of GDP in the first quarter,[50] totalling €1.87 trillion, 4.9 pp below the debt level registered in the same period of 2019. Household debt accounted for 56.9% of GDP, while corporate debt stood at 93.7%. Likewise, households' financial wealth fell by 1.1% year-on-year to €2.29 trillion, 184.7% of GDP, while in net terms it stood at €1.52 trillion, 123.2% of GDP and 4.4 pp below the figure for the same period of the previous year, largely as a consequence of the fall in the price of equity assets due to the coronavirus crisis.

- Average daily trading volumes on the electronic market stood at €1.75 billion in the second quarter,[51] 17% down on same period of 2019, and below the €1,995 million of the previous quarter. The fragmentation of the trading of Spanish shares remains very high, although there was a slight recovery in BME's market share (57.5% of trading subject to market rules) in relation to trading venues other than the home market,[52] in a context of reduced volatility. Likewise, trading in Spanish shares through systematic internalisers, and therefore not subject to market rules, increased slightly to 17% of total trading,[53] compared with 15% in the first quarter. (In the first quarter of 2018, when MiFID II had just entered into force, this proportion was 5%). Apart from this, the Swiss market operator SIX Group took control of the market infrastructure operator in Spain (BME) after its voluntary public offer was accepted by more than 93% of BME's shareholders.

- The Ibex 35 liquidity indicator (evaluated using the bid-ask spread and an increase in which means a loss of liquidity) increased significantly between March and mid-April,

[48] In accordance with the guarantee programme recently established in Royal Decree-Law 15/2020 of 21 April on urgent complementary measures to support the economy and employment.

[49] The third tranche of the guarantee programme, endowed with €24.5 billion, includes €4 billion to guarantee commercial paper issued on the MARF. The maximum amount of the guarantee will cover 70% of the total amount of the issue of commercial paper, which may have a maximum maturity of 24 months. The cost of the guarantee will be 30 bp for issues with a maturity of up to 12 months and 60 bp for those with maturities of between 13 and 24 months, but its cost will be offset by a reduction in the return demanded by investors. The guarantees will be available until 30 September, with the following conditions for awarding them: having registered a commercial paper issue programme on the MARF before 23 April, the company's registered office being located in Spain and the funds obtained not being available for paying dividends. The amount of commercial paper issued in the second quarter of the year on the MARF reached €2.1 billion (€4.5 billion in the first half of the year). The issuances of commercial paper in this market by companies such as El Corte Inglés, MásMóvil and Sacyr have benefited from the guarantee programme established.

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

[51] Preliminary data for July indicate that average daily trading for the first half of the month was €1.45 billion.

[52] The market share of trading venues other than the home market reached 47.8% in the first quarter of the year, favoured by the context of high volatility, which contributed to increasing algorithmic and high-frequency trading operations, which tend to take place mainly in trading venues other than the home market.

[53] Total trading is understood in this context as the sum of the trading subject to market rules and that carried out through systematic internalisers.

reaching its highest value in recent years. The bid-ask spread reached over 0.20% in April, a worse figure than those observed during the 2008 financial crisis and similar to those seen in the sovereign debt crisis of 2012, when there was also a period of restrictions on short trading. Since these highs, the differential has been progressively narrowing, standing at 0.09% in mid-July, a slightly higher level than before the crisis (around 0.06%). The deterioration in the liquidity of Spanish securities is explained by the decline in trading volumes and the high volatility in the markets, plus at least part of the effects of the restrictions on short trading. This is one of the conclusions reached by a study recently published by the CNMV[54] which analyses the impact of the restrictions imposed by the CNMV on short trading in the context of the crisis with respect to some relevant market variables such as liquidity (measured through the bid-ask spread), volatility, trading and price movements of the securities concerned. According to this report, only a slight deterioration in the bid-ask spread of the securities subject to the prohibition was identified, and this has tended to diminish over time.

Liquidity conditions in debt markets continued to be favoured by the intensity of the ECB's purchases. In the case of the 10-year sovereign bond, the bid-ask range in absolute terms has experienced certain ups and downs but remains below 1 bp (Figure 15).

- Interest rate differentials between loans to Spanish companies and those in the euro area as a whole grew significantly both for those with amounts less than €1 million and for those with higher amounts. The former stood at 37 bp in May (-1 bp in February), while the latter reached 50 bp. (32 bp in February), thus reaching their highest levels since the first half of 2016 and 2015 respectively.

Risk of contagion: orange

- The correlation between the daily returns of the various Spanish asset classes, which grew sharply in the first months of the year as a result of the spread of the coronavirus, remained at a high level. The median of these correlations stood at 0.57 in mid-July, having fallen gradually from the 0.64 shown at the end of April. However, these values are much higher than those observed at the beginning of the year (around 0) and than the average for the whole of 2019 (0.19), and closer to the average values of the last decade (0.5) (see Figure 31). The maximum value of the correlations by pairs of assets remained at values close to 0.90, while the minimum value was situated in mid-July at a level somewhat lower than in April (0.08 compared with 0.13), although notably above the values of the beginning of the year (-0.37 at the beginning of February). The COVID-19 crisis has led to a deterioration in expectations and an increase in uncertainty, which have been transferred to the various asset classes, causing falls in the prices of stocks, debt and credit and leading to an increase in correlation levels among asset returns. Greater levels of correlation increase the chances of contagion among different asset classes and make it more difficult to diversify portfolios.

