1 Introduction

Global growth prospects are constrained both by the lasting effects of the crisis and by prior structural conditioning factors…

Recovery in the advanced economies after the Great Recession is proving slow and the medium-term growth outlook is moderate. This is as a result both of the fact that the previous expansion was associated with unsustainable factors – in particular private-sector over-indebtedness, excessive growth in asset prices and the excessive size of the financial and real estate sectors – and of the very consequences of the crisis, in terms of high public debt, an increase in structural unemployment and uncertainty.[1] These factors compounded prior structural constraints such as the ageing of the population or the trend reduction in productivity.[2]

…especially in the European countries

Growth prospects are particularly moderate in the European economies. The latest estimates of potential growth for the EU countries in the coming decade place it at around 1.3%, significantly below the estimate for the pre-crisis period (see left-hand panel of Chart 3.1). Specifically, if these prospects are compared with those existing before the crisis, the previous medium-term growth rate can be seen to have fallen by around 0.5 pp owing, above all, to the worse-than-expected performance of productivity and capital accumulation.

In Spain, the economic crisis gave rise to very high losses in output and employment…

In the case of the Spanish economy, the onset of the crisis evidenced the build-up of strong macroeconomic imbalances in the expansionary phase, whose origin lay in an excessive concentration of resources in the real estate sector, high private-sector debt, the excessive scale and accumulation of risks by the financial sector and significant losses in competitiveness, which were manifest in a high external deficit and a continuous increase in external debt. The outcome was very high cumulative losses in output and employment that exceeded those observed in other economies. Moreover, the unfolding of the crisis prompted an extraordinary increase in unemployment and a rapid increase in the budget deficit and in public debt.

… and the medium- and long-term growth outlook is also moderate

The available estimates project a potential growth rate for the Spanish economy below its historical pattern (see right-hand panel of Chart 3.1). This outlook is conditional upon both overall and characteristic factors of the Spanish economy, including most notably the necessary process of public and private deleveraging, the high unemployment level, low productivity growth and population ageing.

The improvement of this outlook will require efficient resource reallocation

For the recovery to firm and the growth outlook to brighten, it will be necessary to see through the ongoing correction of imbalances, reduce the unemployment rate and increase productivity. In this connection, resources in the economy must be reallocated to the most productive industries and firms and the rise in unemployment must be prevented from becoming structural. Economic policies have a crucial role to play, fomenting better-quality factors of production and eliminating the obstacles to their efficient allocation.

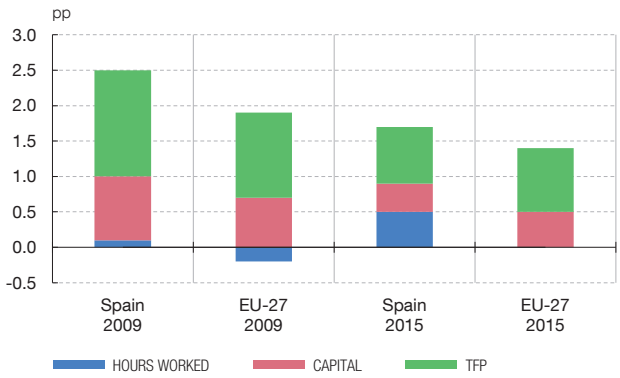
This chapter analyses the process of reallocation of resources since the onset of the crisis and during the incipient recovery with the aim of identifying the factors behind it and the potential distortions checking it. The chapter is structured as follows. The second section

1 See I. Hernando, P. del Río and I. Pablos (2015), "Adjustment and growth prospects in the developed economies", *Economic Bulletin,* March, Banco de España.

