3 THE BUOYANCY OF INVESTMENT IN THE RECOVERY: DETERMINANTS AND CHALLENGES

Signboard for the 1st Annual Research Conference in the Cibeles building.

3 THE BUOYANCY OF INVESTMENT IN THE RECOVERY: DETERMINANTS AND CHALLENGES

Summary

During the current upswing in the Spanish economy, investment in equipment and intangible assets has been markedly buoyant. This strength, in absolute terms and relative to the euro area, is explained by a number of macroeconomic and microeconomic factors. Notable among these are the easing of external financial conditions and the availability of own funds to finance investment, the reduction in uncertainty and the greater export orientation of the business sector, in addition to the usual effect of the improvement in domestic demand during economic recoveries.

In the short and medium term, business investment will benefit from the existence of certain favourable circumstances. Notable among these are the economic expansion, which is expected to continue over the coming years, and the ongoing favourable financial conditions. In addition, investment should be boosted by improvement in some of the pre-existing imbalances (in particular, the lower indebtedness of the business sector and a distribution of credit among companies more favourable to growth), as well as the competitiveness gains built up in past years, against a background in which external markets are expected to remain buoyant.

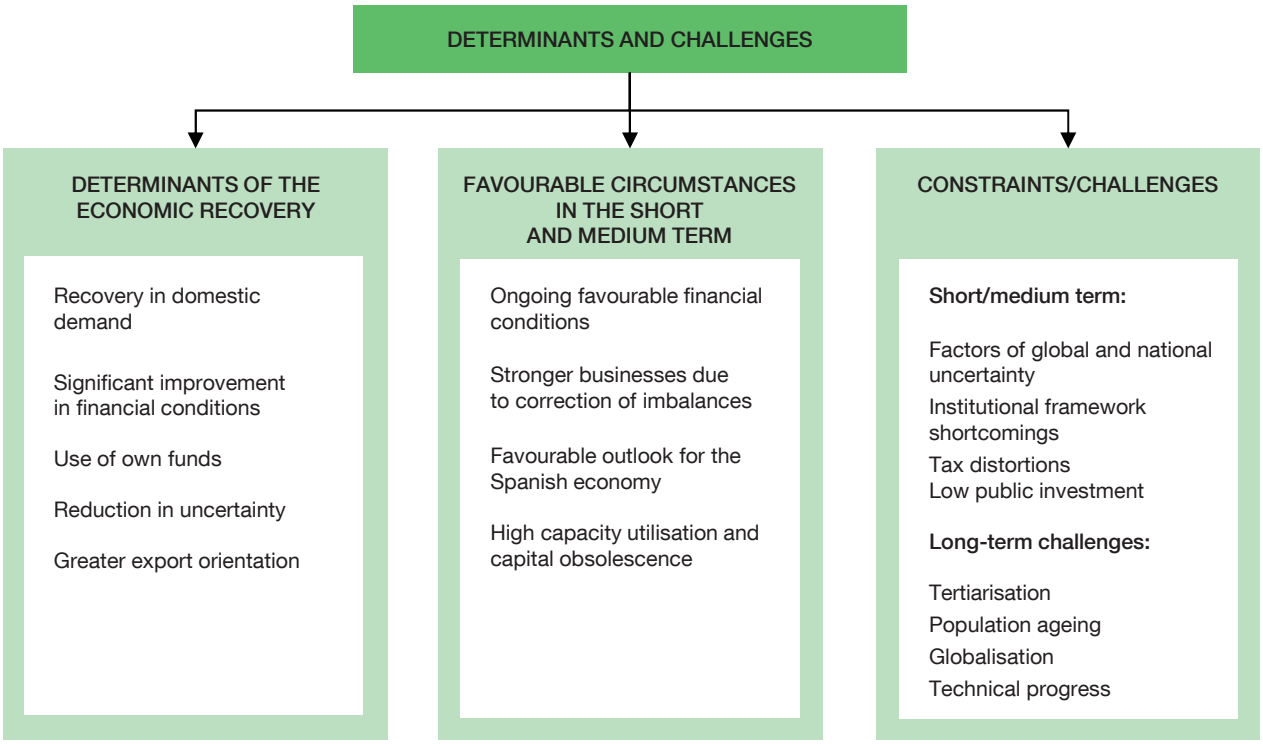
But there also remain certain obstacles, which may influence developments in the short, medium and long term. Factors that may limit investment in equipment and intangibles in the short term include, notably, the risks associated with a possible increase in economic uncertainty, both at global level (as consequence of increased protectionism, Brexit and the possibility of further episodes of political uncertainty in Europe) and at national level (a highly fragmented parliament and political uncertainty in Catalonia). In the medium term, certain factors persist that limit the potential growth of business investment and its effectiveness, including some linked to aspects of the institutional framework (in the areas of regulation, competition and effectiveness of the judicial system), tax distortions and the possibility of continued low levels of public productive investment. In the longer term, there are a number of trends, of a global nature, that may put downward pressure on investment, including especially the tertiarisation of economies, globalisation, technological change and population ageing.

1 Introduction

Business investment is a fundamental element of the cyclical behaviour of the economy and long-term economic growth. On the expenditure side, gross fixed capital formation currently accounts for around 20% of GDP in Spain. Of this, one half is investment in equipment, machinery and intangible assets, while the other half is linked to residential and non-residential construction. Investment decisions determine the economy's capital stock and thus affect its long-term growth, by enabling installed capital to be renewed and technological advances incorporated therein, as well as the productive capacity of firms to be expanded. Also, investment in research and development, among other activities, directly boosts technical progress. In the short term, this component of aggregate demand is the most volatile, and consequently its fluctuations drive the cyclical swings in production and employment.

This chapter explores the determinants of the recent buoyancy of investment in equipment and intangibles in the Spanish economy. The next section characterises the behaviour of these components of investment during the current upswing and provides an international comparison. The third section discusses the determinants of this behaviour,

THE BUOYANCY OF BUSINESS INVESTMENT (EXCLUDING CONSTRUCTION) FIGURE 3.1



SOURCE: Banco de España.

distinguishing between financing conditions, export orientation and the evolution of uncertainty. Finally, the chapter concludes with a discussion of the drivers and constraints that will govern the future behaviour of investment in the short, medium and long-term.

2 The buoyancy of investment in the recovery

Non-construction investment*[1] *has been very buoyant during the current upswing in the Spanish economy. Between 2013 and 2017, this aggregate, which includes investment in equipment, machinery and intangible assets, increased in real terms by around 27%, while GDP grew by 12%. As a result, in 2017 it exceeded its pre-crisis level, having fallen during the recession by more than output (-13%, as against -8%) (see Chart 3.1.1). This type of investment has thus risen as a proportion of GDP over the last decade by around 1 percentage point (pp), to somewhat over 10% of GDP in 2017, its highest level for the last three decades, when it has been on average around 9.5% of GDP (see Chart 3.1.3).

The recent strength of investment has been broadly based across the components of investment in equipment and in intangible assets.[2] Investment in intangible assets (which includes items such as computer software, databases and R&D&I) accounted for around 30% of non-construction investment in 2017, as compared with 18% at the beginning of the century, and its cyclical volatility is well below that of equipment investment (see Chart 3.1.2). The latter underwent a major adjustment during the crisis, but its buoyancy during the recovery means that the previous losses have been more than offset, so that its level in 2017 was 3% higher than in 2007.

1 Gross fixed capital formation, in real terms, excluding "Dwellings" and "Other buildings and structures", according to the National Accounts.

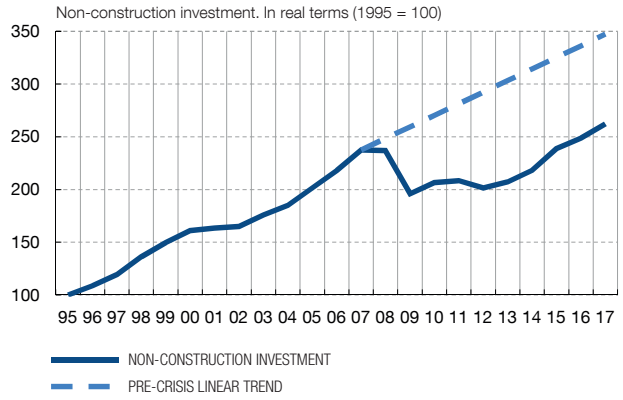
2 Investment in equipment refers to the category "Machinery and equipment and weapons systems" of the National Accounts, while investment in intangible assets refers to that of "Intellectual property products".

INVESTMENT IN EQUIPMENT AND INTANGIBLES BUOYANT IN THE RECOVERY

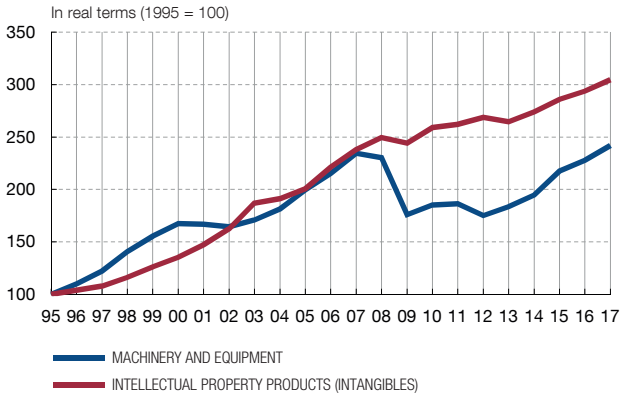
CHART 3.1

The momentum has been broad-based in terms of components, both in the case of equipment and machinery and intangible assets, which continued to be accumulated, even during the crisis, at the trend growth rate of recent decades. The behaviour of costruction-related investment, on the other hand, was less favourable, and in 2017 it still stood at somewhat less than 50% of its pre-crisis level.

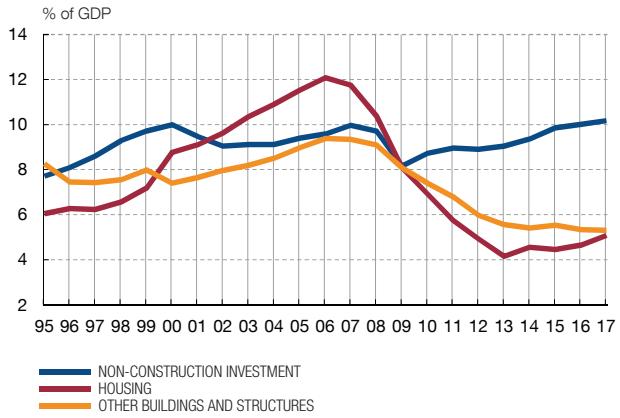
1 NON-CONSTRUCTION INVESTMENT BUOYANT IN THE RECOVERY ...



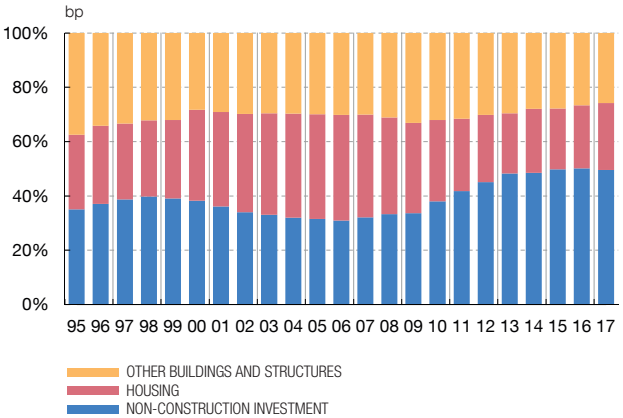
2 ... ACROSS MAIN COMPONENTS



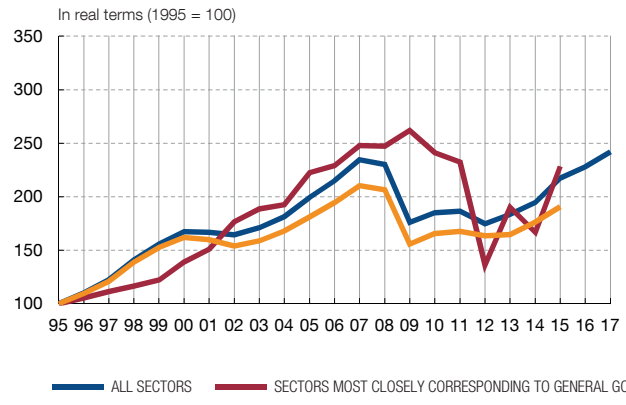
3 WHILE CONSTRUCTION-RELATED INVESTMENT MORE SUBDUED ...



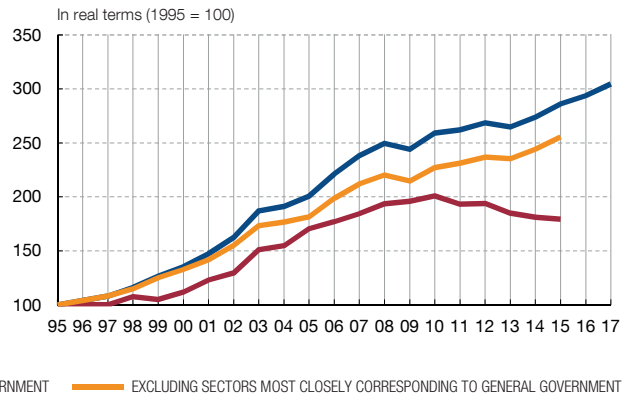
4 ... MEANING INVESTMENT IN EQUIPMENT AND INTANGIBLES UP AS A PROPORTION OF TOTAL INVESTMENT



5 EQUIPMENT INVESTMENT IN THE SECTORS MOST CLOSELY CORRESPONDING TO PUBLIC-SECTOR ACTIVITY ALSO RECOVERED ...



6 ... WHILE INTANGIBLES INVESTMENT SLOWED SOMEWHAT



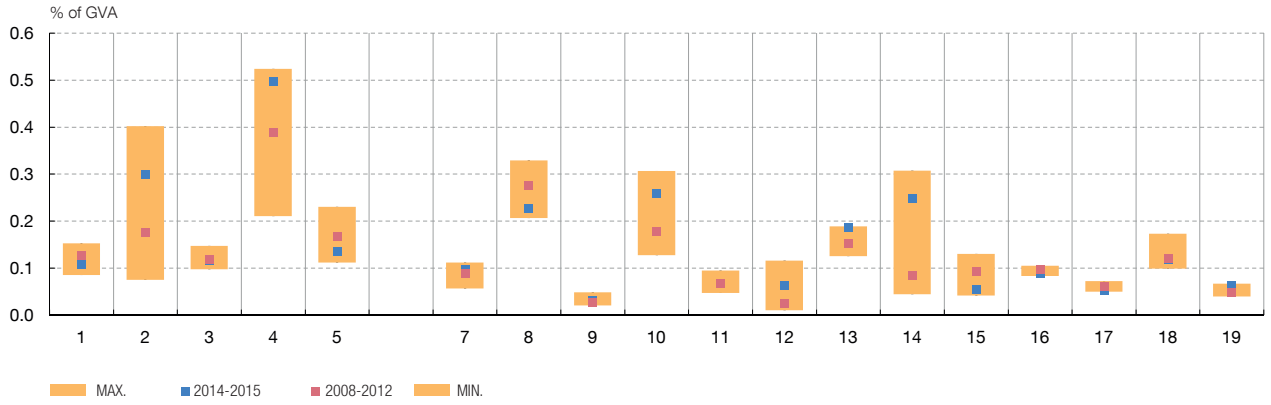
SOURCES: INE and Banco de España.

Download

NON-CONSTRUCTION INVESTMENT BY INDUSTRY CHART 3.2

The improvement in non-construction investment was broadly based across industries. The ratio of investment to value added was in most industries higher in 2014-2015 than before the crisis.

RATIO OF INVESTMENT TO VALUE ADDED, BY INDUSTRY (a)



SOURCE: INE.

a Industries: (1) Agriculture, forestry and fishing; (2) Mining and quarrying; (3) Manufacturing; (4) Electricity, gas, steam and air conditioning supply; (5) Water supply; sewerage, waste management and remediation activities; (6) Construction (excluded); (7) Wholesale and retail trade; repair of motor vehicles and motorcycles; (8) Transportation and storage; (9) Accommodation and food service activities; (10) Information and communication; (11) Financial and insurance activities; (12) Real estate activities; (13) Professional, scientific and technical activities; (14) Administrative and support service activities; (15) Public administration and defence; compulsory social security; (16) Education; (17) Human health and social work activities; (18) Arts, entertainment and recreation; (19) Other service activities.

Download

The improvement in non-construction investment was also broadly based across the productive sectors.[3] Thus, the ratio of investment to value added was in most industries higher in the two-year period 2014-2015 (the latest year for which a breakdown is available) than in the pre-crisis period. The industries recording the largest increase in the ratio of investment to value-added were varied, including mining and quarrying, energy, information and communication, and administrative and support service activities (see Chart 3.2).

By contrast, the behaviour of construction-related investment[4] ***has been much less favourable during the recovery, and in 2017 stood at less than 50% of its pre-crisis level***. This aggregate behaviour reflects, first, the adjustment in housing investment, which, despite its recent improvement, was down to around 5% of GDP in 2017 (in line with levels in other European countries) from 12% before the crisis, following the major expansion of the residential sector that occurred from the late 1990s (see Chart 3.1.3). As for the rest of construction, it has now been declining as a percentage of GDP for a decade. In 2017, this item accounted for somewhat more than 5% of GDP, having fallen by some 4 pp of GDP since 2007. The behaviour of this component largely reflects the impact of fiscal consolidation, which has essentially been based on cuts in public sector construction investment, including investment in transport infrastructure.[5]

After its sharp contraction during the last downturn, investment in equipment and intangible assets of the sectors most closely corresponding to public-sector activity[6]

3 Excluding that part of the real-estate services sector that measures imputed property income.
4 This item includes the categories "Dwellings" and "Other buildings and structures" of the National Accounts.
5 See J. J. Pérez and I. Solera (2017), "Developments in public investment during the crisis and the recovery", *Economic Bulletin* 4/2017, Banco de España.

contributed to the strength of the recovery, albeit to a lesser extent than that of the rest of the sectors. Between 2013 and 2015, the equipment investment of these sectors, which accounts for around 10% of the total, grew in line with that of the rest, recovering to somewhat more than 90% of its pre-crisis level (see Chart 3.1.5). Investment in intellectual-property-related products by those sectors with a larger public-sector involvement (which accounts for somewhat more than 15% of the total) continued to display the slight downtrend that began in 2011, in contrast to the buoyancy observed in the rest of the sectors (see Chart 3.1.6).