- With regard to movements in EU public debt assets, the correlation between the yield on Spanish sovereign bonds and that on those of the core EU countries decreased considerably relative to April. This overall decline went through some ups and downs as the risk perception of the Spanish economy changed relative to the core countries. Thus, in May, the correlation increased to a maximum of 0.83; later, in June, there was a notable

[54] CNMV (2020). *Analysis of the effect of restrictions on net short positions on Spanish shares between March and May 2020*, available at https://www.cnmv.es/DocPortal/Publicaciones/OTROS/Informe_ventas_en_corto_23072020.pdf.

fall to 0.32, due to the sharp decrease in the correlation between the yield of the Spanish sovereign bond and those of the German and Dutch bonds and, finally, in the first days of July the indicator increased slightly to 0.47. On the other hand, the correlation between the yield of the Spanish sovereign bond and that of the peripheral countries stood at 0.96 in mid-July (at the end of April it was 0.94), very high values that point to the identification of financial vulnerabilities common to these economies (see Figure 32). This correlation experienced certain ups and downs in the period considered, showing an initial decrease (from 0.94 to 0.83 at the beginning of June) and a subsequent increase, until mid-July, to 0.96.

Market risk: orange

Figure 3. Stock market prices

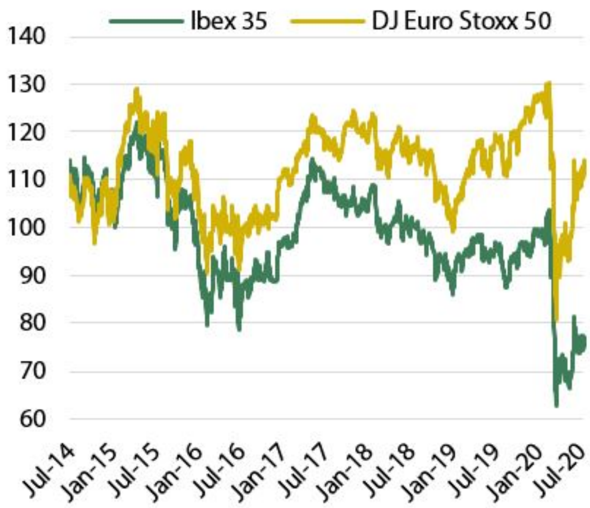


Figure 4. Price-earnings ratio (PER)

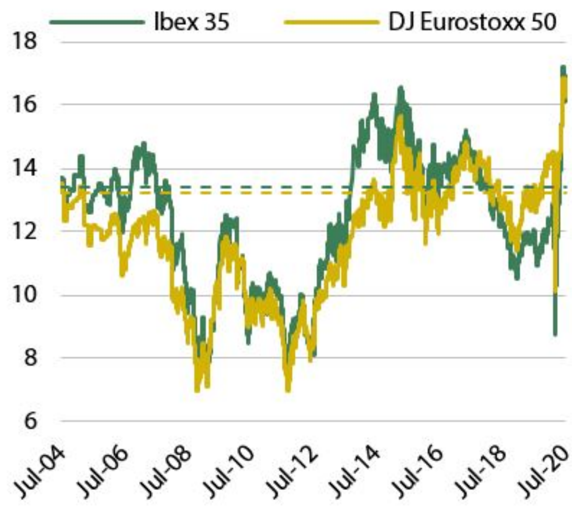


Figure 5. Short-term interest rates (3 months)

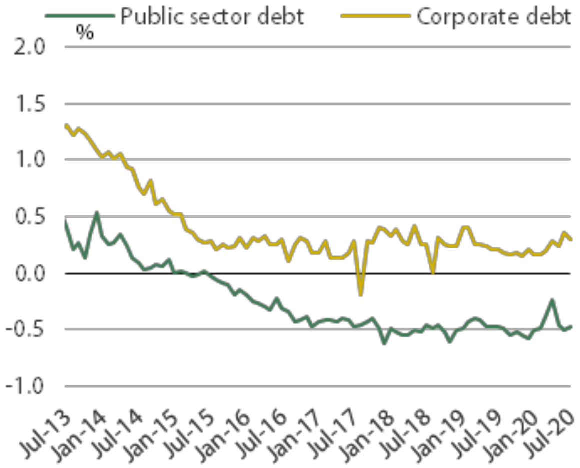


Figure 6. Long-term interest rates (10 years)