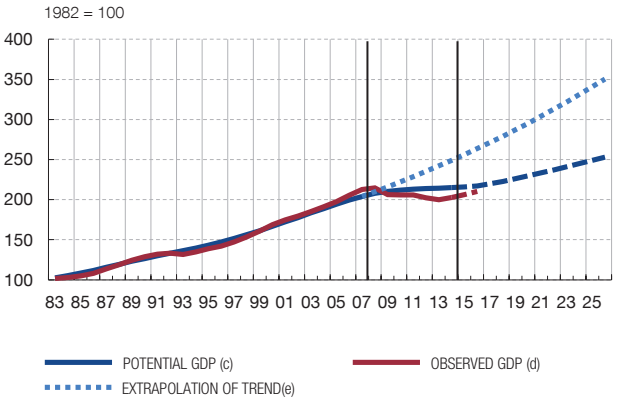
2 Against the background of this downturn in growth prospects, some authors have set out what is known as the secular stagnation hypothesis, under which the economy might be trapped in a situation of low growth over a prolonged period. See CEPR (2014), "Secular stagnation: facts, causes and cures", *A VoxEU.org Book*, CEPR Press.

IMPACT OF CRISIS ON POTENTIAL GDP AND MEDIUM-TERM OUTLOOK CHART 3.1

POTENTIAL GROWTH PROJECTIONS AND CONTRIBUTIONS IN 2025 ACCORDING TO EUROPEAN COMMISSION BEFORE AND AFTER THE CRISIS (a)



GDP AND POTENTIAL GDP IN SPAIN (b)



SOURCES: EC, INE and Banco de España.

a See «The 2009 Ageing Report: Economic and Budgetary Projections for the EU-27 Member States (2008-2060)» and «The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies».
b In each case, continuous lines are for estimates and dotted lines are for projections.
c Between 1983 and 2007, the annual average rate of change estimated for potential GDP was 2.9 %. Between 2008 and 2013, this rate declined to 0.8 %.
d Between 1983 and 2007, the annual average rate of change of observed GDP was 3 %. Between 2008 and 2013, this rate was –1 %.
e Trend scenario for potential GDP before the crisis, corresponding to annual average growth of 2.9 %.

describes, from an aggregate standpoint, the Spanish economy's medium-term growth prospects and analyses some of the challenges it faces. The rest of the chapter adopts a more disaggregated approach in order to determine whether recent developments in relation to the ongoing reallocation of factors of production across both sectors and firms allows the scope of these challenges to be better discerned. Specifically, the third section describes, from a sectoral perspective, the reallocation process observed since the onset of the crisis. The fourth section analyses the intra-sectoral reallocation of resources. Finally, the fifth section discusses certain economic and institutional factors that may be preventing the allocation process from unfolding efficiently.

2 The impact of the crisis on growth capacity and the medium-term outlook

The analysis of the impact of the economic crisis on growth capacity and the medium-term outlook can be addressed drawing on the estimates of potential growth, discounting the cyclical factors that influence its course in the short term. In this connection, the Banco de España estimates of the Spanish economy's potential growth by its Directorate General Economics, Statistics and Research are set out and discussed hereafter. These projections, like those of international institutions[3], are based on a production function approach in which the economy's output capacity is inferred drawing on estimates, at their potential levels, of the factors of production, employment and capital, and total factor productivity (TFP), with the latter defined as that portion of output growth which is not explained by changes in the factors of production and which approximates the economy's level of efficiency[4]. Potential growth estimates are highly controversial owing, among other

3 K. Havik, K. Mc Morrow, F. Orlandi, C. Planas, R. Raciborski, W. Roger, A. Rossi, A. Thum-Thysen, and V. Vandermeulen (2014), *The production function methodology for calculating potential growth rates and output gaps,* Economic Papers No. 535, European Commission; A. Johansson, Y. Guillemette, F. Murtin, D. Turner, G. Nicoletti, C. Maisonneuve, P. Bagnoli, G. Bousquet, and F. Spinelli (2013), *Long-Term Growth Scenarios,* OECD Economics Department Working papers No. 1000, OECD Publishing.