The recent behaviour of equipment investment is similar to that seen at the same stage of the cycle in the 1990s, despite the major deleveraging by non-financial corporations in recent years.[7] Unlike in the cycle of the 1990s, the crisis that began in 2008 gave rise to two consecutive recessions, so that a comparison of the upturn that began in late 2013 with that which began in 1993 may be distorted by the fact that the initial position of the economy was not the same. Historical evidence suggests that recessions that are accompanied by severe business deleveraging usually have more persistent negative effects on investment,[8] so that one would expect investment to behave less favourably in the latest cycle than in the 1990s. However, the growth of investment since 2013 has been higher than predicted by its historical relationship with economic activity, despite the major reduction in corporate debt that has taken place during much of the recovery (see Charts 3.3.1, 3.3.2 and 3.3.3).

Investment is behaving somewhat more favourably in Spain in the recovery than in the euro area as a whole. The dynamics of investment in the euro area as a whole, however, are markedly heterogeneous across countries. Of the four largest euro area countries, Italy has recorded the poorest relative performance by non-construction investment since end-2013 and France the most favourable (see Charts 3.3.4, 3.3.5 and 3.3.6). The weakness of business investment at global level in the early years of the recovery has been analysed in a large number of recent studies.[9] In the case of the euro area countries, however, the evidence available shows that, in most of them, business investment has moved in line with aggregate activity. The more favourable behaviour of non-construction investment relative to GDP in Spain has enabled the gap with the main euro area countries to be closed. As regards its composition, equipment investment as a proportion of total investment was, in 2017, higher in Spain (70%) than on average in Germany, France and Italy (60%), while the weight of intangibles investment in Spain was lower than in these countries.

From a more global perspective, investment has grown more moderately in the euro area than in the United States, which has a significantly higher investment-to-GDP ratio. Over the last two decades, the US economy has recorded more significant increases in business investment than the euro area, both in the case of equipment investment and

---

6 Defined, in this case, as the sectors "Public administration and defence; compulsory social security", "Education" and "Health and social services", according to the INE. In the latter two sectors, however, although the majority of the activity is public, activity is also performed by privately owned and controlled firms. Likewise, in other sectors there is also a significant presence of firms that are mainly publicly owned firms (e.g. ADIF and AENA). Unfortunately, the official statistics do not allow a better separation of public and private activity.

7 There is no official information of the INE on investment in intellectual property assets for the period before 1995.

8 See, inter alia, Honkapohja and Koskela (1999), "The economic crisis of the 1990's in Finland", *Economic Policy*, 14, pp. 401-436.

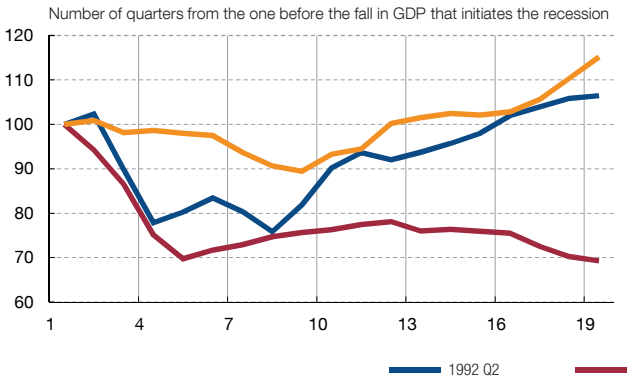
9 See M. Banbura et al. (2018), "Low investment in the EU", Occasional Paper, ECB, forthcoming, or J. C. Berganza, S. Romero, T. Sastre, P. Burriel and M. Folch (2015), «La debilidad de la inversión empresarial en las economía desarrolladas", *Boletín Económico,* July-August, Banco de España.

EQUIPMENT INVESTMENT IN SPAIN MORE BUOYANT IN THE CURRENT RECOVERY THAN IN THE 1990s AND IN THE EURO AREA

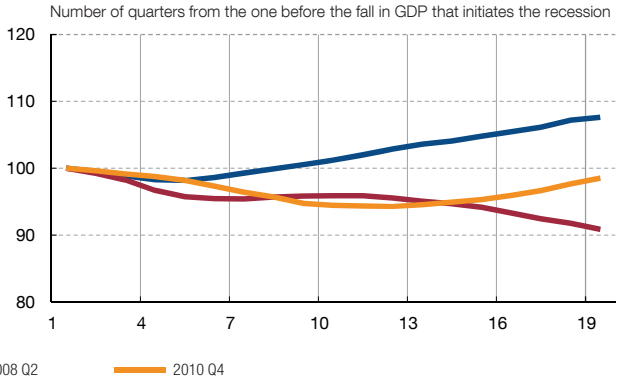
CHART 3.3

The recent behaviour of equipment investment has been similar to that in the cyclical episode in the 1990s, despite the heavy deleveraging by non-financial corporations. Also, investment has performed relatively more favourably in the recovery in Spain than in the euro area as a whole.

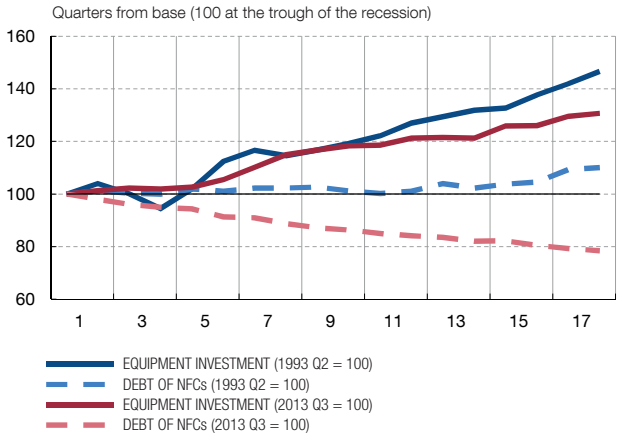
1 EQUIPMENT INVESTMENT OVER VARIOUS CYCLICAL EPISODES



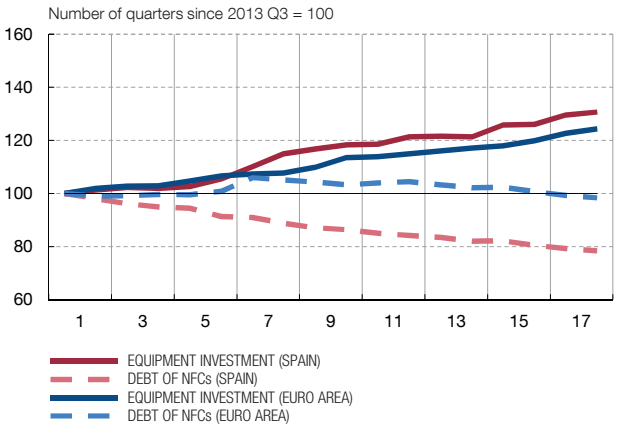
2 GDP OVER VARIOUS CYCLICAL EPISODES



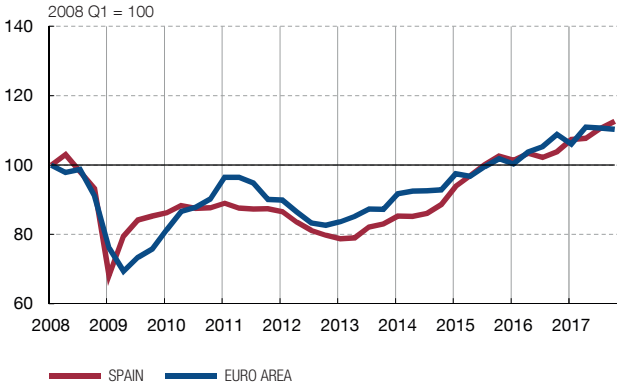
3 INVESTMENT AND DELEVERAGING DURING RECOVERY PERIODS



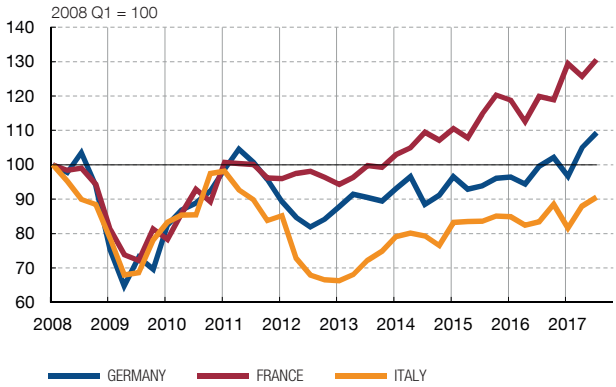
4 INVESTMENT AND DELEVERAGING: SPAIN AND EURO AREA



5 NON-CONSTRUCTION INVESTMENT OVER THE LAST DECADE: SPAIN AND THE EURO AREA



6 NON-CONSTRUCTION INVESTMENT OVER THE LAST DECADE: EURO AREA COUNTRIES



SOURCES: INE and Eurostat.

Download

in that of intangible assets (see Chart 3.4). Notwithstanding this, in recent years the euro area appears to have closed most of the gap in intangibles.[10] Given how important the latter have become in the developed economies, Box 3.1 explores the definition and measurement of intangibles and the implications that a higher proportion of this type of assets entails for the economy's technical progress and aggregate productivity.

3 The recovery of investment: financing, uncertainty and export orientation

The healthy growth of investment by Spanish firms, with respect to euro area firms, is explained by a number of macroeconomic and microeconomic factors. Notable among these have been the improvement in external financial conditions, the use of own funds to finance investment, the reduction in economic and political uncertainty, and the strengthening of the export orientation of Spanish firms in recent years. The easing of financial conditions since 2013 and an improved allocation of financial flows to the benefit of more productive firms appears to have had a more favourable impact on firms in Spain than in the euro area as a whole, given the less favourable initial position of Spanish companies on aggregate, in terms of greater credit constraints, the higher cost of accessing credit, and heavy business deleveraging.[11] Also, the reduction in uncertainty, following the episodes of sovereign crisis in the euro area between 2010 and 2012, would have most favoured those economies, like the Spanish one, that showed greater vulnerability during this phase of the crisis. Moreover, the strength of investment in Spain in the most recent period has remained based on two fundamental supports that operated during the last downturn: the relatively high availability of own funds and the shift in the composition of demand since the start of the crisis from the domestic to the external component. The latter entailed a need for greater investment on aggregate, to maintain the momentum of strong growth in the Spanish economy's export capacity. The contribution of these elements is analysed in detail below.

3.1 THE FINANCING OF INVESTMENT

Internal sources of financing played a significant role in the behaviour of investment during the crisis and also in the subsequent recovery. In the early stages of the crisis the tensions in wholesale financial markets had a contractionary impact on the supply of bank credit. In these circumstances, financial institutions passed on the rise in the cost of financing their lending to businesses. In an economy as highly banked as the Spanish one, these developments led many firms to replace bank credit, at least partially, with alternative sources of financing, such as securities issuance, in the case of large firms and, more generally, greater use of own funds, through increases in the gross operating surplus, normally known as the "profit margin".[12] There is some evidence that this countercyclical behaviour by margins was not confined exclusively to Spain, but was also seen in other euro area countries subject to significant financial strains during the crisis (such as Portugal and Ireland),[13] and in the United States.[14] In the recovery sources of internal funding have continued to have a high weight, although the measures adopted by national and European authorities, including the expansionary monetary policy implemented in recent years by the ECB, have led to considerable improvement in the conditions of access to bank and non-bank financing (see Chart 3.5). Indeed, the use of own funds has been particularly important during the crisis and the recovery for financing investment in intangible assets,

10 A structural explanation for this is to be found in R. Döttling, G. Gutiérrez and T. Philipon (2017), "Is there an investment gap in advanced economies? If so, why?", ECB Forum of Central Banking, June.

11 Regarding the financing of investment in Spain, see Chapter 2, *Annual Report 2016*, Banco de España.

12 See Chapter 2, *Annual Report 2016*, Banco de España, or J. M. Montero and A. Urtasun (2014), "Price-cost mark-ups in the Spanish economy: a microeconomic perspective", Working Paper 1407, Banco de España.

13 See Chapter 4, *Annual Report 2014*, Banco de España.

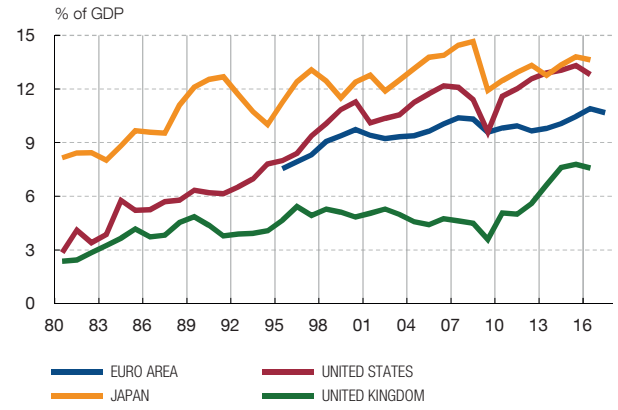
14 See S. Gilchrist, J. W. Sim and E. Zakrajšek (2014), *Uncertainty, Financial Frictions, and Investment Dynamics*, NBER Working Paper, No 20038, National Bureau of Economic Research, United States.

FROM A GLOBAL PERSPECTIVE, INVESTMENT HAS BEEN MORE SUBDUED IN THE EURO AREA THAN IN THE UNITED STATES IN RECENT DECADES, ALTHOUGH THE GAP IN INTANGIBLES HAS NARROWED

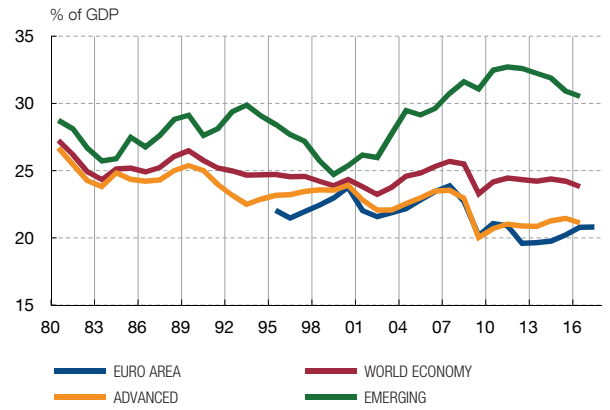
CHART 3.4

From a global perspective, investment in the euro area has been more subdued than in the United States, which has a significantly higher investment/output ratio. Even so, the euro area appears to have closed a large part of the gap existing in the case of intangibles. In the case of Spain, the weight of intangibles investment is lower than on average in the main euro area countries.

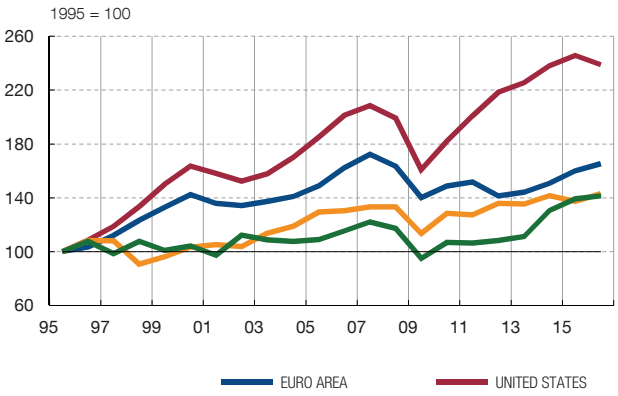
1 NON-CONSTRUCTION INVESTMENT GLOBALLY



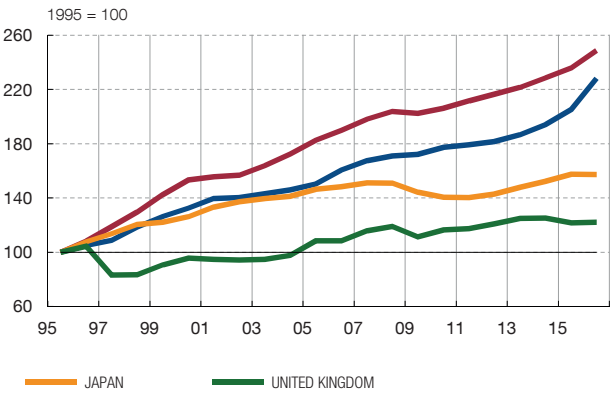
2 TOTAL INVESTMENT GLOBALLY



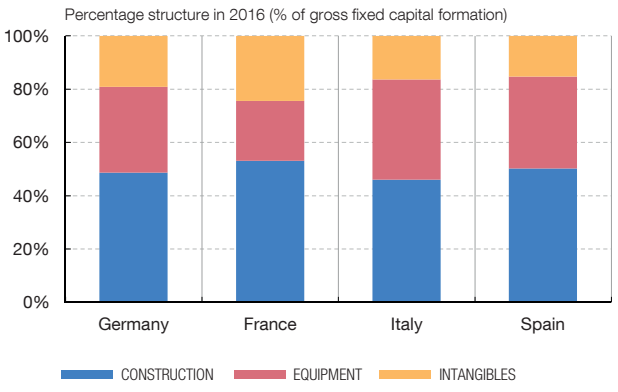
3 EQUIPMENT INVESTMENT GLOBALLY



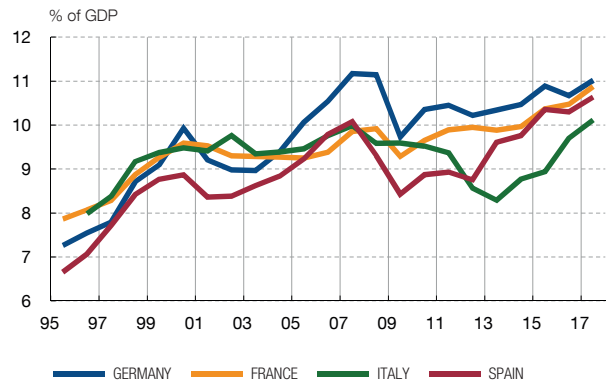
4 INTANGIBLES INVESTMENT GLOBALLY



5 STRUCTURE OF INVESTMENT IN THE MAIN EURO AREA COUNTRIES



6 NON-CONSTRUCTION INVESTMENT IN THE MAIN EURO AREA COUNTRIES



SOURCES: Eurostat and OECD.