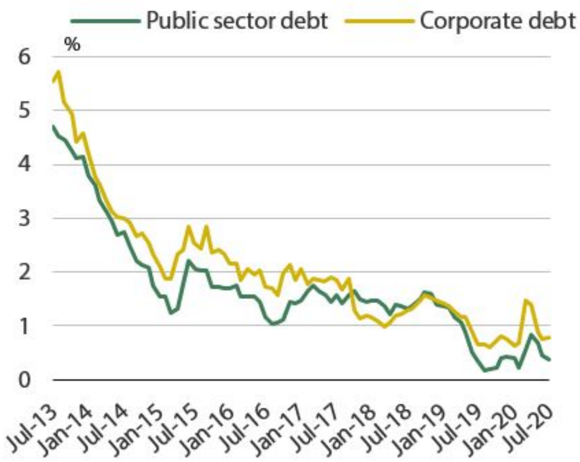
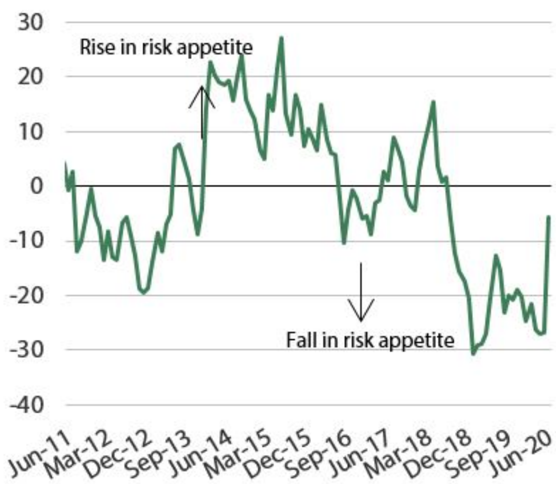


Figure 7. Oil price

Figure 8. Risk appetite (State Street)



Credit risk: green

Figure 9. Financing of the non-financial sector

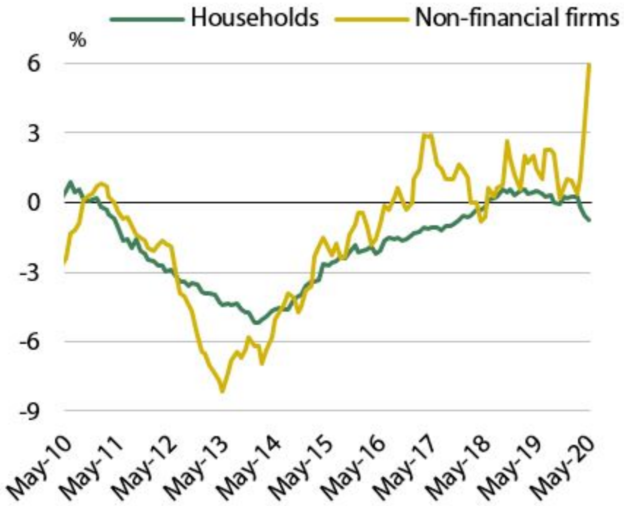


Figure 10. NPL (delinquency) ratio and unemployment rate

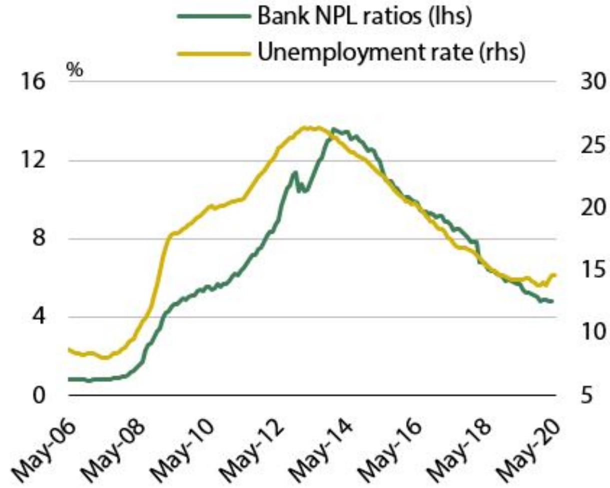


Figure 11. 10-year government debt risk premium (spread with Germany)

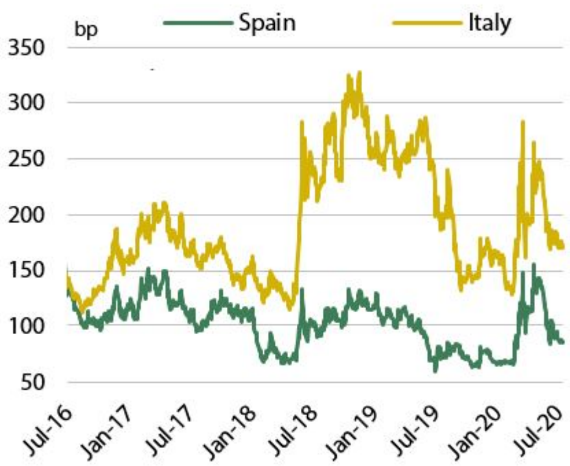


Figure 12. Private debt risk premium (5-year CDS)