4 The fundamental assumptions of this estimate are: (1) technological progress is neutral in that it increases output in the same way that the employment factor does; (2) marginal factor productivity is given by factor prices; (3) there are constant returns to scale; (4) to estimate the structural component of unemployment, a micro-founded Phillips curve relationship is used which provides less procyclical estimates than other methodologies available in the literature.

aspects, to their habitual procyclicality and to the difficulty of calculating them in real time. Beyond point estimates, their analysis allows, in any event, for a discussion of the main conditioning factors of growth. These results are set out below, firstly reviewing the impact of the crisis, and subsequently analysing the medium-term outlook.[5]

2.1 THE IMPACT OF THE CRISIS ON POTENTIAL OUTPUT

The economic crisis had a significant impact on the Spanish economy's potential growth…

The recent economic crisis had a most adverse effect not only on economic activity but also on the estimated rate of the Spanish economy's potential growth (see right-hand panel of Chart 3.1). If potential growth stood at close to 3% on average in the period running from 1983 to 2007, it is estimated it would have stood below 1% during the crisis. Growth in the upturn was based on a high contribution by the factors of production (labour and capital), which increased over time and enabled the negative trend of productivity to be offset (see top left-hand panel of Chart 3.2), whereas the crisis prompted a sharp slowdown in the contribution of the factors of production which was not offset by the slight recovery in TFP. These results placed Spain, along with Italy, among the European countries with the biggest slowdown in the rate of potential growth between 2009 and 2013 (see top left-hand panel of Chart 3.3).

...as a result, above all, of the negative trend in employment…

The impact of the crisis was particularly felt in employment, whose contribution to growth turned negative during the recession after it had maintained contributions of over 1 pp per year since the 1990s. Among the different components of employment[6], the contributions of the population of working age, the participation rate and the NAIRU (or structural unemployment rate) evidenced a very sharp slowdown, while the negative contribution of hours worked per employee that had been observed over the previous period was checked slightly (see top right-hand panel of Chart 3.2).

…with a strong deceleration in the population of working age, following the reversal of migratory flows…

The demographic component played a key role in these developments. The population of working age, which had moved on a rising trajectory in recent decades, began to post declines from the start of the crisis which translated into a slightly negative contribution to potential growth, chiefly as a result of the reversal of emigration flows. Immigrants inflows accounted for 1.4% of the total population between 2000 and 2007, placing the weight of the foreign population in the total population at 12.6% in 2007 against 1% in 2000. However, the crisis drastically curbed immigrant inflows while outflows from Spain increased notably, essentially involving recent foreign arrivals in Spain, making for a negative migratory balance since 2010[7]. In addition, the gradual process of national population ageing began to be felt in the aggregate population figures. In particular, the growth of the national population of working age dipped from 0.4% in 2007 to 0.1% in 2013.

…a slowdown in the increase in the participation rate...

Further, the trend increase observed in past decades in the participation rate has been checked in the most recent period, despite the fact that during the crisis the decline in

5 Attempts have been made in recent years to develop alternative methodologies for estimating potential growth. These seek to include financial variables or are based on an alternative concept of growth adjusted for domestic and external macroeconomic imbalances (in the current account balance, the real effective exchange rate, the international investment position, public- and private-sector saving and investment, residential investment and the weight of the non-tradables sector); (see Borio, C., P. Distyatat and M. Juselius (2013), *Rethinking potential output: Embedding information about the financial cycle,* BIS Working Papers no. 404; and Alberola, E., A. Estrada and D. Santabárbara (2013), *Growth Beyond Imbalances. Sustainable Growth Rates and Output Gap Reassessment,* Documentos de Trabajo, no. 1313, Banco de España. The estimates of potential growth based on these alternative methodologies are in line with those presented in this chapter.

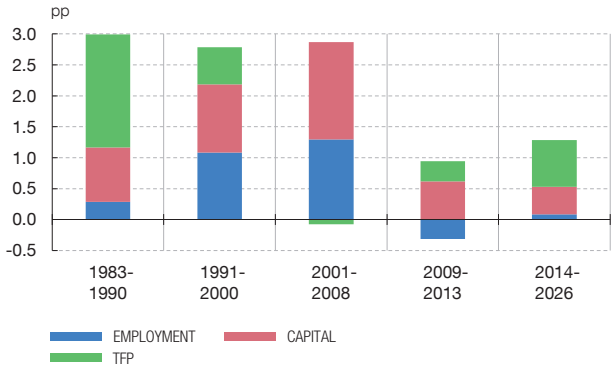
6 The level of employment, measured in total hours worked, can be written as a function of the population of working age, the participation rate, the unemployment rate and the number of hours worked per employee.