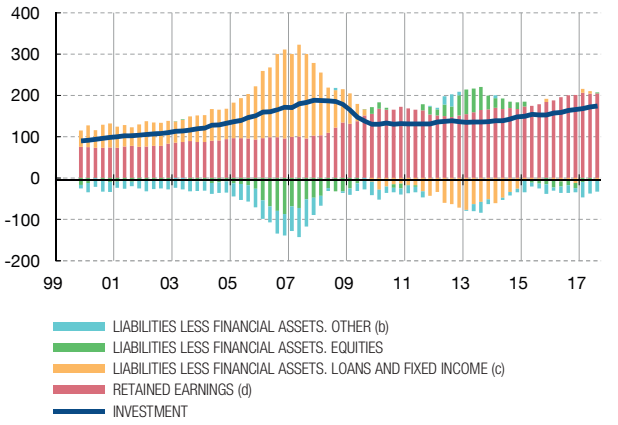
Download

THE DETERMINANTS OF THE FAVOURABLE INVESTMENT BEHAVIOUR INCLUDE NOTABLY THE IMPROVEMENT IN EXTERNAL FINANCING CONDITIONS AND THE USE OF OWN FUNDS

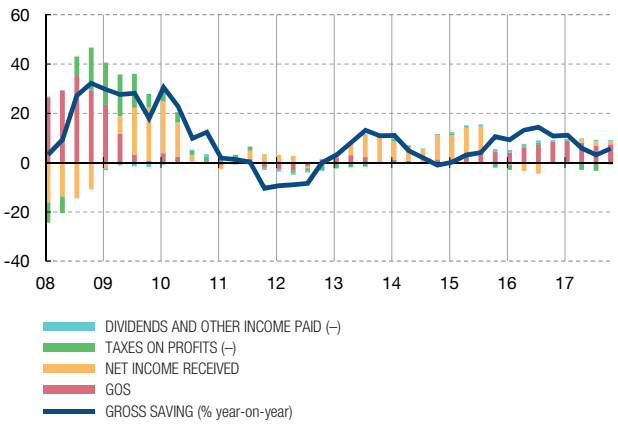
CHART 3.5

The internal sources of financing of investment not only played a significant role during the crisis, but also during the subsequent recovery. Also, aggregate deleveraging by the non-financial corporations sector in recent years has been compatible with a reallocation of flows of financing towards more productive firms.

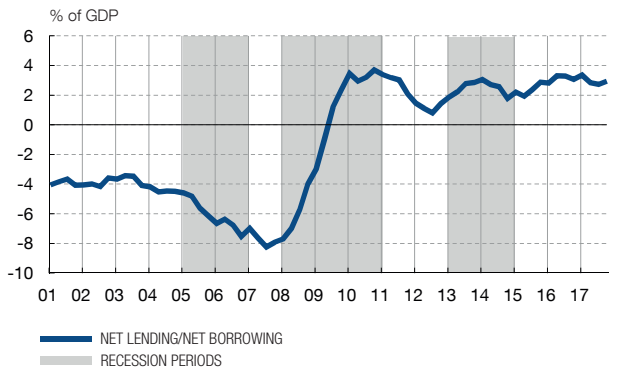
1 INVESTMENT FLOWS AND FINANCING OF NON-FINANCIAL CORPORATIONS (a)



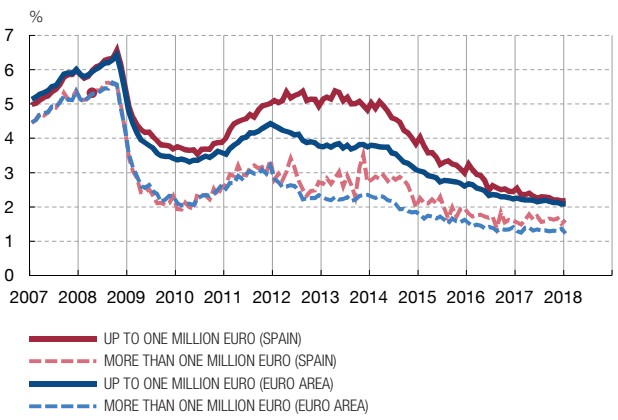
2 NOMINAL GROWTH OF GROSS BUSINESS SAVING AND CONTRIBUTIONS



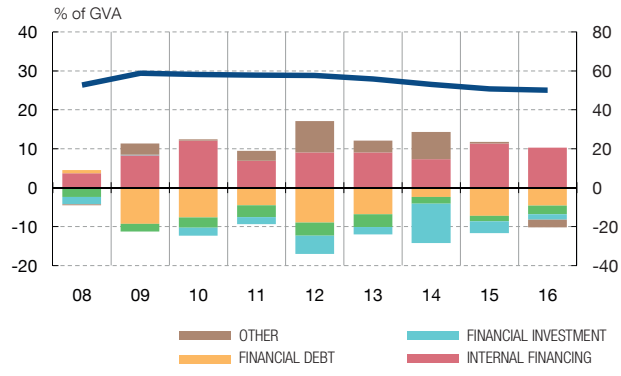
3 NET LENDING/NET BORROWING OF NON-FINANCIAL CORPORATIONS



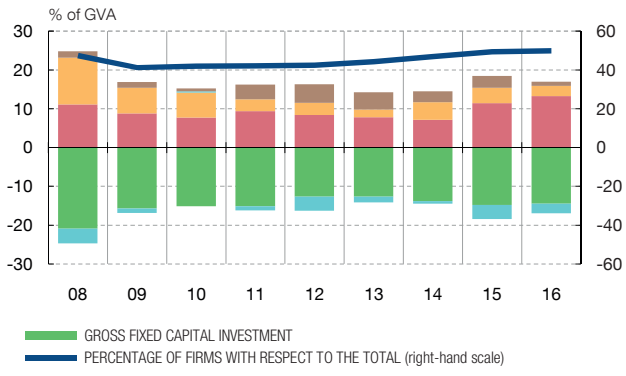
4 INTEREST RATES FOR NON-FINANCIAL CORPORATIONS



5 FLOWS OF ASSETS AND LIABILITIES OF FIRMS WITH NEGATIVE NET INVESTMENT (e)



6 FLOWS OF ASSETS AND LIABILITIES OF FIRMS WITH ZERO OR POSITIVE NET INVESTMENT (e)



SOURCES: INE, Banco de España and ECB (SAFE).

a Cumulative four-quarter flows.
b Including statistical adjustments.
c Including loans from residents and non-residents.
d Gross saving plus net capital transfers.
e Net investment is understood to be the flow of (tangible and intangible) gross fixed capital formation net of capital consumption.

Download

which may reflect the greater difficulty of accessing external financing to fund projects involving investment in this type of asset.[15]

Moreover, the aggregate deleveraging by the non-financial corporations sector in recent years has been compatible with a reallocation of flows of financing towards more productive firms. Against a background of more significant improvement in financial conditions in the Spanish economy than in the euro area as a whole, credit has generally flowed to those firms in a better economic and financial position, which has boosted investment, given that these firms are in a better situation to undertake new projects. The proportion of companies that have carried out investment in recent years has increased, as also has the average amount invested by each firm (see Charts 3.5.5 and 3.5.6). In addition, the allocation of credit is now more efficient than it was before the crisis, insofar as funds tend to flow to firms that are, on average, more productive and in a healthier financial position.[16] These developments contrast with the evidence existing for the pre-crisis period, which shows that investment was mainly earmarked for projects offering better collateral, which led to a concentration in less productive sectors and, within these, in less productive firms.[17]

3.2 THE REDUCTION IN UNCERTAINTY

Uncertainty has been significantly reduced in recent years, from the peak levels recorded in 2012.[18] According to the available indicators, the reduction in uncertainty during the recovery was especially significant up to the end of 2015, after which it rose again, as a result of the political uncertainty linked to the high degree of parliamentary fragmentation that followed the elections held in December 2015 and June 2016 and, more recently, since mid-2017, owing to the tensions relating to the political situation in Catalonia (see Chart 3.6).

The evidence available for Spain shows that the moderation in uncertainty has had positive effects on firms' investment decisions. One of the normal characteristics of investment processes is the timing mismatch between the costs of expanding productive capital, which firms incur in the short-term, and the income flows obtained from the investment, which only materialise over a much longer time horizon and cannot be precisely estimated *ex ante*. Consequently, a reduction in the level of uncertainty leads firms to embark on investment projects that they would otherwise have postponed until more information was available. In fact, according to the studies available for Spain, the effect of a reduction in uncertainty has significant positive effects on investment[19] (see Chart 3.6.3). It is also important to distinguish between types of firm,

15 See D. Dejuán, A. Menéndez and M. Mulino (2018), "Evolución de la inversión en el sector empresarial no financiero español", *Boletín Económico*, Banco de España, forthcoming.

16 See Chapter 2, *Annual Report 2016*, Banco de España.

17 See Ó. Arce, J. M. Campa and A. Gavilán (2013), "Macroeconomic adjustment under loose financing conditions in the construction sector", *European Economic Review*, 59, pp. 19-34; S. Basco, D. López Rodríguez and E. Moral-Benito (2017), *Housing Bubbles and misallocation: evidence from Spain*, Working Paper, Banco de España, forthcoming; Martín, Moral-Benito y Schmitz (2018), *The Financial Transmission of Sectoral Shocks: Evidence from the Spanish Housing Bubble*, Working Paper, Banco de España, forthcoming, and G. Jiménez, E. Moral-Benito and R. Vegas (2018), *Bank Lending Standards over the Cycle: The Role of Firms' Productivity and Credit Risk*, Working Paper, Banco de España, forthcoming.

18 Measuring the degree of uncertainty is complicated, although diverse indicators may be constructed to enable it to be proxied. See M. Gil, J. J. Pérez and A. Urtasun (2017), "Macroeconomic uncertainty: measurement and impact on the Spanish economy", *Boletín Económico*, 1/2017, Banco de España for a discussion of the literature and a proposal for indicators for the Spanish economy.

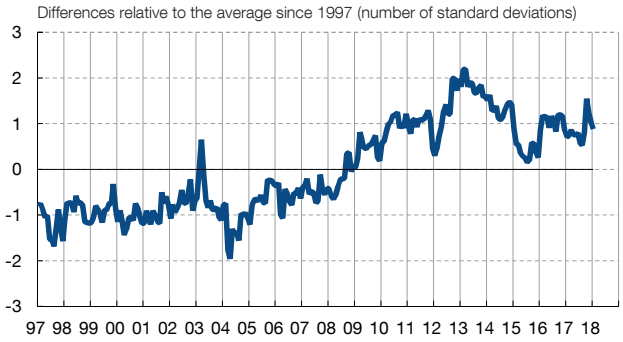
19 Based on VAR-type (vector autoregressive) models, which incorporate indicators of uncertainty and equipment investment. The Spanish sovereign debt spread over Germany and a price index are also included as additional control variables, to take into account the possible effects of the financial and nominal variables on the different indicators of uncertainty. The analysis also takes into account the effect of uncertainty arising from the external environment, in particular the EU, so that the effects of national idiosyncratic shocks can be isolated.

UNCERTAINTY HAS DIMINISHED IN RECENT YEARS, FROM ITS HIGHS IN 2012, WHICH HAS PROBABLY HAD A POSITIVE IMPACT ON INVESTMENT

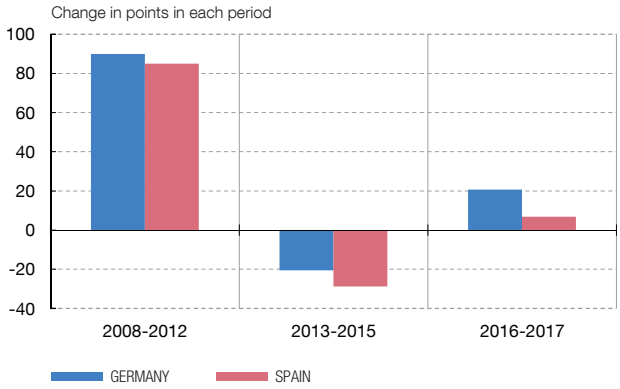
CHART 3.6

Economic uncertainty has diminished significantly during the recent recovery in Spain, from the highs recorded in 2012. The evidence available, based on both aggregate and individual data, shows that a less uncertain environment is conducive to business investment.

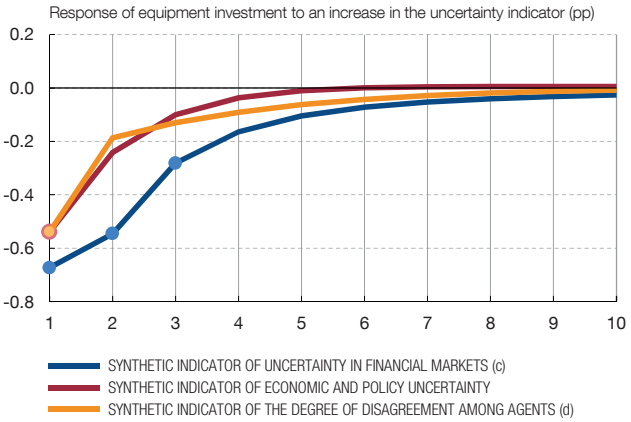
1 ECONOMIC UNCERTAINTY IN SPAIN (a)



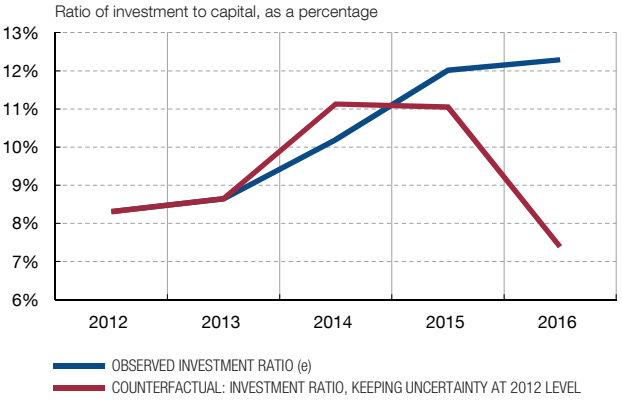
2 UNCERTAINTY AS MEASURED BY THE EPU: SPAIN AND GERMANY



3 EFFECT OF UNCERTAINTY: MODEL WITH AGGREGATE DATA (b)



4 EFFECT OF UNCERTAINTY: MODEL WITH INDIVIDUAL DATA



SOURCES: INE, FUNCAS forecast panels, European Commission, CIS barometer, PRS Group, www.policyuncertainty.com and Banco de España.

a Synthetic indicator compiled by applying the principal components technique, using information from the indicators of assessment of the current political situation and of political expectations of the CIS, the Economic Policy Uncertainty Index (EPU), the political risk indicator (PRS Group) and the degree of disagreement in budget deficit forecasts.

b The VAR model includes: as endogenous variables, uncertainty as measured by the synthetic indicators of financial markets, disagreement and economic policy uncertainty, investment, the Spanish sovereign debt spread over the German Bund and a price index; and as exogenous variables, EURO STOXX 50 volatility, the EPU for the EU as a whole and a synthetic indicator of European uncertainty (calculated in a similar manner to that used for Spain's synthetic indicators).
● Indicates statistical significance at the 5% level.

c Synthetic indicator compiled by applying the principal components technique, using information from indicators of the volatility of the IBEX 35, the exchange rate, the oil price and the ten-year bond price.

d Synthetic indicator compiled by applying the principal components technique, using information from indicators of the disagreement in forecasts of GDP, private consumption and equipment investment, uncertainty about the outlook for unemployment over the next twelve months, uncertainty about industrial order books and uncertainty about industrial production expectations.

e. Ratio of business investment to capital, according to Banco de España Central Balance Sheet Data Office.

Download

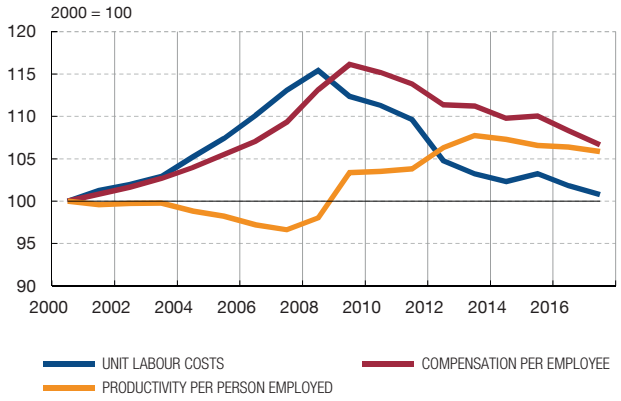
since the effect of uncertainty may vary according to their characteristics (see Chart 3.6.4). Specifically, the latest studies[20] show that small and medium-sized firms are more vulnerable to shocks arising from economic uncertainty and react to such shocks more

20 See D. Dejuán and C. Ghirelli (2018), *Determinants of firms' investment in Spain: the role of policy uncertainty*, Working Paper, Banco de España, forthcoming. This paper provides a detailed analysis of various determinants of investment using microdata of Spanish firms for the period 1997-2014 from the Banco de España's Central Balance Sheet Data Office. The paper refers to the literature on these factors, emphasising the importance of determinants that are both internal and external to the firm.

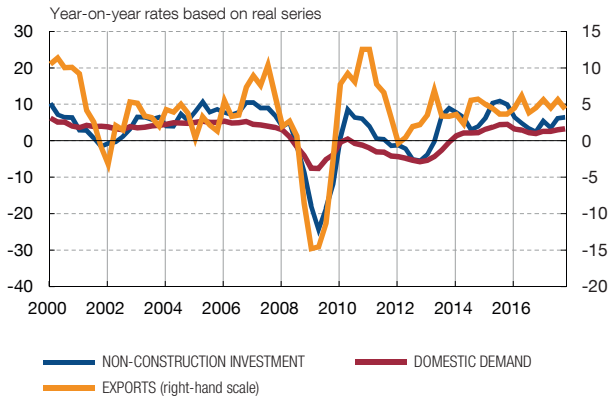
THE GREATER EXPORT ORIENTATION OF SPANISH FIRMS HAS BOOSTED INVESTMENT CHART 3.7

The export orientation of the Spanish economy has increased during the crisis and the recovery, boosting business investment. The favourable behaviour of exports has been partly based on the recovery of the price competitiveness that the Spanish economy lost during the upswing prior to the crisis. Also, given the weakness of domestic demand, Spanish firms have become more external-market oriented.