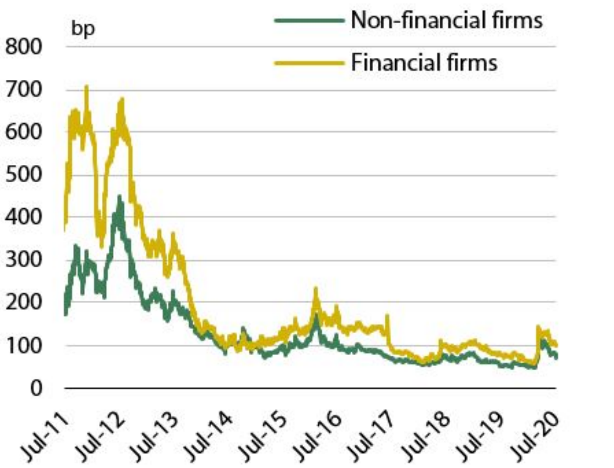
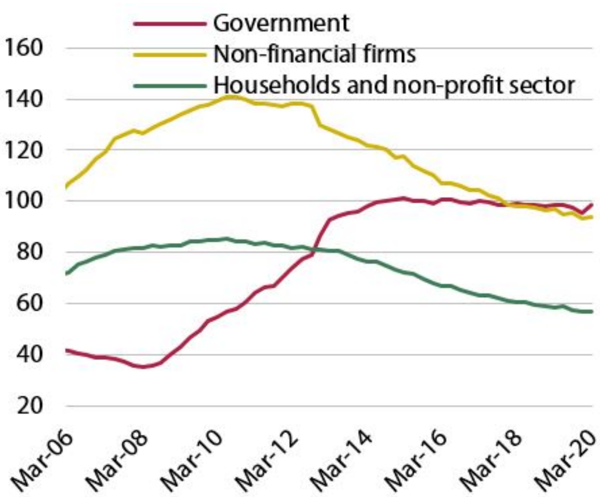


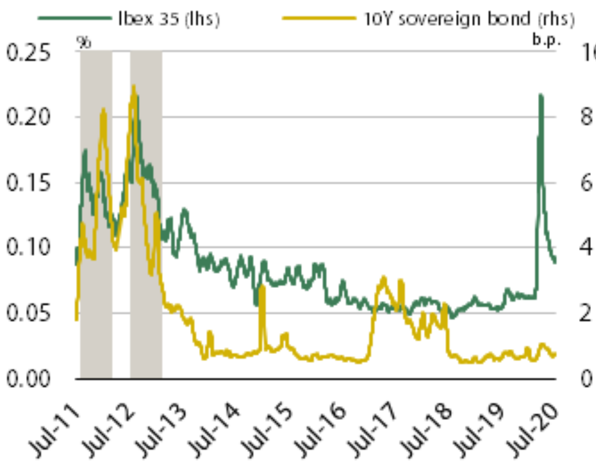
Figure 13. Housing prices (year-on-year change)

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)

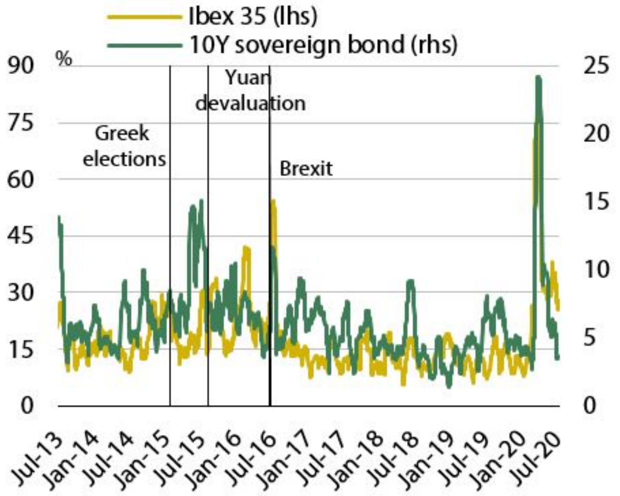


Figure 17. SIBE trading (1-month moving average)

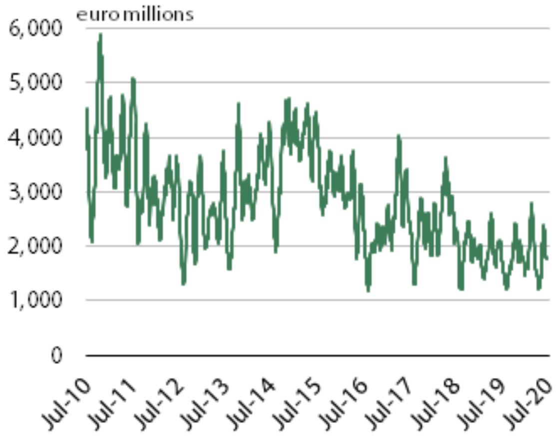


Figure 18. Interbank spread (LIBOR-OIS)