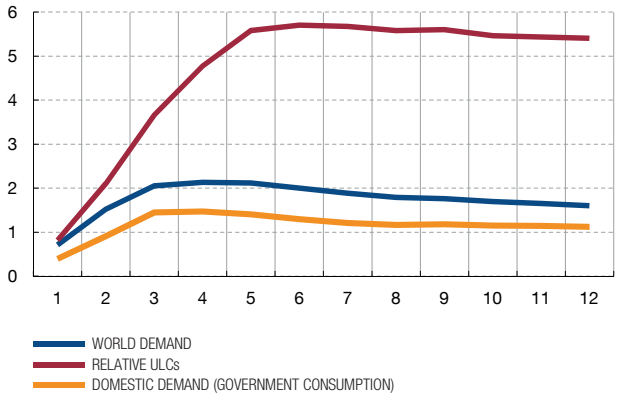
1 COMPETITIVENESS



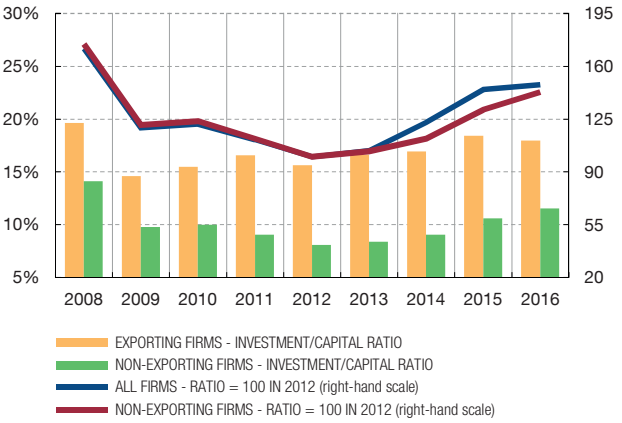
2 INVESTMENT AND EXTERNAL DEMAND



3 CUMULATIVE RESPONSE BY INVESTMENT TO A SHOCK EQUIVALENT TO A 1% INCREASE IN GDP OVER THREE YEARS (a)



4 INVESTMENT OF EXPORTING AND NON-EXPORTING FIRMS: INDIVIDUAL DATA



SOURCES: INE and Eurostat.

a Results of the Quarterly Model of the Banco de España (MTBE).

Download

strongly. Also, responses are found to vary according to financial position, so that those with a high debt ratio are more severely affected by uncertainty.[21]

3.3 GREATER EXPORT ORIENTATION

During the crisis and subsequent recovery, the export orientation of Spanish firms has increased, boosting investment. The significant increase in sales to the rest of the world in recent years has been based, on one hand, on the recovery of the competitiveness that the Spanish economy lost during the pre-crisis expansion; price and cost adjustment has generated a depreciation of the real exchange rate, which would appear to have contributed to the dynamism of exports during this period (see Chart 3.7.1). Also, Spanish firms increased their orientation towards external markets given the weakness of domestic

21 With debt ratio values above the median value of the distribution of this variable. This effect is directly related to the importance of financial frictions and the effect of uncertainty on the demand for and supply of credit. Having low levels of profitability, however, does not seem to explain the differing effects of the impact of uncertainty.

demand, which would appear to have translated into an increase in the volume of exports and in the number of firms that are regular exporters. Specifically, among manufacturing firms, those with the largest presence in external markets were able to partly offset the fall in their domestic sales with increases in their exports, a process that was assisted by labour cost moderation. According to the estimates available, between 2009 and 2013, these firms on average replaced around one-third of their lost domestic sales with sales in foreign markets.[22]

The relevance of the increase in export orientation for investment is confirmed by an analysis of the individual decisions of firms based on recent data. The tendency for exporting firms to show high investment-to-capital ratios has increased during the recovery (see Chart 3.7.4).[23] This has occurred through two channels. First, exporting firms are characterised by having higher investment-to-capital ratios, so that growth in the number of exporting firms (extensive margin) has boosted investment. Second, the recovery in the investment of exporting firms seems to have been somewhat stronger than the recovery in that of non-exporting firms, so that the increase in sales abroad by the former (intensive margin) has also been a factor favouring the dynamism of investment. The investment-to-capital ratio of exporting firms began to increase in 2010, while that of non-exporting firms did not do so until 2013. This may partly be explained by the lower sensitivity among the former to increases in domestic uncertainty, as well as by the above-mentioned replacement of domestic demand by foreign demand.

The increase in investment was higher than was to be expected from the behaviour of aggregate demand, which may indicate greater capacity utilisation among exporting firms. Insofar as firms that satisfy domestic demand and demand from the rest of the world are not the same, this reorientation of production towards export activity may have caused the aggregate behaviour of capacity utilisation to mask disparate behaviour at sectoral level. Thus, it is possible that during the recession exporting industries maintained approximately full capacity utilisation, which would help to explain why investment behaved more favourably during the recovery than was to be expected from the evolution of aggregate demand.[24]

3.4 THE CONTRIBUTION OF THE VARIOUS DETERMINANTS OF INVESTMENT IN A STRUCTURAL MODEL

The role of the determinants highlighted in the previous section is consistent with a structural interpretation of the recent behaviour of corporate investment in Spain.[25] Under the general equilibrium model estimated for the Spanish economy, the low growth of private productive investment[26] in the period 2011-2012 is explained by the adverse effects of the financial factors and negative (private and public) demand shocks. These contractionary effects began to disappear in 2013 and to be replaced by a clearly positive impact arising from wage moderation, which generated an expansionary effect during

22 See P. Antràs, M. Almunia, D. López Rodríguez and E. Morales (2018), *Venting Out: Exports during a Domestic Slump*, Working Paper, Banco de España, forthcoming. See also P. Soares and E. Prades (2017), "Does export concentration matter in economic adjustment programs? Evidence from the euro-area", *Journal of Policy Modelling*.

23 See D. Dejuán and C. Ghirelli (2018), op. cit.

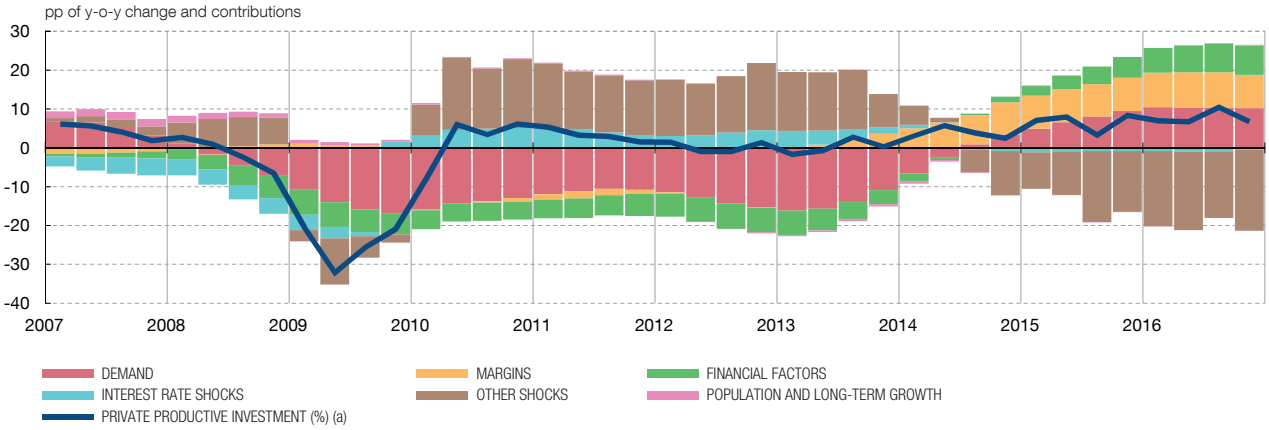
24 See D. Posada, J. M. González Mínguez and A. Urtasun (2014), "Un análisis del comportamiento reciente de la inversión en equipo y de sus determinantes", *Boletín Económico*, June, Banco de España.

25 See G. Almeida, S. Hurtado and O. Rachedi, *JoSE: Joint Spain-Euro-Area Model*, Working Paper, Banco de España, forthcoming.

26 The definition of investment in this model is slightly different to that discussed in the previous section. It is defined as total investment, excluding housing and general government. With respect to the concept of investment in equipment and intangibles used as reference, it therefore includes private construction. Also, although the general government sector is excluded, all the investment activity of the non-general government corporate public sector, responsible for most of the public infrastructure and other investment of this sector, is included (see J. J. Pérez and I. Solera (2017), "Developments in public investment during the crisis and the recovery", *Economic Bulletin*, 4/2017, Banco de España).

CONTRIBUTIONS TO INVESTMENT GROWTH ACCORDING TO A STRUCTURAL MODEL CHART 3.8

From a macroeconomic standpoint, the key role of financial conditions, internal financing, domestic and foreign demand would be consistent with a structural interpretation of recent developments in business investment in Spain.



SOURCES: INE and Banco de España.

a Difference between GFCF and the aggregate of housing investment and public investment.

Download

subsequent years, especially through the export channel. From 2015, the recovery in private demand also began to have a positive influence. Likewise, the contribution of the financial factors to growth, which had become neutral in 2013, was clearly positive between 2014 and 2016. Thus, according to this model, the strong growth of investment in recent years is explained mainly by the re-emergence of positive domestic demand shocks, the expansionary effects of wage moderation (competitiveness) and the normalisation of financial conditions (see Chart 3.8).

4 Favourable circumstances and constraints for investment in the short and medium term

4.1 FAVOURABLE CIRCUMSTANCES FOR THE MOMENTUM OF INVESTMENT

The positive developments in financial conditions and in the availability of financing are expected to continue, which will provide ongoing support to the momentum of investment. As mentioned above, the measures adopted by the ECB have boosted access to funding through bank credit and the issuance of debt instruments, and have permitted a very low interest rate scenario. Looking ahead, monetary and financial conditions are expected to remain favourable to investment for a protracted period of time (see Chart 3.9.1). Similarly, the restructuring and reorganisation process of the credit institutions sector in Spain and progress in the area of the banking union within Europe should be conducive to the proper functioning of lending activity (see Chapter 2 of this report).

Progress in the correction of imbalances in the corporate sector, especially the debt overhang, should allow companies to undertake investment projects on a sounder footing. Higher corporate saving has facilitated internal financing, at the same time as the balance sheet restructuring of firms and the improved outlook for returns have made it easier for companies to tap external funds (see Chart 3.9.2). Accordingly, the available studies for the case of Spain, which are based on individual data, show that there is a non-linear relationship between debt levels and business investment, with the result that the adverse effect of the former on the latter, *ceteris paribus*, would be significant for high debt levels and its impact would be less relevant at present, following the sharp deleveraging that has taken place.[27]

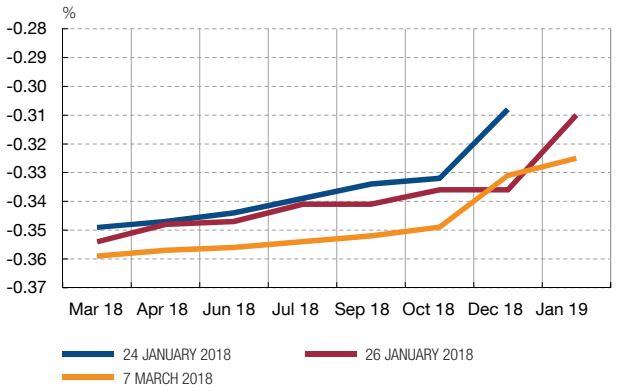
27 See, in particular, F. Herranz González and C. Martínez Carrascal (2017), *The impact of firms' financial position on fixed investment and employment. An analysis for Spain*, Working Paper 1714, Banco de España.

LOOKING AHEAD, NOTEWORTHY AMONG THE CIRCUMSTANCES FAVOURING INVESTMENT ARE LOOSE FINANCIAL CONDITIONS, THE GROWTH OUTLOOK AND FIRMS' IMPROVED FINANCIAL POSITION

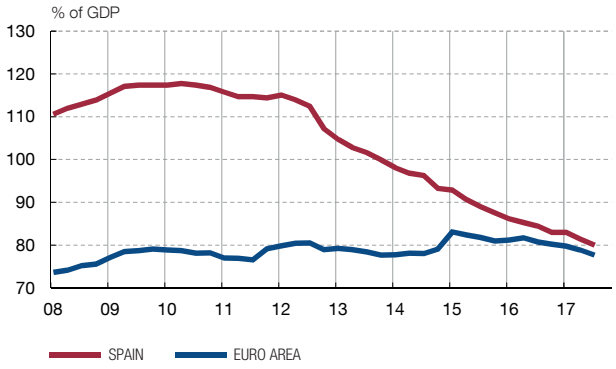
CHART 3.9

A series of factors will favour protracted buoyant investment in the short and medium term including most notably, ongoing positive financial conditions, the correction of business sector imbalances and an outlook of a continued recovery in the Spanish economy.

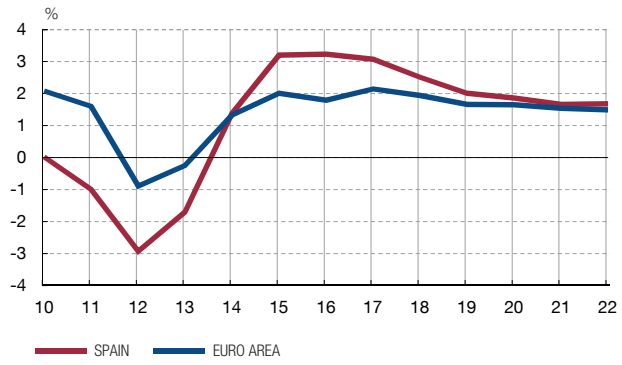
1 EXPECTED EONIA RATE FOR THE NEXT EIGHT MEETINGS OF THE GOVERNING COUNCIL OF THE ECB



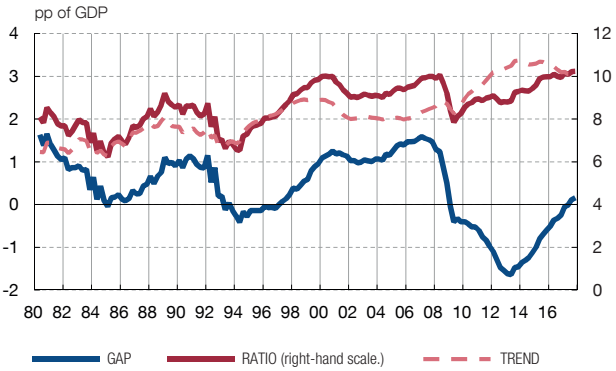
2 CORPORATE DEBT RATIO



3 MEDIUM-TERM GROWTH OUTLOOK (a)



4 GAP BETWEEN EQUIPMENT INVESTMENT AND ITS TREND (b)



SOURCES: INE, Banco de España, AMECO and IMF.

a IMF (WEO Report, October 2017).
b Difference between the ratio of equipment investment to GDP and the estimated trend of this ratio (unobserved components model). See D. Leiva, J. J. Pérez, G. Pérez Quirós and A. Urtasun (2018), An empirical model of the basic macroeconomic stylised facts of the Spanish economy, Working Papers, Banco de España, forthcoming.

Download

Likewise, the outlook for economic growth is also favourable for investment activity. The medium-term outlook for the Spanish economy remains positive: GDP growth of more than 2%[28] – above the euro area average – is expected over the next few years (see Chart 3.9.3). Progress made in restoring macro-financial equilibria (especially the correction of the loss of competitiveness and high private indebtedness after the start of the crisis) is making for a strong and possibly more sustainable recovery than in other upturns.[29]

In a scenario of these characteristics, corporate investment could retain its momentum in step with the higher degree of capacity utilisation. Although the ratio of investment in equipment to GDP is estimated to have stood at levels close to its trend

28 Specifically, according to the "Quarterly report on the Spanish economy", *Economic Bulletin,* 1/2018, Banco de España, real GDP is estimated to show increases of 2.7% in 2018, 2.3% in 2019 and 2.1% in 2020.
29 See Chapter 1 of this report.

in 2017, there may be additional gains given the current firming of the recovery of the Spanish economy[30] (see Chart 3.9.4). Accordingly, on one hand, capacity utilisation is at very high levels in certain sectors and to a greater extent in those related to exports[31] (see Chart 3.10.1). On the other, during the last decade capital obsolescence has occurred with most investment earmarked for covering capital depreciation (see Chart 3.10.4). Finally, the price of investment goods relative to other goods [32] has fallen in Spain since 2005 (when its peak of the last two decades was recorded) by slightly more than 11% (–1.7% in the euro area as a whole) and, thus that lower relative price could have a positive effect on investment decisions (see Chart 3.10.5).

4.2 POSSIBLE INVESTMENT CONSTRAINTS AND OBSTACLES IN THE SHORT AND MEDIUM TERM

The persistence of short-term risks could prompt heightened uncertainty, both globally and in Spain, curtailing investment projects. From a global standpoint, recently, several threats to the momentum of world trade have emerged, owing to protectionist trends in certain countries (especially, in the United States) and to Brexit (see Chart 3.11.1). At national level, the materialisation of a fresh scenario of heightened political uncertainty such as that observed during most of 2016 or in relation to the political situation in Catalonia (see Box 1.1. of Chapter 1 of this report) could negatively impact agents' confidence and business investment.[33]

Also, current low levels of public investment could restrict business investment insofar as the former complements and acts as a catalyst for the latter. Public-sector investment has made a highly significant contribution to the recent budget deficit reduction process to the extent that all its components[34] recorded their lowest levels of recent decades (for infrastructure, see Chart 3.11.2). In this setting, evidence shows that a positive relationship exists between aggregate productivity of the economy and so-called "productive public spending" with a significant impact on potential growth. Business investment is a particularly significant channel through which this impact materialises, both direct business investment (by state-owned or state-controlled companies) and indirect business investment (via the private sector). Although funds earmarked for public-sector investment could represent the crowding out of private-sector activity in the short term,[35] the aggregate impact of higher public-sector investment on private activity is generally positive in the long term, insofar as productive public capital expands, resulting in an improvement in the return on private factors (complementarity or crowding in

30 See D. Leiva, J. J. Pérez, G. Pérez Quirós and A. Urtasun (2018), *"An empirical model of the basic macroeconomic stylised facts of the Spanish economy"*, Working Paper, Banco de España, forthcoming.

31 Among others, noteworthy is the high capacity utilisation in the industries of manufacture of electrical equipment, manufacture of machinery and equipment, manufacture of motor vehicles, trailers and semi-trailers, and manufacture of other transport equipment.

32 Measured as the ratio between the investment deflator and the GDP deflator.

33 For an analysis of the potential effects of a scenario of a more abrupt and persistent increase in political uncertainty, see, for example, the box in the *Financial Stability Report,* Banco de España, November 2017, on the hypothetical scenarios triggered by the episode of political tension in Catalonia at the end of last year (see Box 1.1, "The economic impact of uncertainty arising from political tensions in Catalonia", in the *Financial Stability Report, November 2017, Banco de España*). Specifically, this box simulates a hypothetical scenario assuming an increase in uncertainty in a given quarter which is equivalent to the uncertainty recorded in the most intense previous episode, and a subsequent linear decline until the uncertainty disappears after two years. In this case, the estimated negative effect on GDP is slightly more than 2.5 pp in cumulative terms over those two years.

34 See J. J. Pérez and I. Solera (2017), "Developments in public investment during the crisis and the recovery", *Economic Bulletin, 4/2017*, Banco de España.

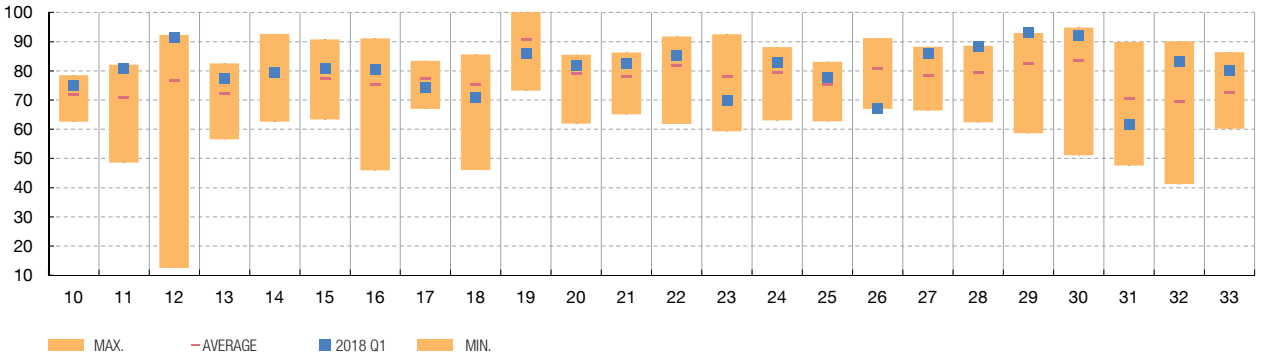
35 The available evidence for Spain tends to find positive effects in the short term. In particular, M. Alloza, P. Burriel and J. J. Pérez (2018), "*Fiscal Policies in the Euro Area: Revisiting the Size of Spillovers*", Working Papers, Banco de España, forthcoming, find that each euro spent on public investment would generate a cumulative increase after two years of nearly €2 in terms of GDP and between €0.5 and €1 in terms of private productive investment.

FACTORS ALSO EXPECTED TO BOOST INVESTMENT INCLUDE HIGH CAPACITY UTILISATION AND CAPITAL DEPRECIATION

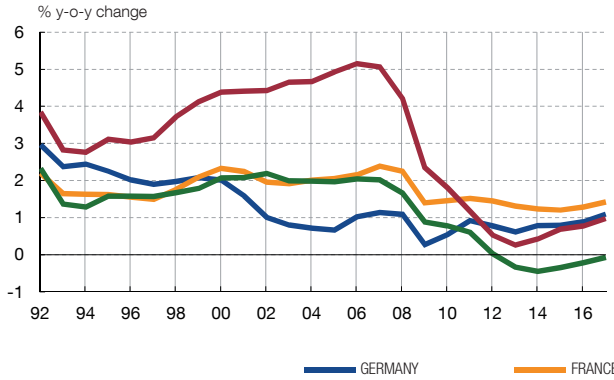
CHART 3.10

In a scenario of continued recovery of the Spanish economy, business investment would remain buoyant in keeping with a higher degree of capacity utilisation.

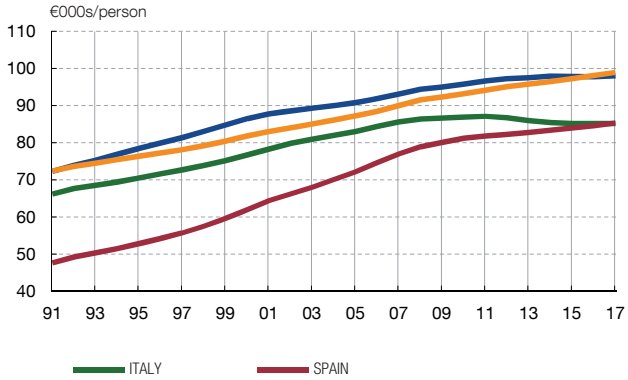
1 CAPACITY UTILISATION IN MANUFACTURING INDUSTRIES (a)



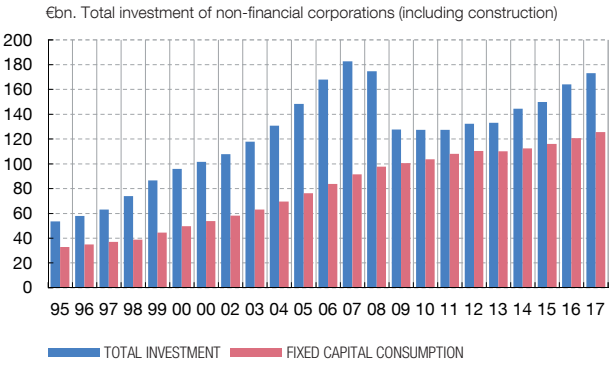
2 CHANGE IN CAPITAL STOCK OF ECONOMY



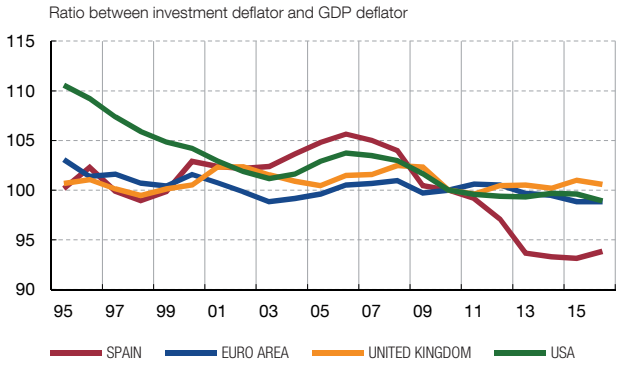
3 CAPITAL STOCK OF ECONOMY PER CAPITA



4 INVESTMENT AND DEPRECIATON OF THE CORPORATE CAPITAL STOCK



5 RELATIVE PRICE OF INVESTMENT GOODS



SOURCES: INE, Banco de España, European Commission, AMECO and IMF.

a Manufacturing industries: (10) Manufacture of food products; (11) Manufacture of beverages; (12) Manufacture of tobacco products; (13) Manufacture of textiles; (14) Manufacture of wearing apparel; (15) Manufacture of leather and related products; (16) Manufacture of wood and of products of wood and cork, except furniture; (17) Manufacture of paper and paper products; (18) Printing and reproduction of recorded media; (19) Manufacture of refined petroleum products; (20) Manufacture of chemical products; (21) Manufacture of basic pharmaceutical products and pharmaceutical preparations; (22) Manufacture of plastics; (23) Manufacture of other non-metallic mineral products; (24) Manufacture and first processing of metals; (25) Manufacture of fabricated metal products, except machinery and equipment; (26) Manufacture of computer, electronic and optical products; (27) Manufacture of electrical equipment; (28) Manufacture of machinery and equipment; (29) Manufacture of motor vehicles, trailers and semi-trailers; (30) Manufacture of other transport equipment; (31) Manufacture of furniture; (32) Other manufacturing; (33) Repair and installation of machinery and equipment.

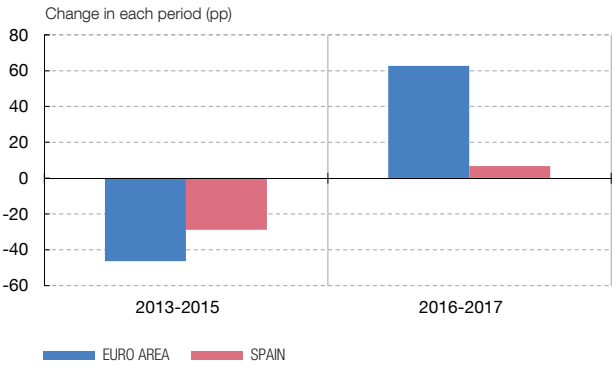
Download

CERTAIN CONSTRAINTS AND CURBS ON SHORT AND MEDIUM-TERM INVESTMENT PERSIST, INCLUDING FEATURES OF INSTITUTIONAL AND TAX FRAMEWORKS

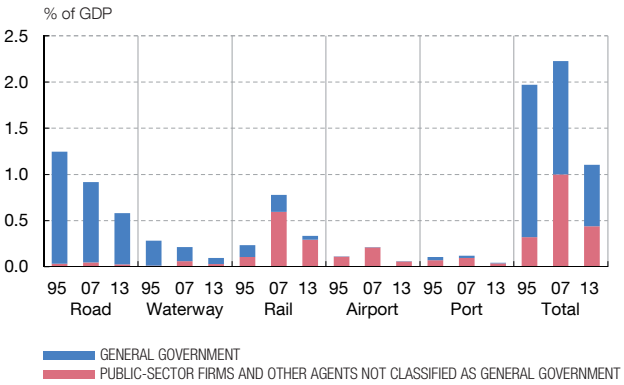
CHART 3.11

There is a series of factors which could curb the momentum of investment in the short and medium term, if suitable policies are not implemented. These factors include, most notably, global and national risks which could increase uncertainty, low public investment, the shortcomings of the institutional framework and distortions arising from the corporate income tax system.

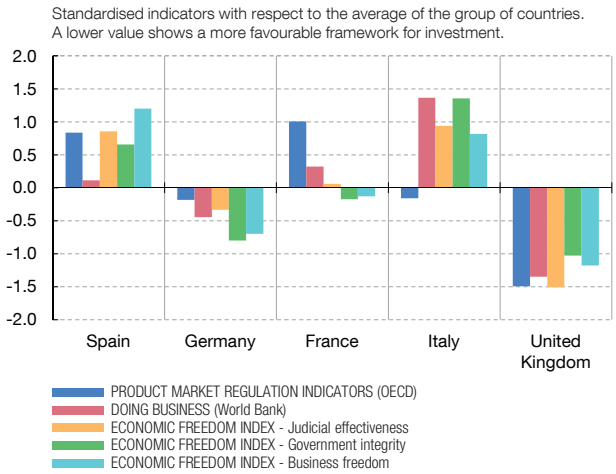
1 RECENT INCREASE IN ECONOMIC UNCERTAINTY (a)



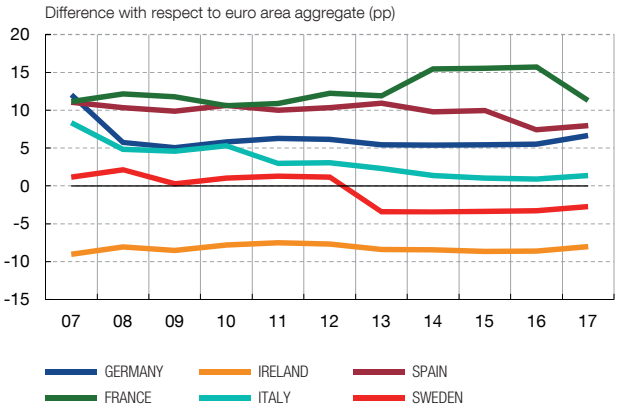
2 PUBLIC SECTOR INVESTMENT IN INFRASTRUCTURE



3 INSTITUTIONAL FRAMEWORK INDICATORS



4 TAX ON BUSINESS INVESTMENT RETURNS



SOURCES: INE, Banco de España, Instituto Valenciano de Investigaciones Económicas and OECD.

a EPU (Economic Policy Uncertainty).

Download

effects).[36] From this standpoint, public spending on infrastructure and R&D&I activities is particularly important, these items would affect aggregate economic activity and private investment to a greater extent.[37] Accordingly, note that public investment in R&D in Spain

36 The final effect will depend, in any event, on the design of the investment plan (implementation period and duration, degree of distortion of the fiscal instrument used to finance it) or on other macroeconomic aspects such as the interest rate response to public investment stimulus or the degree of nominal rigidities present in the economy. For a review of the theoretical arguments and channels, see M. Baxter and R. King (1993), "Fiscal Policy in General Equilibrium", *American Economic Review*, or E. Leeper, T. Walker and Yang (2010), "Government investment and fiscal stimulus", *Journal of Monetary Economics*.

37 See, for example, Bom and Ligthart (2014), "What have we learned from three decades of research on the productivity of public capital?", *Journal of Economic Surveys*, and Comín, Licht, Pellens and Schubert (2018), "*Do Companies Benefit from Public Research Organizations? The Impact of the Fraunhofer Society in Germany*", Centre for Innovation, Research and Competence in the Learning Economy.

amounted to 0.50% of GDP in 2015 compared with the EU aggregate of 0.62% (Germany: 0.81%; France: 0.79%; and Italy: 0.51%).[38]

The weight of public investment in R&D is smaller, furthermore, in a setting of significantly lower private investment in this area than in benchmark countries. According to the OECD, investment in R&D in Spain's total economy (public and private) stood at 1.2% of GDP in 2015, which is lower than the EU aggregate of 2% and much smaller than the figures for Germany and France (2.9% and 2.3%, respectively).[39] More generally, the weight of investment in intangible assets in Spain remains low, in relative terms, despite the rising trend of recent decades. Compared to other European countries, in 2016 the Spanish economy's investment drive in intangible assets (measured as its weight in GDP) was 1.2 pp of GDP lower than the euro area aggregate (see Chart 2 of Box 3.1). From this standpoint, it is important for the recent vigour in investment in intangible assets to continue so that this gap closes, given their increasing significance in production processes and their impact on productivity gains.

As for other structural conditioning factors, certain shortcomings in institutional arrangements, including several regulatory factors, are not conducive to business dynamism. The available empirical evidence points to tighter regulations tending to be associated with lower business investment.[40] Notwithstanding the improvements made during the crisis, Spain's regulatory framework continues to entail certain constraints, since it is generally more restrictive than that of benchmark European economies such as Germany and the United Kingdom, according to the habitually used indicators such as those of the OECD's *Product Market Regulation*, the World Bank's *Doing Business report* or the *Heritage Foundation's* economic freedom indicators (see Chart 3.11.3).[41]

Reforms aimed at improving the use and quality of productive factors and the efficient operation of product markets and factors are essential for boosting productive investment and economic growth in the medium and long term. The effects of these reforms could be particularly positive during the present boom since the adjustment costs they entail can be met to a greater degree.[42] Similarly, in a monetary union, the application of structural reforms aimed at reducing barriers to competition may stimulate business investment significantly, even in the short term and in situations in which the additional accommodative capacity of monetary policy is constrained (see Box 3.4).[43]

A stable framework of relationships between firms needs arrangements which ensure that rules and agreements are enforced. An inefficient agreement enforcement system generates greater legal uncertainty, adversely affecting investment and productivity. This adverse impact is, furthermore, greater in the case of intangible assets

38 See OECD (2017), "*Main Science and Technology Indicators*", Vol. 2017, 2.

39 See again, OECD (2017), *op. cit.*

40 See European Central Bank (2016), "*Business investment developments in the euro area since the crisis*", October and G. Palumbo, G. Giupponi, L. Nunziata and J. S. Mora-Sanguinetti (2013), "*The Economics of Civil Justice: New Cross-Country Data and Empirics*", OECD Economics Department Working Papers, 1060.

41 For example, the OECD points out that administrative burdens on start-ups are generally greater in Spain. Registering a sole proprietorship takes more time in Spain than in Germany and in the United Kingdom. It is also necessary to contact a larger number of public bodies to register a public limited company.

42 The "*Report on Structural Policies in the euro area*", a forthcoming Occasional Paper of the ECB, contains a detailed discussion on the relationship between cyclical position and the costs of reforms.

43 See Ó. Arce, S. Hurtado and C. Thomas (2016), "Policy Spillovers and Synergies in a Monetary Union", *International Journal of Central Banking*, and OECD (2012), "Reducing income inequality while boosting economic growth: can it be done?", *Economic Policy Reforms*.

(such as copyright and patents), which are more complex to protect. In the case of Spain, there is evidence of the link between the effectiveness of the legal system and investment, as well as between the former and the entry of new firms into markets and their subsequent growth.[44]

Taxation also influences firms' investment decisions. Economic research has underlined the potential for taxation on the purchase of productive assets and on the related returns to affect an economy's accumulation of capital through its impact on investment decisions and, in particular, on an economy's capacity to attract foreign direct investment.[45] In this regard, Spain stands out for having a tax structure that has persistently taxed business investment returns at a level above the euro area average, even though it has decreased in recent years (see Chart 3.11.4).[46]

The main obstacles to investment, according to Spanish firms, are uncertainty, frictions caused by business and fiscal regulations and possible limited demand for products and services. According to the 2017 Survey of the European Investment Bank, in addition to these factors, Spanish firms mention other relevant factors such as energy costs, labour market regulations, the availability of staff with the right skills, the availability of internal and external financing and adequate transport infrastructure and access to digital infrastructure. In the EU as a whole, the various factors are ranked in a similar order, except for the availability of staff with the right skills which is attributed more importance (see Box 3.2).