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

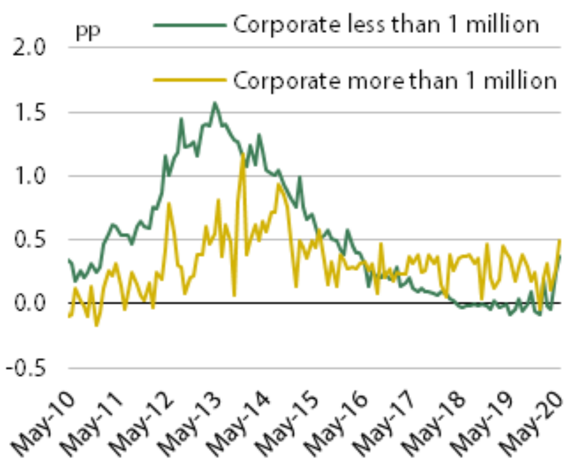
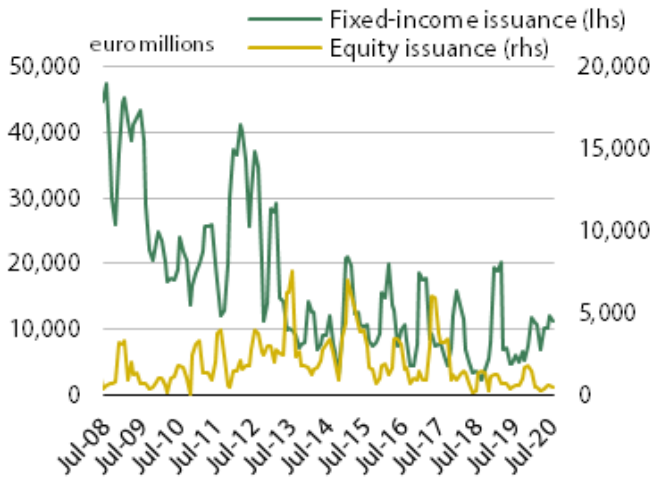


Figure 20. Issues (3-month moving average)



Macroeconomic risk: red

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

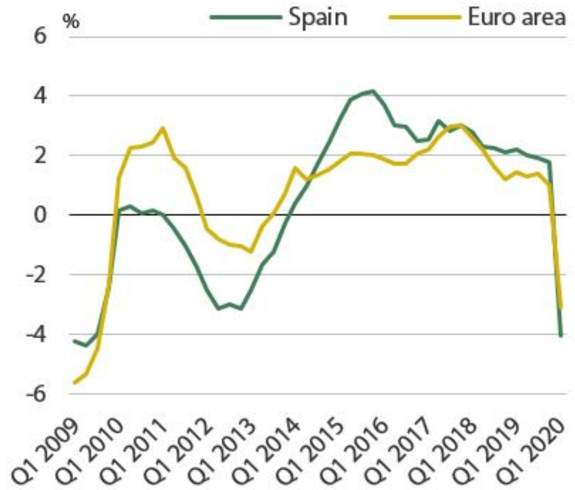


Figure 22. HCPI and core CPI (year-on-year change)

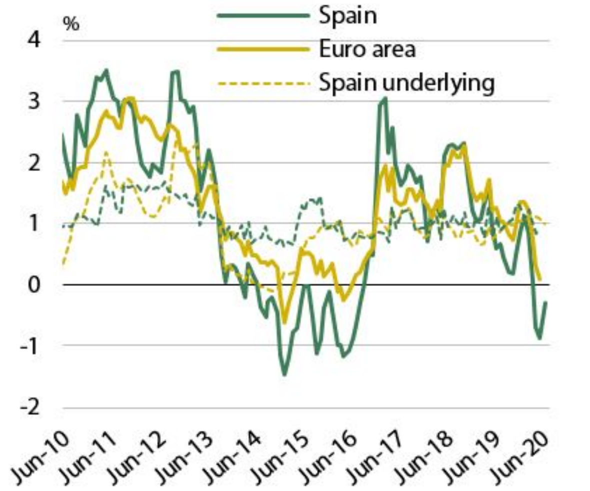


Figure 23. Employment (year-on-year change)

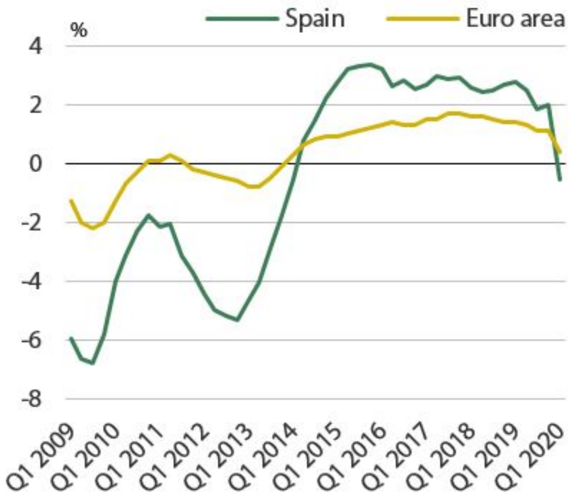
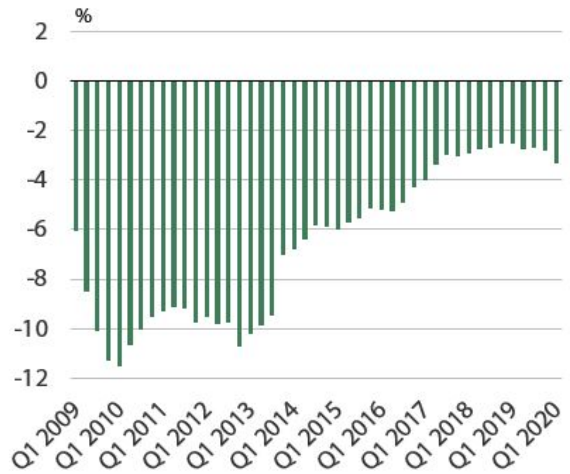


Figure 24. Government balance (% GDP)



Cumulative data for four quarters.