4.3 GLOBAL TRENDS IMPACTING INVESTMENT LEVELS

The growing importance of services in advanced economies has meant that investment has been restructured slightly towards sectors with lower investment ratios in relative terms. The services industries generally have lower gross fixed capital formation to GDP ratios than the industrial sectors which are the traditional drivers of investment (see Chart 3.12.2). Accordingly, when the residential construction and general government sectors are excluded, investment as a percentage of value added shows a declining profile in the advanced economy which could be related to the process of tertiarisation.

In tandem, the investment ratio in most sectors has decreased. This has been the case in particular in the services sectors. Indeed, when the change in the non-residential

---

44 See D. Dejuán, C. Ghirelli and J. S. Mora-Sanguinetti (2018), "*Quality of enforcement and investment decisions. Firm-level evidence from Spain*", Working Paper, Banco de España, forthcoming; M. García-Posada and J. S. Mora-Sanguinetti (2014), "Entrepreneurship and Enforcement Institutions: Disaggregated Evidence for Spain", *European Journal of Law and Economics*, 40, pp. 49-74; and M. García-Posada and J. S. Mora-Sanguinetti (2015), "Does (average) size matter? Court enforcement, business demography and firm growth", *Small Business Economics*, 44, pp. 639-669.

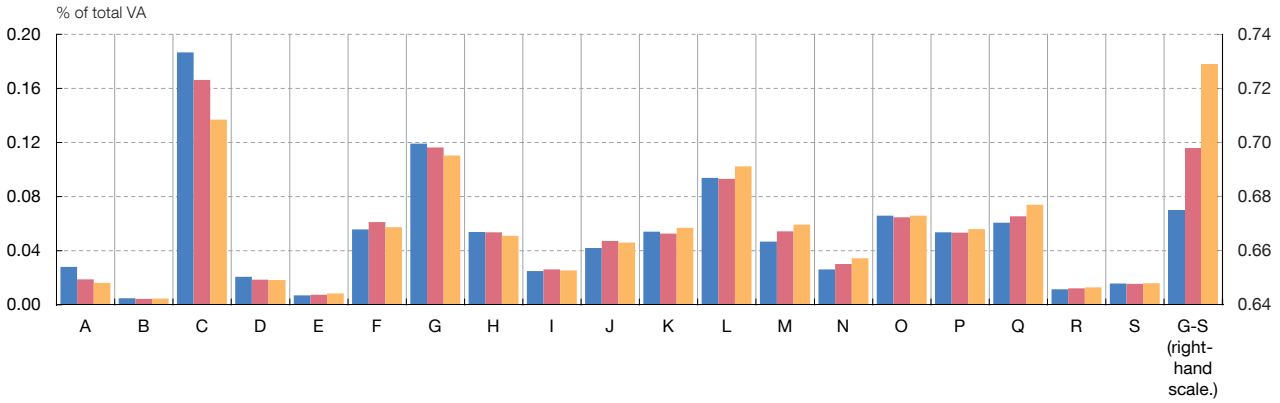
45 The empirical evidence for the case of Spain indicates that higher taxation on companies triggers lower investment in the short term, based on both aggregate data (see P. Gil, F. Martí, R. Morris, J. J. Pérez and R. Ramos, (2018) "The Output Effects of Tax Changes: Narrative Evidence for Spain", *SERIES-Journal of the Spanish Economic Association*) and individual data (see D. Dejuán and C. Ghirelli (2018), op. cit.).

46 The actual taxation of business investment is obtained from the data published by Eurostat which are calculated using the influential methodology proposed in M. P. Devereux and R. Griffith (1998), "Taxes and the Location of Production: Evidence from a Panel of U.S. Multinationals", *Journal of Public Economics*, 68, pp. 335-367 and M. P. Devereux and R. Griffith (2003), "Evaluating tax policy for location decisions", *International Tax and Public Finance*, 10, pp. 107-126. According to this methodology, estimated taxation as a percentage of business investment should consider the cost for firms of the taxes, as a whole, on the purchase of productive assets and on the related earnings. A particularly relevant component of this calculation is the cost for a company of applying a tax depreciation rate to assets for corporate income tax purposes which is lower than the economic depreciation rate of these assets (estimated by the OECD). For a more detailed discussion, see D. López Rodríguez (2018), "La recaudación del impuesto sobre sociedades en España: evolución y limitaciones en el contexto internacional", *Boletín Económico*, Banco de España, forthcoming, European Commission (2017), "*Taxation Trends in the European Union*", Eurostat Statistical Books; and ZEW (2016), "Effective Tax Levels Using the Devereux-Griffith Methodology: 2016 Report", Project for European Commission TAXUD 2013/CC/120.

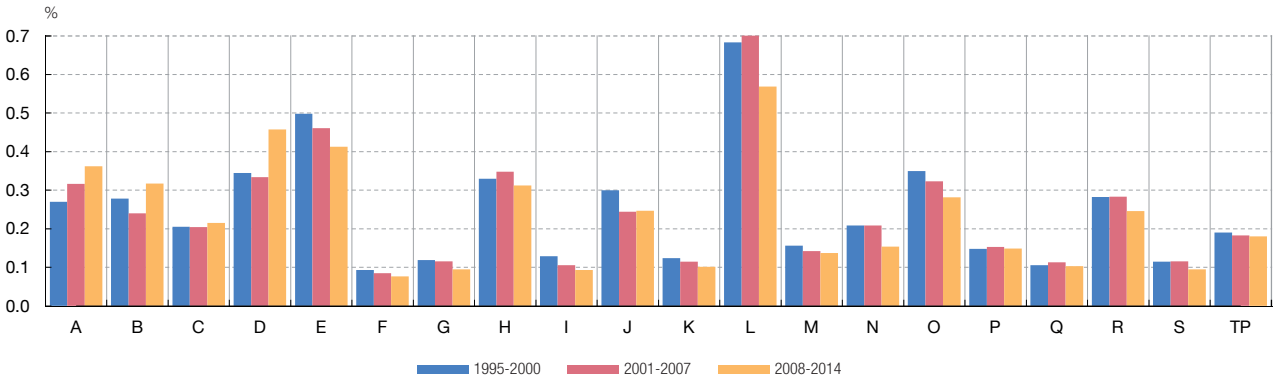
AT GLOBAL LEVEL, THE WEIGHT OF SERVICES-RELATED SECTORS, WHERE INVESMENT IS WEAKER, HAS INCREASED IN RECENT DECADES

CHART 3.12

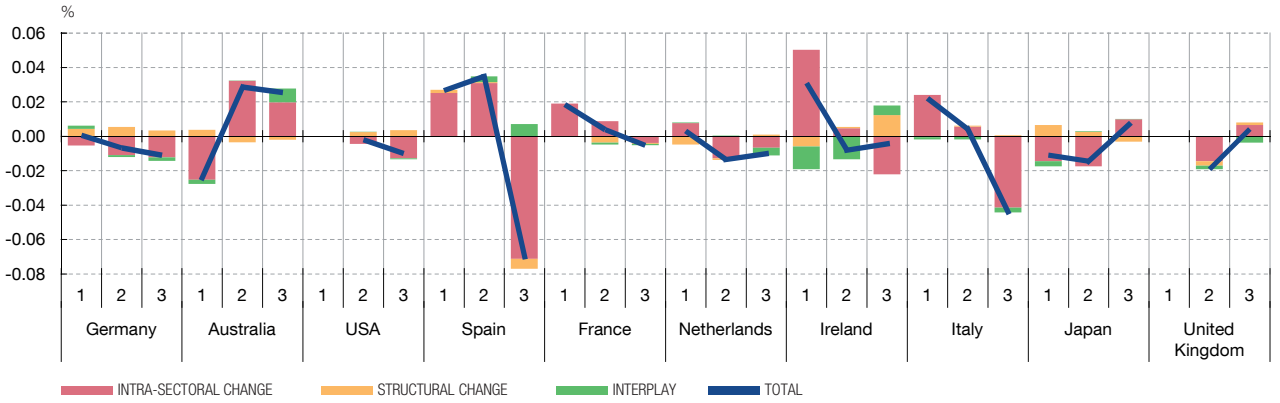
1 STRUCTURE OF VALUE ADDED (MEDIAN) (a)



2 INVESTMENT-TO-GDP RATIO (MEDIAN) (a) (b)



3 CHANGE IN INVESTMENT-TO-GDP RATIO. INTRA-SECTORAL EFFECT AND CHANGE OF SECTORAL STRUCTURE (c)



FUENTES: Organización para la Cooperación y el Desarrollo Económicos, BEA, ABS y Banco de España.

a Industrial classification (ISIC 4): A (agriculture), B (mining and quarrying), C (manufacturing), D (electricity, gas, steam and air conditioning supply), E (water supply, sewerage, waste management and remediation activities), F (construction), G (wholesale and retail trade, repair of motor vehicles and motorcycles), H (transportation and storage), I (accommodation and food service activities), J (information and communication), K (financial and insurance activities), L (real estate activities), M (professional, scientific and technical activities), N (administrative and support service activities), O (public administration and defence; compulsory social security), P (education), Q (human health and social work activities); R (arts, entertainment and recreation), S (other service activities).
b Investment rate defined as ratio of gross fixed capital formation to gross value added, both at current prices.
c 1: 1995-2001, 2: 2001-2007, 3: 2007-2014. Real estate activities (L) is not included.

Download

investment to GDP ratio in various countries is broken down into the effect of the change of sectoral structure, on one hand, and the effect of changes within each sector, on the other, the latter appears as the most relevant explanation of the changes in this variable in the last two decades (see Chart 3.11.3).[47]

Part of these developments could be explained by the interplay between sectoral variations and the change in relative price of investment goods with respect to other goods. Technological progress and notably less expensive intangible assets have boosted the acquisition of this type of goods in the services sectors which are increasingly important in terms of domestic output, such as business and financial services. These intangible assets generally require lower upfront outlays than tangible assets,[48] which could explain the reduction in investment to GDP ratios in developed economies, without forgetting the problems associated with measuring investment in intangible assets. Based on the available evidence, the accumulation of intangible assets could have positive effects on productivity,[49] as well as other implications, in terms of firms' financial structures, since the characteristics of intangible assets make them less suitable for use as collateral or as a guarantee to obtain borrowed funds,[50] compared with tangible assets. Similarly, stronger intangibles investment has implications for the labour market and demand for labour since these investments usually require more highly skilled workers.

Noteworthy among the factors which could reduce the strength of investment in the developed economies are that a large number of emerging economies are now integrated into the world economy and that firms are increasingly international. Globalisation has contributed to boosting the development of global production chains, with a notable increase in the cross-border services trade and, in general, the internationalisation process of all real and financial economic activity. The outcome of this process has been that a growing proportion of production and world investment is located in emerging economies which have booming markets and lower production costs. Capital flows in the form of direct investment at global level reflect this shift. The available studies, however, show that foreign direct investment by developed economies in the last two decades does not appear to have been detrimental, in general, to domestic investment. Only in those sectors where investment is stronger in assets relating to intellectual property (information and communication, financial services, professional and technical activities and manufacturing), could foreign investment have significantly replaced domestic investment in recent years (see Box 3.3).

From a long-term perspective, population ageing will affect the advanced economies' investment potential. Specifically, investment could suffer insofar as adverse demographic trends impact potential growth expectations and productivity, although the relatively

47 The same conclusion is drawn in European Commission (2017), "*Investment in the EU Member States*", Institutional Paper 062, October.

48 See R. Döttling, T. Ladika and E. Perotti (2016), "*The (Self-)Funding of Intangibles*", Tinbergen Institute Discussion Papers 16-093/IV, Tinbergen Institute.

49 For example, C. Corrado, J. Haskel and C. Jona-Lasinio (2013), "*Knowledge Spillovers, ICT and Productivity Growth*", Discussion Paper, IZA 8274.

50 However, in certain countries, such as the United States, a growing trend can be seen towards using intangible assets as collateral to obtain borrowed funds, especially in those sectors where the proportion of this type of assets is very high. See S. C. Lim, A. J. Macias and T. Moeller (2016), "Intangible Assets and Capital Structure", Paris December Finance Meeting EUROFIDAI-AFFI; and M. Loumioti (2012), *The use of intangible assets as loan collateral*, SSRN Paper 1748675.

higher supply of savings will tend to bring about lower interest rates.[51] The available research has also underlined the fact that innovation in an ageing population could be lower, which would reduce the marginal productivity of capital and, consequently, investment.[52] By contrast, however, some authors have noted that ageing and technological progress could lead to an increase in capital intensity per employee, that will require higher investment levels, also as a result of the relative change in the price of productive factors, in a setting of tighter labour market conditions, with the result that the price of capital could fall in relative terms.[53]

51 See L. H. Summers (2014), "US economic prospects: Secular stagnation, hysteresis, and the zero lower bound", *Business Economics*, 49, pp. 65-73.

52 Y. Aksoy, H. Basso, R. P. Smith and T. Grasl (2018), "Demographic structure and macroeconomic trends", *American Economic Journal: Macroeconomics*, forthcoming.

53 See P. Butzen, S. Cheliout, E. De Prest, S. Ide and W. Melyn (2016), "Why is investment in the euro area continuing to show only weak recovery?", *Economic Review*, National Bank of Belgium, pp. 81-98; and C. Goodhart and M. Pradhan (2017), *Demographics Will Reverse Three Multi-Decade Global Trends*, BIS Working Paper 656.

The knowledge-based economy, linked to the development of intangible assets, has become increasingly important in determining the competitive advantages of firms. Specifically, the progress of knowledge-based activities can be divided into two stages: the first, focused on the development of information and communications technologies (ICT) (software, hardware and communications), has been followed by a new stage characterised by the investment drive in intangible assets. The trend towards the "tertiarisation" (a shift to services) of developed economies, combined with the process of technological change, may have significant implications for the type of capital goods in which firms invest, driving investment in intangible assets, linked to creativity and knowledge.

The definition of intangible assets encompasses ICT, research and development (R&D), innovation, design, creativity, image and brand, organisation and specific human capital formation. Measurement of these concepts is not straightforward, and their conceptual definition has gradually broadened. In the past, the accounting rules treated spending on intangible assets as intermediate consumption expenses. However, the new system of accounts, ESA 2010, considers intangible assets to be investments. Until recently, of the three large categories of this type of asset,[1] the national accounts only considered the acquisition of computer software to be investment, although the ESA 2010 has also incorporated spending on research and development. The current national accounts systems include the following range of specific intangible assets in the "intellectual property assets" category: a) computerised systems (software and databases) and b) R&D, mineral exploration and entertainment, literary or artistic originals. However, measurement of and accounting for this type of asset continues to be subject to debate, and some authors (Corrado, Hulten and Sichel, 2006) have already identified a broader range of assets considered intangible.

There are marked differences across countries regarding the relative significance of intangibles investment. In euro area countries, the rate of investment in this type of asset is less than in other EU economies, such as the Nordic countries or the United Kingdom. In the United States, investment in intangible assets is estimated to have even exceeded traditional investment in tangible assets. During the latest crisis, investment in intangible assets proved very resilient in most of the developed economies and, in a good number of them, the ratio of the assets included in the national accounts to GDP continued to increase.

In the case of Spain, based on national accounts data, intangible assets have grown significantly, both in terms of volume and as a proportion of total gross fixed capital formation (GFCF). Specifically, these assets have risen from 7% of total GFCF in 2008 to 14% in the last ten years (compared with tangible asset investment (excluding residential investment) which accounts for 60%). Therefore, the cyclical behaviour seen in other assets has not been observed in intangible assets, which have grown steadily since 1995 at an average yearly rate of 5%.

In comparison with other countries, on average, in 1995-2016, the investment drive in intangible assets in Spain was lower than that of most other European Union countries and similar to that of Portugal and Italy, and behind the Nordic countries (such as Finland and Sweden), the United Kingdom and France (see Charts 1 and 2). Moreover, a rising trend in investment was observed, most notably in Belgium, Austria, Netherlands and France, whose investment in intangible assets rose by around one percentage point in terms of GDP. In Spain, investment in this type of assets was 3% of GDP in 2016, compared with 1.5% in 1995.

However, as mentioned earlier, the definition of intangible assets in the ESA 2010 is incomplete, and it is therefore necessary to use databases which include other intangible assets (see Charts 3 and 4) in order to accurately describe their economic relevance. The Valencian Institute of Economic Research (IVIE, by its Spanish abbreviation)[2] provides an estimate for a broader range of assets. ICTs are wide-reaching technologies that impact on all sectors, but only if they are accompanied by further innovations. In this respect, some intangible assets not included in the ESA 2010, relating to organisation and the people using ICT, enable the latter to make a greater contribution to economic growth. The assets not included in the ESA 2010 account for a larger share of GDP than the intangible assets that are included. This discrepancy has been reduced over time, owing to the broader inclusion of such assets in the national accounts.

Thus, in 2014, the intangible assets included in the ESA 2010 represented 3% of GDP, while those that were not, represented 3.5%. As regards the composition of intangible asset investment (according to the IVIE's broad definition), the most significant component is that relating to economic competencies (around 40% of total intangible asset investment), closely followed by investment in innovative property. The two most noteworthy subcomponents are R&D investment and investments to improve the organisational structure of firms

1 Investment in intangible assets is usually classified under three categories: a) computer software and databases; b) research and development or other activities that may give rise to intellectual property rights of a scientific or artistic nature, and c) economic competencies, such as improvements in employee skills, in organisational structure or brand reputation development.

2 See M. Mas and J. Quesada (dirs.) (2014), Activos intangibles: Una inversión necesaria para el crecimiento económico en España (Intangible assets. A necessary investment for economic growth in Spain) Ariel and Fundación Telefónica, Barcelona

Chart 1
INVESTMENT IN TANGIBLE AND INTANGIBLE ASSETS. AVERAGE IN 1995-2016

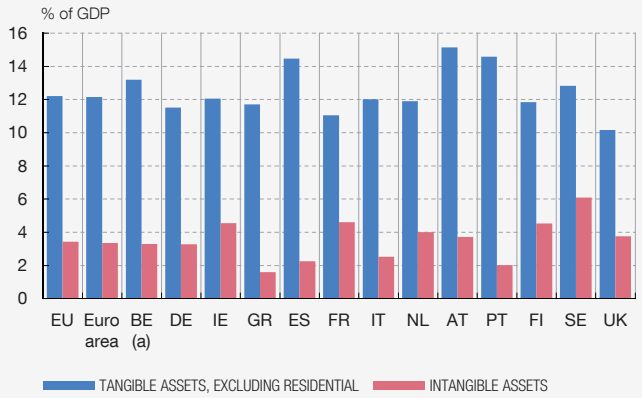


Chart 2
CHANGES IN INTANGIBLE ASSET INVESTMENT

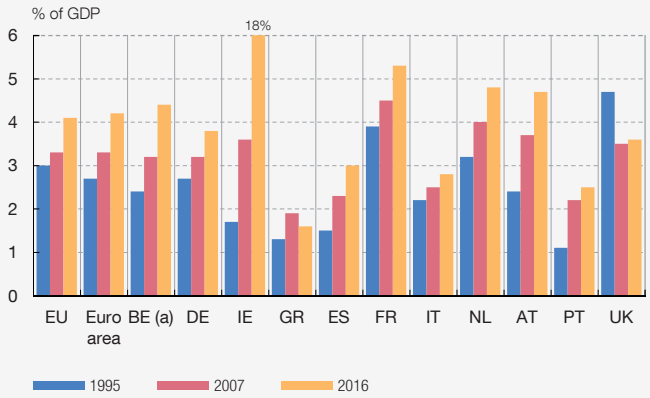


Chart 3
INVESTMENT IN TANGIBLE AND INTANGIBLE ASSETS. AVERAGE IN 1995-2014

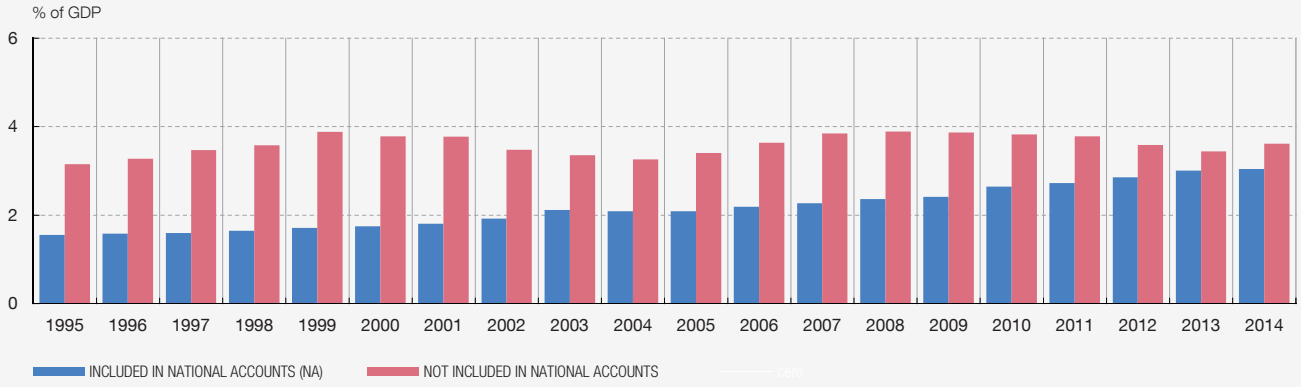
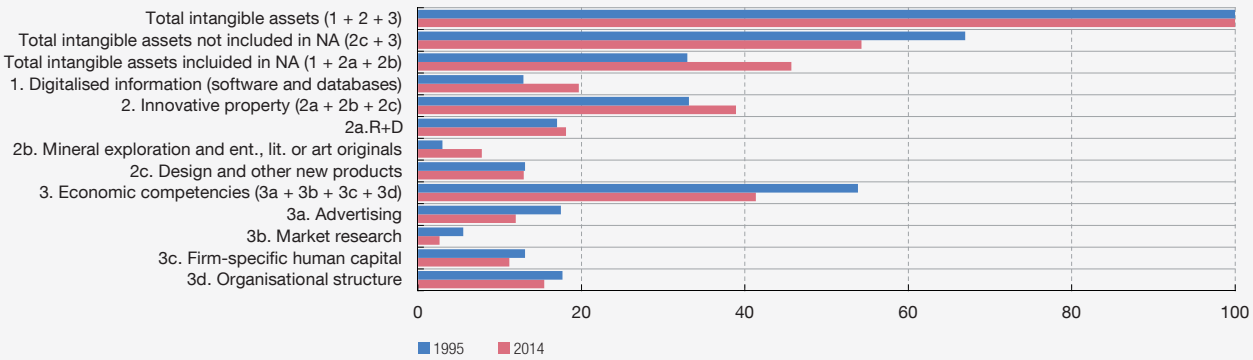


Chart 4
BREAKDOWN BY CATEGORY



SOURCE: Eurostat, IVIE.

a Data available up to 2015.

(18% and 15.5% of total investment in intangible assets, respectively). Lastly, some heterogeneity was observed in the changes affecting the subcomponents over time. Particularly noteworthy was the considerable rise in investments in software and databases and innovative property, with cumulative increases of 187% and 147% between 1995 and 2014, respectively, while investments in advertising and market research decreased as a proportion of total investment in intangible assets during the same period.

Finally, the relative significance of the determinants of investment is of particular interest when exploring the ratio of tangible to intangible investment. Some authors[3] have found evidence pointing to the role played by firm size and product and labour market regulation as the main drivers of investment in intangible assets. In addition, this type of investment seems to be less dependent on the economic cycle and the financial position of firms than tangible asset investment, with internal financing playing a relatively more significant role[4].

3 C. Corrado, J. Haskel, C. Jona-Lasino and M. Iomni (2016), "Intangible investment in the EU and US before and since the Great Reccesion and its contribution to productivity growth" Working Paper No 2016/08, European Investment Bank.

4 European Investment Bank (2017), "From recovery to sustainable growth". Investment Report No 2017/2018, European Investment Bank.

In 2016, in order to better understand the investment decisions of European companies, the European Investment Bank (EIB) began to prepare annually the EIB Group Survey on Investment and Investment Finance (EIBIS). This survey includes interviews of around 12,500 firms from the 28 EU Member States,[1] approximately 500 of which are Spanish. The firms are of all sizes, are from the main sectors and offer qualitative and quantitative information[2] on their investment activities, finance needs and the difficulties they face. The results from the first two waves of this survey (2016 and 2017) are currently available. This box analyses Spanish firms' responses to the questions in the questionnaire relating to the obstacles they perceive and to the investment gap (relationship between the investment level and the investment that ensures the success of their business going forward). These results are compared with those of the EU companies surveyed, as a whole.

Uncertainty about the future and, next in order, business regulations (licences, permits, etc.) and taxation, and demand for products and services, are the obstacles indicated by a higher proportion of Spanish firms both in the 2016 and 2017 waves[3] (see Chart 1). Next are energy costs, labour market regulations and the availability of staff with the rights skills. The perception of the availability of finance, which includes both internal and external financing, is in seventh position. Lastly, the factors mentioned by a smaller number of companies are availability of adequate transport infrastructure and access to digital infrastructure.

In the EU as a whole, the order of the different factors is observed to be very similar, the main exception being the availability of staff with the right skills, an obstacle which is of relatively greater importance in the EU. These differences are consistent with the higher unemployment rate in Spain, which means that, in principle, it has a greater surplus of available labour.

The results for Spain show a higher proportion of firms reporting each obstacle, except for the availability of staff with the right skills, where the level is similar. Given that the perceptions about the obstacles are subjective, it is possible that, since the economic and financial crisis was relatively more severe in Spain, Spanish companies may tend to perceive that each obstacle represents a barrier to investment. Certain cultural aspects could also play a significant role in explaining these differences. Thus, for example in the case of the availability of finance, the available objective indicators approximating this concept, such as the proportion of firms whose access to bank finance is restricted[4] show similar results in the two areas (around 6%). That seems to suggest that Spanish companies are more inclined to report obstacles than other European companies.

If the results of the two available waves are compared, the proportion of companies reporting obstacles in the two areas is seen to decrease in the 2017 wave compared with the previous wave. However, this is more pronounced in Spain which could be linked to cyclical factors and, in particular, to the stronger economic recovery in Spain.

Using a linear probability model which controls for characteristics at firm level,[5] such as size, age of the firm, access barriers to external bank finance, productivity, sector and balance sheet situation (profit ratios, leverage and liquidity), generally, those firms with a worse economic and net worth position which are less productive are observed to have a greater likelihood of reporting obstacles to investment. This effect is more significant for obstacles relating to the availability of finance, access to digital infrastructure and energy costs in the case of Spain and for obstacles relating to the availability of finance, business regulations, energy costs and the availability of staff with the right skills, in the case of Europe. Thus, for example, in the case of the availability of finance, an increase of 10 pp in the indebtedness ratio means an increase of 2.7 pp in the probability of reporting that obstacle for Spain (1.5 pp for the EU). Financially constrained firms have a higher probability of reporting any obstacle, especially in the case of the availability of finance, for which the probability of reporting this obstacle increases to 18 pp for Spanish firms (22 pp for European firms). Generally, SMEs and younger companies (approximated as those which have been in business for less than ten years) do not have a greater probability of encountering a given obstacle than other firms. Some barriers, such as those relating to labour market and business regulations are more likely to be reported by infrastructure firms and those in the construction sector.

Another aspect covered by the EIBIS is the investment gap perceived by firms, that is, the fact that they consider that the investment made in the last three years has been too little to ensure the success of their business going forward. The

1 The methodology of the EIBIS is available at http://www.eib.org/attachments/eibis_methodology_report_2017_en.pdf.

2 The questionnaire used in 2016 is available at http://www.eib.org/attachments/eibis_general_module_questionnaire_2016_en.pdf. Small changes were made to it in the 2017 wave, but the structure remains the same.

3 The proportion of firms reporting each obstacle is constructed as follows: if an obstacle is reported as a major obstacle, it is given a weighting equal to unity, whereas if it is reported as a minor obstacle, its weight is 0.5.

4 Firms in any of the following situations are considered financially constrained: their loan applications have been rejected, they have only been granted a portion of the funds requested, the loan was extended but at a cost they consider to be very high and those companies which did not apply for external finance because they thought they would be turned down.

5 Some of these variables are available in the survey itself and others were obtained by matching the survey with the database of Amadeus.

Table 1
RESULTS OF THE ESTIMATION OF A MODEL OF THE PROBABILITY THAT A FIRM WILLL REPORT AN INVSTEMENT GAP. SAMPLE OF EUROPEAN FIRMS (a) (b) (c) (d)

¥Profitability ratio$_{t-1}$		-0.283***	-0.291***	-0.287***	-0.290***	-0.289***	-0.293***	-0.279***	-0.290***	-0.291***	-0.273***
¥Indebtedness ratio$_{t-1}$		0.063***	0.063***	0.064***	0.063***	0.063***	0.063***	0.050***	0.063***	0.064***	0.047**
¥Liquidity ratio$_{t-1}$		-0.032	-0.032	-0.033	-0.032	-0.032	-0.033	-0,010	-0.032	-0.032	-0.016
¥Total factor productivity$_{it}$		-0.028***	-0.028***	-0.029***	-0.028***	-0.028***	-0.029***	-0.024***	-0.028***	-0.029***	-0.023***
Financially constrained (c)		0.138***	0.139***	0.140***	0.140***	0.141***	0.140***	0.187***	0.142***	0.141***	0.182***
§SME		0.017	0.018	0.020	0.019	0.018	0,020	0.013	0.021	0.019	0.012
§Young firm (<10 years old)		-0.024	-0.026	-0.025	-0.025	-0.025	-0.026	-0.030*	-0.025	-0.025	-0.029*
§Construction sector		-0.001	0.001	0.003	0.005	0,000	0.003	-0.003	0.003	0.004	-0.010
§Services sector		-0.016	-0.018	-0.015	-0.016	-0.018	-0.015	-0.017	-0.016	-0.016	-0.017
§Infrastructure sector		-0.045**	-0.046**	-0.044**	-0.045**	-0.046**	-0.043**	-0.046**	-0.046**	-0.046**	-0.045**
§Uncertainty	Minor	0.024*									0.019
	Major	0.074***									0.054**
§Business regulations	Minor		0.018**								0.004
	Major		0.042***								0.008
§Demand	Minor			0.001							-0.019
	Major			0.033**							-0.006
§Energy costs	Minor				0.007						-0.017
	Major				0.028						-0.009
§Labour market regulations	Minor					0.015					0.005
	Major					0.050***					0.027**
§Avail. of staff with right skills	Minor						0.024*				0.018
	Major						0.035***				0.016
§Availability of finance	Minor							0.049***			0.049***
	Major							0.130***			0.124***
§Transport infrastructure	Minor								0.008		-0.017*
	Major								0.009		-0.031*
§Digital infrastructure	Minor									0.014*	-0.009
	Major									0,010	-0.032
Fixed effects country /year		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		8,250	8,256	8,255	8,254	8,254	8,254	8,251	8,254	8,255	8,239
R-squared		0.06	0.061	0.06	0.06	0.062	0.061	0.059	0.073	0.065	0.077

SOURCES: 2016 and 2017 EIBIS.

a The regression is based on EIBIS and ORBIS information for the period 2016-2017. The coefficients are obtained from a linear probability model with country and year fixed effects. The standard errors are corrected and clustered at country level. *, ** and *** indicate significance for confidence levels of 90%, 95% and 99%, respectively.
b The variables with the ¥ symbol are defined as follows: *profitability ratio* as profit before interest and taxes to total assets; *indebtedness ratio* as interest-bearing debt to total assets; *liquidity ratio* as cash and cash equivalents to total assets; *total factor productivity* as logarithmic variable based on the firm's value added and the factors of production used.
c Financially constrained is a binary variable which takes a value of one for those firms in any of the following situations: their loan applications were rejected, they have only been granted a portion of the funds requested, the loan was extended to the companies but at a cost they consider to be very high and those companies which did not apply for external finance because they thought they would be turned down.
d The variables with the § symbol are dichotomic and take the value of one if the firm belongs to the group with the corresponding characteristic or if the firm reports that obstacle and to what degree. Otherwise, the variable takes the value of zero.

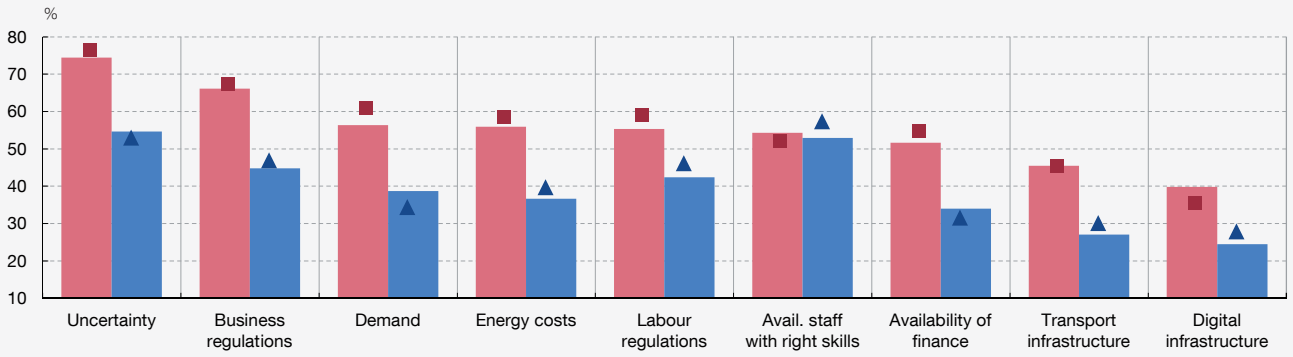
proportion of Spanish firms that stated in the 2017 wave that they suffered from an investment gap stands at around 20%, this percentage being higher among firms in the construction and infrastructure sector and at large corporations (see Panel 2 of Chart 1). In 2016, this percentage was slightly lower for Spanish firms, as a whole. Compared with European firms, the proportion of Spanish companies which reported having an investment gap is around 4 pp higher, that difference is more pronounced in the construction and infrastructure sector, although also among large corporations and mature firms (doing business for more than ten years).

Table 1 shows the results, for the overall sample of EU firms, of a linear probability model's estimation that a European firm will state that it has an investment gap. The same explanatory variables of the model above are included as well as a dichotomic variable which takes unit value if the company report a particular obstacle. First, the results show that less profitable, more indebted, less productive firms belonging to the infrastructure sector have a higher probability of reporting an investment gap than others, these differences being statistically significant. The probability of financially constrained firms reporting an investment gap is 14 pp higher than for other companies.

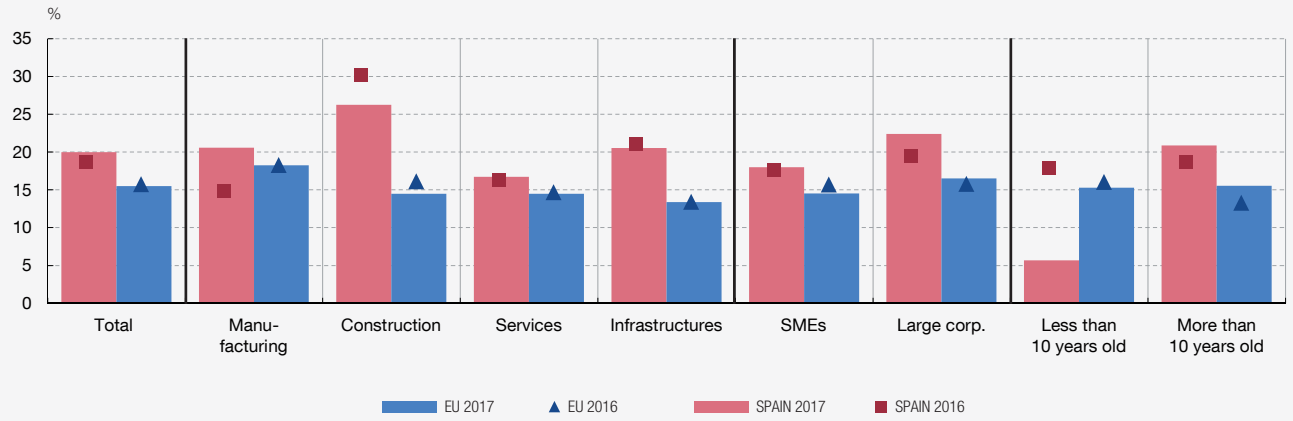
The results indicate that reporting any of the obstacles included in the survey increase the probability of having an investment gap. Furthermore, this effect is amplified when the obstacle is perceived as a major one, irrespective of the obstacle in question. Those with

Chart 1
OBSTACLES TO LONG-TERM INVESTMENT AND THE PERCEIVED INVESTMENT GAP

1 WEIGHTED PROPORTION OF FIRMS REPORTING AN OBSTACLE (a)



2 PROPORTION OF FIRMS REPORTING AN INVESTMENT GAP (b)



SOURCE: 2016 and 2017 EIBIS.

a The proportion of firms reporting each obstacle is constructed as follows: if an obstacle is reported as a major obstacle it is given a weight of one, whereas if it is reported as a minor obstacle, its weight is 0.5.
b Percentage of firms stating that they have invested too little in the last three years to ensure the success of their business going forward.

a stronger impact are: the availability of finance[6] (reporting this obstacle as major increases the probability of having an investment gap by 13 pp), followed by uncertainty (the effect is 7 pp) and, to a lesser degree, labour market and business regulations (4 pp-5 pp). These results are in line with the main determinants of investment indicated by the economic literature.