Figure 25. Exchange rates

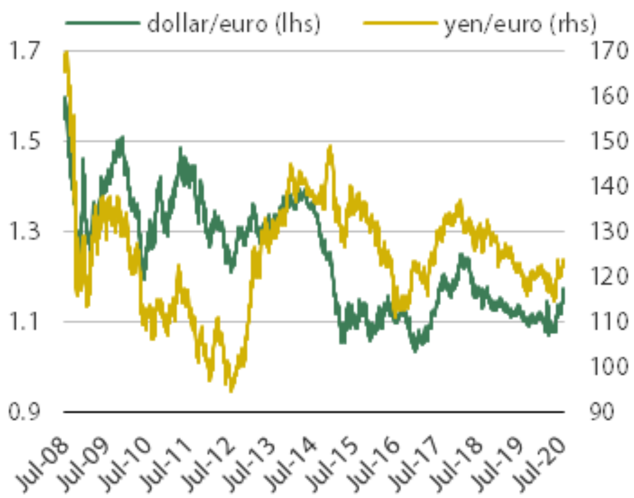
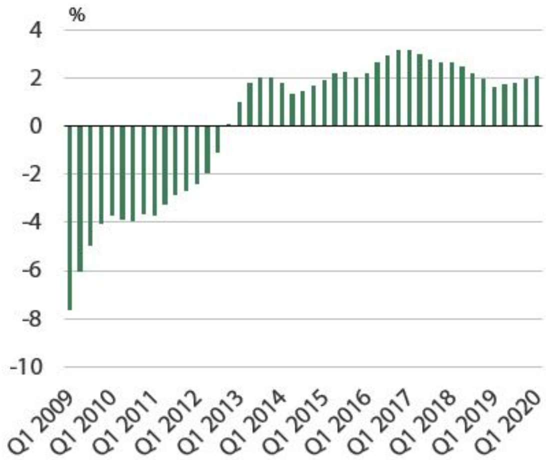
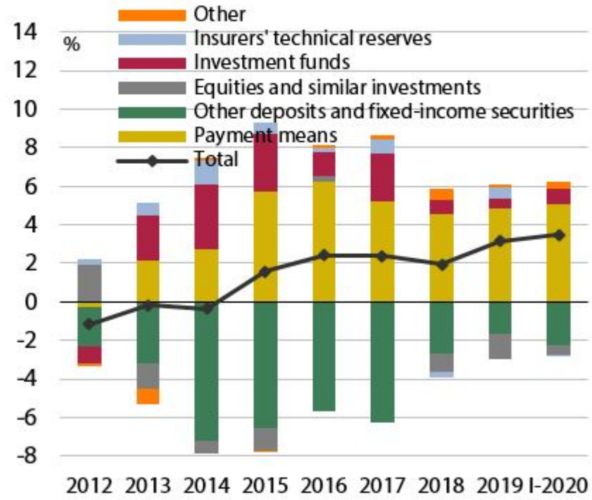


Figure 26. Current account balance (% GDP)



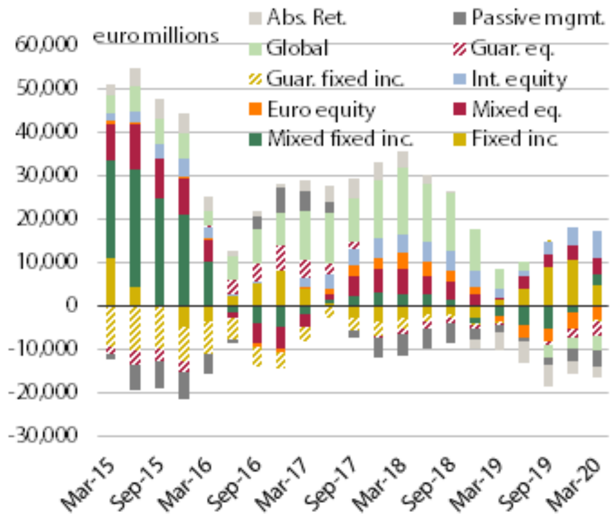
Investors

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 (% disposable income)