The qualitative findings obtained for the sub-sample of Spanish firms is generally in line with the findings for the whole sample. In Spain the obstacle with the most important effects on the investment gap is uncertainty which represents an increase of 11 pp in the probability of reporting an investment gap, compared with 7 pp for the overall sample. The other obstacles do not have statistically significant effects, although it should be noted that in this case the coefficients are estimated more imprecisely given the small sample size. In Spain firms belonging to the construction sector present a higher probability of reporting an investment gap, whereas in the EU no difference in probability is found between firms belonging to this sector and those in the services and manufacturing sector. These differences are consistent with the greater severity of the crisis in the construction sector in Spain.

6 In Table 1, the "obstacle to finance" variable is defined as those firms that are not finance-constrained but which state that the availability of finance is an obstacle to investment; in order to avoid the correlation between these two variables and to measure the effect of the "availability of finance" obstacle for those firms which are not finance-constrained.

The last two decades have seen the growing internationalisation of firms, while a large number of emerging countries have become part of the global value chain. Both processes have been driven by technological developments in the area of communication networks and information (since these developments have substantially reduced costs), by the liberalisation of capital movements in various regions and by the signing of a number of trade and economic integration agreements (such as the creation of the euro area and the European Union, and their enlargement to Eastern European countries, or China joining the World Trade Organization). All of these factors have contributed to boosting the development of global production chains, a notable increase in the cross-border services trade and, in general, to the globalisation of all economic activity. As a result of this process a growing proportion of world production and investment has been located in emerging economies, with expanding markets and lower production costs.

The impact on investment in the developed economies of this shift in capital flows towards the new emerging markets depends on whether that foreign investment is a substitute for domestic investment (negative correlation) or if the relationship between the two is complementary (positive correlation). In principle, since both compete for financial resources that have a rising cost, a substitutionary relationship can be expected between domestic investment and foreign investment. This hypothesis was supported by the first empirical studies on this relationship, based on OECD country data, and by more recent studies on Japanese firms or

Chart 1
INTELLECTUAL PROPERTY INVESTMENT RATIO BY SECTOR (a) (b)

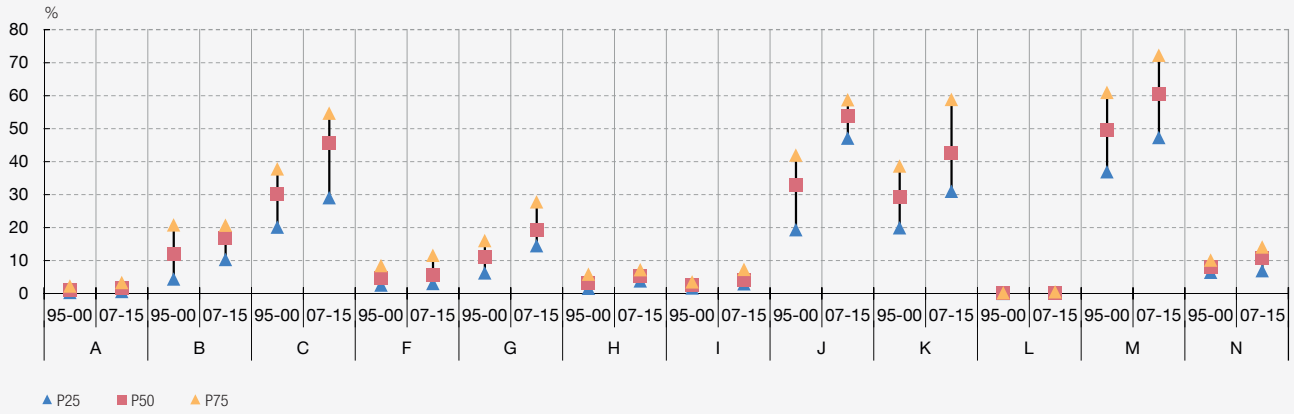
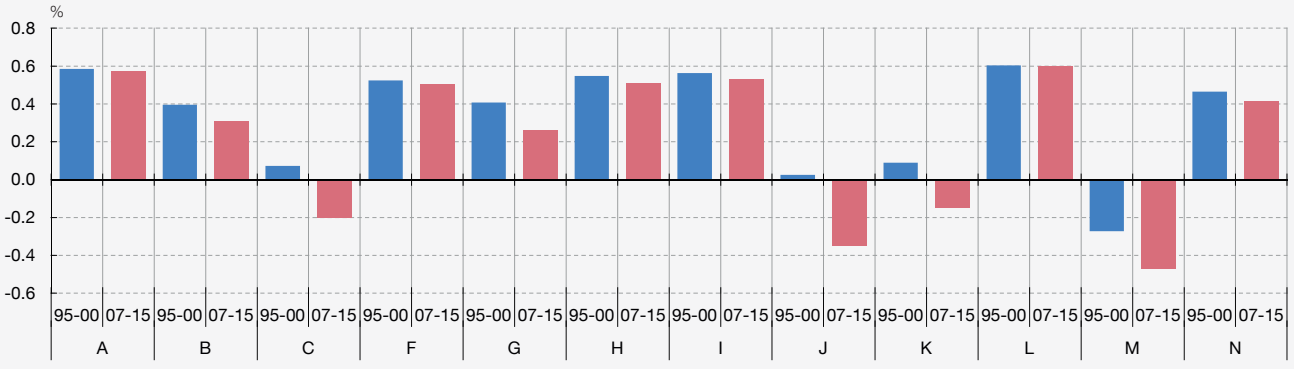


Chart 2
EFFECT OF FOREIGN INVESTMENT ON REAL INVESTMENT GROWTH (b) (c)



SOURCES: OECD, Eurostat and Banco de España.

a Intellectual property investment as a proportion of total investment.
b A: agriculture; B: mining; C: manufacturing industry; F: construction; G: retail H: transport; I: hotels, restaurants; J: information, communication; K: financial services; M: professional services; N: administrative activities.
c Assessed as the median intangible intensity for each sector.

developing economies.[1] However, firms operating in several countries can access financial resources in different local markets and redistribute them among the group companies according to their objectives. In these circumstances, the interaction between domestic investment and foreign investment is chiefly determined by factors relating to the characteristics of the productive process.

The international expansion of firms may adopt various forms which combine two stylised alternatives of the type of integration of the productive process (vertical or horizontal) to a greater or lesser degree. Where production is fragmented into stages distributed across different geographical areas (vertical integration), occasionally structured in the form of value chains, the investment made in the different areas will be complementary, either as a simultaneous response to changes in the determinants of the firm's global investment or because production abroad requires inputs produced by the parents or vice versa. Conversely, if the internationalisation is based on plants in different geographical locations which replicate the same type of productive process (horizontal integration), —possibly as a result of a decision to replace exports to these markets with localised production, in order to save on transport costs, benefit from potential labour cost advantages, remove the impact of tariff and non-tariff barriers—, foreign investment would replace domestic investment. In the last two decades, the internationalisation of production has evolved along both lines, through the strong growth of global value chains (vertical integration) and also through the delocalisation of domestic production, generally that with lower added value. The foreign plants of firms with a more horizontal structure tend to use certain intermediate inputs simultaneously —for example, activities with a technological content linked to creativity and knowledge— which are usually "non-rival" (they may be used simultaneously at several plants), unlike many of the intermediate inputs in the value chains.

Both forms of integration are likely to coexist within a firm or sector of activity, although the technological characteristics of the productive process are a major factor determining the type of integration. To examine what type of relationship is prevalent between domestic investment in the developed economies and their foreign direct investment, an equation for sectoral gross capital formation has been estimated, including industrial and services sectors. The data correspond to 19 productive sectors (ISIC 4, highest level) in 19 advanced economies in 1995-2014. Under the neoclassical theoretical framework, each sector's investment depends on the demand outlook, reflected by the level of activity or added value, and the user cost of capital,[2] in addition to the foreign direct investment of that sector to capture the possible ef fects of complementarity/substitution mentioned above. Moreover, the equation includes a horizontal integration indicator (the proportion of investment made by each sector in intellectual property assets) to capture the characteristics of the productive process of each sector (see Chart 1). The idea behind this indicator is that the intensity of investment in intangible assets, which are intermediate inputs that may be used on a non-rival basis by several plants, is indicative of the degree of horizontal integration in each sector.[3] This variable interacts with foreign direct investment to capture its differential effect on domestic investment in the sectors with the highest proportion of intangible assets (higher degree of horizontal integration).

The results of these estimates indicate that a positive relationship (complementary) between sectoral gross capital formation and foreign direct investment (see Chart 2) predominates in the developed economies, and is consistent with the growth of global production chains based mainly on the complementarity of the productive process.[4] However, in the sectors with a higher proportion of intangible assets, for example, information and communication (J), financial services (K) and professional and technical activities (M), the complementary relationship is less clear and can even become substitutive (based on analysis of the median sector). In the case of Spain, which does not differ substantially from the characteristics identified in the median of the sectors, the impact of foreign investment on domestic investment would be similar to that shown in Chart 2, clarifying that the extractive, manufacturing and retail sectors are less intensive in their use of intangible assets, and their impact on domestic investment would therefore be more positive than that reflected by the median of these sectors. Consequently, foreign direct investment by developed economies in the last two decades does not in principle appear to have been detrimental for domestic investment. Only in sectors with a high intensity of investment in intellectual property assets —whose weight in total investment varies across countries—, can foreign investment contribute to explaining the weak growth of investment in recent years.

1 See M.S. Feldstein (1995), "The Effects of Outbound Foreign Direct Investment on the Domestic Capital Stock" in M. Feldstein and G. Hubbard eds. *The effect of taxation on multinational corporations*, University of Chicago Press, 43-66; R. Belderbos, K. Fukao, K. Ito and W. Letterie. (2013), "Global Fixed Capital Investment by Multinational Firms", Economica, 80, 274-299, London School of Economics and A. Al-Sadig (2013), "Outward Foreign Direct Investment and Domestic Investment: the Case of Developing Countries", IMF Working Paper 13/52.

2 User cost of capital is the result of the price of investment goods relative to the production price in each sector and the long-term real interest rate less the depreciation rate of capital.

3 P. Braunerhjelm, L. Oxelheim and P. Thulin (2005), "The relationship between domestic and outward foreign direct investment: The role of industry-specific effects", International Business Review 14, 677-694, use this indicator to conduct a similar exercise for Swedish industrial sectors.

4 M. A. Desai, C. Fritz Foley and J. R. Hines Jr. (2005), "Foreign Direct Investment and the Domestic Capital Stock", American Economic Activity Papers and Proceedings, May, 33-38, also finds a complementary relationship in the case of US multinationals.

Structural reform in product markets, aimed at increasing competition and reducing business mark-ups, raise the level of activity in the economy in the medium and long term. By reducing the inefficiencies deriving from the excessive market power of firms, these reforms enhance the economy's efficiency in the long term, and, therefore, the expectation of increased activity in the future may stimulate consumption and, above all, investment, when structural reforms are announced,[1] even in a context of deleveraging by households and businesses, such as that faced by the Spanish economy in recent years.[2]

This box analyses whether these arguments are applicable to Spain, using a macroeconomic model for this purpose.[3] Specifically, a model of a monetary union comprising two regions of different sizes is used, calibrated in this case to represent Spain and the rest of the euro area.[4] In this model, the households and firms of each country have long-term debt, and their borrowing capacity is constrained by the value of their assets, which serve as guarantees or collateral. On this basis, a structural reform consisting of a permanent reduction of firms' unit margins is simulated. In addition to the "normal times" scenario, two further setups are considered: one in which there is a parallel process of private-sector deleveraging and another in which, in addition to the foregoing, monetary policy is constrained by the lower bound of interest rates.

Charts 1 and 2 show the marginal effect of this reform on GDP and investment under each of the three scenarios. The model simulations confirm, first of all, that these reforms are clearly expansionary in normal times (blue lines in the charts), both for GDP and investment, for the reasons discussed above.

Secondly, the results in a context of private-sector deleveraging (red lines in the charts) show that, although a situation of severe financial constraints may indeed diminish the effectiveness of these structural reforms in the short run, their immediate effect

1 See M. Draghi (2017), Introductory remarks at the European Central Bank Conference "Structural reforms in the euro area", Frankfurt am Main, 18 October 2017. However, part of the literature of recent years has underscored that, in certain situations, there may be adverse effects in the short run. In particular, in a seminal article by Eggertsson et al. (2014) [See G. Eggertsson, A. Ferrero and A. Raffo (2014), "Can structural reforms help Europe?", Journal of Monetary Economics, 61, pp. 2-22] the authors argue that these structural reforms may have a negative impact in the short and medium term if monetary policy is constrained by the lower bound of interest rates and does not have the capacity to accommodate the deflationary effects of lower margins in product markets, resulting in higher real interest rates, the contractionary effect of which could outweigh the positive effects of the reforms themselves, at least in the short run.

2 Moreover, it could be argued that, in an economy facing severe financial constraints and undergoing a process of deleveraging of the private sector, the difficulties in gaining access to financing to undertake new consumption and investment plans could reduce agents' capacity to materialise in the present some of the future positive effects of the reform, so that the effects in the short run would be limited despite the expectation of activity growth in the future.

3 Véase Ó. Arce, S. Hurtado and C. Thomas (2016), "Policy Spillovers and Synergies in a Monetary Union", International Journal of Central Banking, 12, pp. 219-277.

4 This structure based on several countries is essential for the simulation exercises in this box: the results of the Arce at al. model would be similar to those of Eggertsson et al (2014) if the simulated structural reforms were applied to the euro area as a whole and not only to part of it. The forthcoming publication by J. Andrés, Ó. Arce and S. Hurtado (2018), "Internal Devaluations in a Monetary Union: Labour vs Product Market Reforms", Working Paper, Banco de España, analyses in greater depth the effect of the size of the area implementing the reform, and concludes that, in a situation of interest rates constrained by their lower bound, the short-term impact of increased competition in product markets is positive as long as the area implementing the reforms accounts for less than 60% of the monetary union.

Chart 1
MARGINAL EFFECT ON GDP OF A PERMANENT REDUCTION OF BUSINESS MARK-UPS

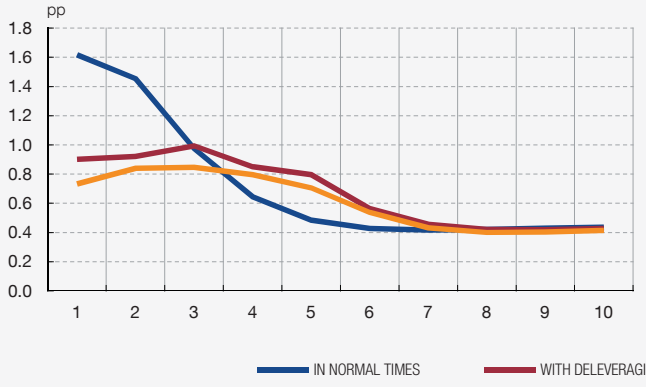
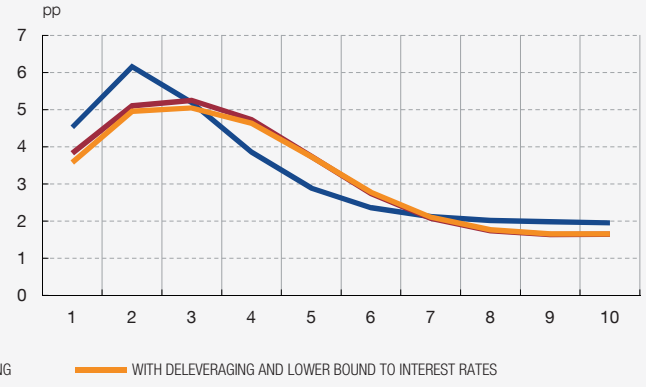


Chart 2
MARGINAL EFFECT ON INVESTMENT OF A PERMANENT REDUCTION OF BUSINESS MARK-UPS



SOURCE: Banco de España.

continues to be clearly positive, both on GDP and on investment. An important channel for achieving this is the incentive to invest generated by the reform, which favours the revaluation of assets and leads to increases in the net worth of indebted households and firms, thus allowing for the intensity, duration and contractionary effects of the deleveraging process to be reduced.[5]

Lastly, if, in addition to a deleveraging process in Spain, the monetary union as a whole is constrained by the lower bound of interest rates (yellow lines in the charts), the results of the model show that the short-term effectiveness of these reforms in stimulating activity is further reduced, although the reform still maintains a clearly positive effect on investment and economic activity both in the short and long term. The reform is deflationary, and since monetary policy cannot accommodate such a shock by further reducing interest rates, there is an increase in real interest rates, whose contractionary effects, however, do not manage to outweigh the positive effects of the reform itself.

In short, the exercises in this box highlight the positive effects on GDP that the reforms aimed at increasing competition in the product markets may give rise to. The upturn in investment following implementation of such a reform is the channel through which entrepreneurs reflect the short-term expectation of a permanently more efficient and dynamic economy. Furthermore, this type of policy has robust expansionary effects, even in a complex macroeconomic context in which agents are faced with the need to reduce their debt and monetary policy has little room for further interest rate cuts.

5 For a detailed analysis of the mechanism whereby the product market reforms shorten the process of private-sector deleveraging, see J. Andrés, Ó. Arce, and C. Thomas (2017), "Structural Reforms in a Debt Overhang", Journal of Monetary Economics, vol. 88, pp. 15-34.