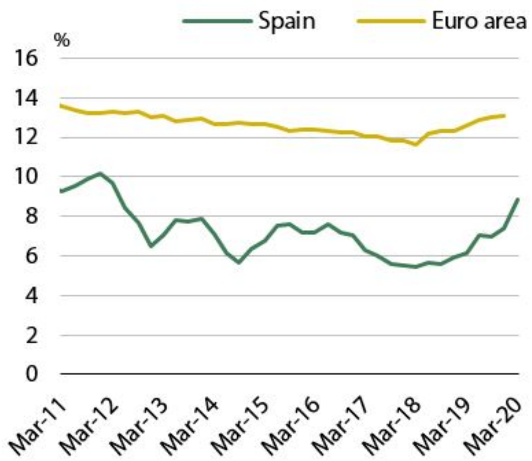
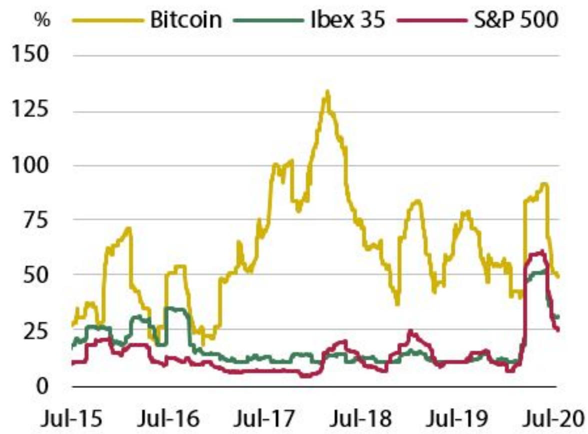


Figure 30. Bitcoin volatility



Risk of contagion: orange

Figure 31. Correlations among asset classes

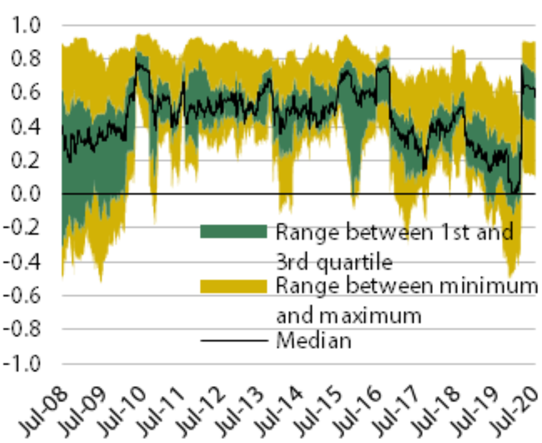
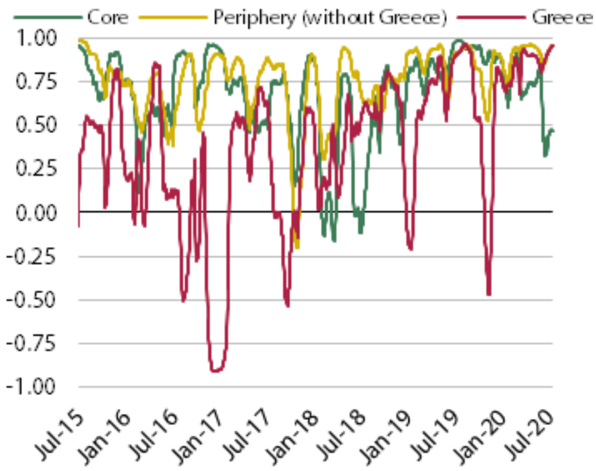
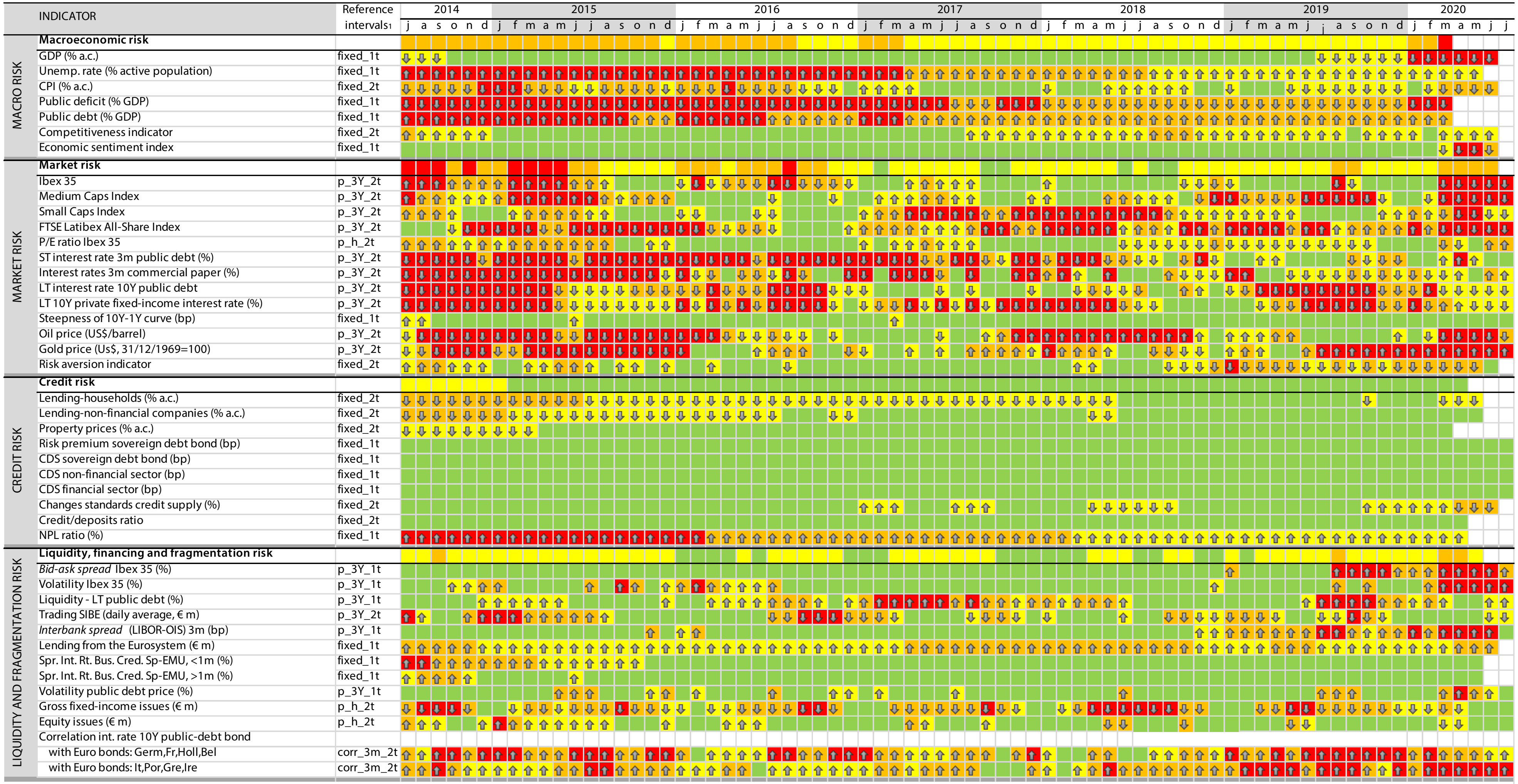


Figure 32. Correlation between the yield on Spanish and other European 10-year bonds



Heat map: Risk categories



(1) Reference intervals could be: (i) "fixed": predetermined numerical tresholds, one (1t) or two-tailed (2t); (ii) "corr_3m": 3 months windows correlation coefficients; (iii) "p_3Y": percentiles obtained from 3 past years distribution, one (1t) or two-tailed (2t) or (iv) "p_h": percentiles obtained from historical distribution. Source: CNMV, Bloomberg and Thomson Datastream. (2) Data until 15 July.

Explanatory notes

Spanish financial markets stress index (Figure 1): The stress index provides a measurement in real time of the systemic risk facing the Spanish financial system, ranging from 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 and the subsequent aggregation takes into account the correlation between segments, in such a way that the index places greater emphasis on stress situations in which correlations are very high. In general terms, the stress variables chosen for each segment (three for each one) correspond to volatilities, risk premiums, liquidity indicators, and sudden loss of value. These variables are good indicators of the presence of stress in the markets. Econometric estimates indicate that index values below 0.27 correspond to periods of low stress in the financial system, while scores between 0.27 and 0.49 correspond to periods of medium stress, and values above 0.49 indicate periods of high stress. The methodology of this index follows the work of Holló, Kremer and Lo Duca in 2012 to propose a similar index for the euro area. For further details on recent movements in this index and its components, see the CNMV's statistical series (market stress indicators), available at http://www.cnmv.es/Portal/Publicaciones/SeriesWeb/Inicio.aspx?codrama=1295&lang=en. 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 Document 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 some macro-economic variables. The main purpose behind the production of these maps is to provide an idea of the position of the reference indicators in relation to their recent history (in most cases three years) or with some predetermined limits, by associating this position with a certain colour. When an indicator changes from green to a warmer colour (orange or red), it does not necessarily mean the existence of risk; rather it indicates a movement towards an extreme value (very high or very low) in the period or range of values used as a reference. If an indicator remains at extreme values for a prolonged period, it may suggest the need for a more detailed analysis; that is to say, it may be interpreted as an alarm signal. The most comprehensive heat map (see last few pages of the note) includes 43 indicators,[55] five of which are prepared by the CNMV. The large number of indicators taken into consideration allows us to make an analysis of vulnerabilities for each segment of the financial markets (equity income, fixed income, banking sector, etc.) or for different risk categories (macro, market, liquidity, credit, etc.), as illustrated in Figure 2. The colours of these aggregates (markets or risk categories) are assigned by calculating a weighted average of the values of the individual indicators they 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.

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

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

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 behaviour by investors. This situation could lead to high volatility in periods of stress. Meanwhile, diversification would offer fewer advantages since in this context it would be more difficult to avoid exposure to sources of systemic risk.

- Correlation between the yield on the Spanish and other European 10-year bonds (Figure 32). The correlation is calculated using daily data in 3-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.