7 M. Izquierdo, J. F. Jimeno and A. Lacuesta (2015), *Spain: from immigration to emigration?*, Documentos de Trabajo, No. 1503, Banco de España.

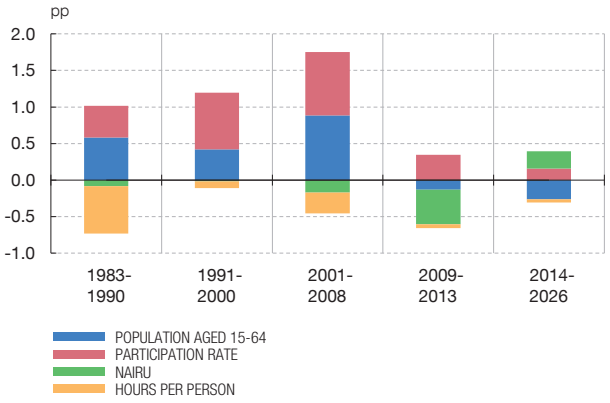
DETERMINANTS OF POTENTIAL GROWTH

CHART 3.2

GROWTH OF POTENTIAL GDP

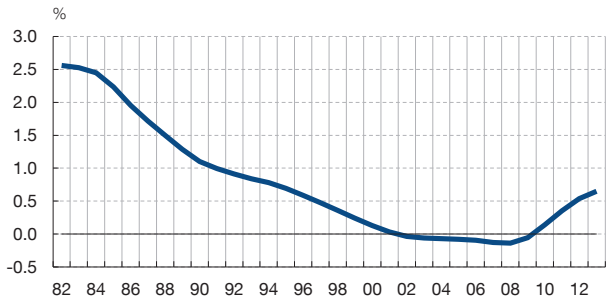


GROWTH OF POTENTIAL EMPLOYMENT

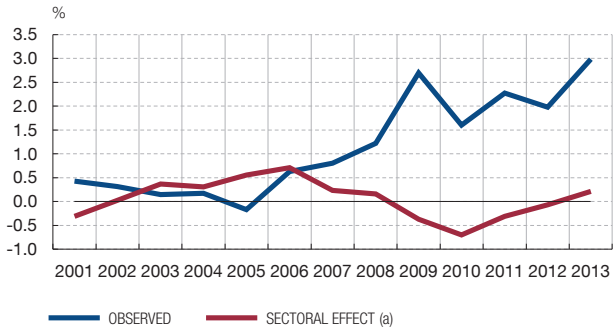


GDP RATIOS OF DIFFERENT TYPES OF INVESTMENT

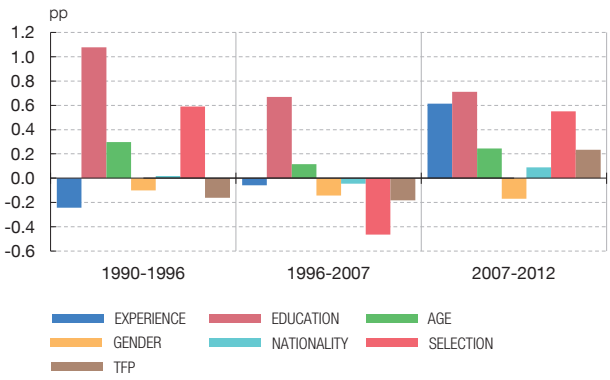
TOTAL FACTOR PRODUCTIVITY (TFP) (y-o-y rate)



ESTIMATED COMPOSITION EFFECT ON APPARENT LABOUR PRODUCTIVITY (y-o-y rate)



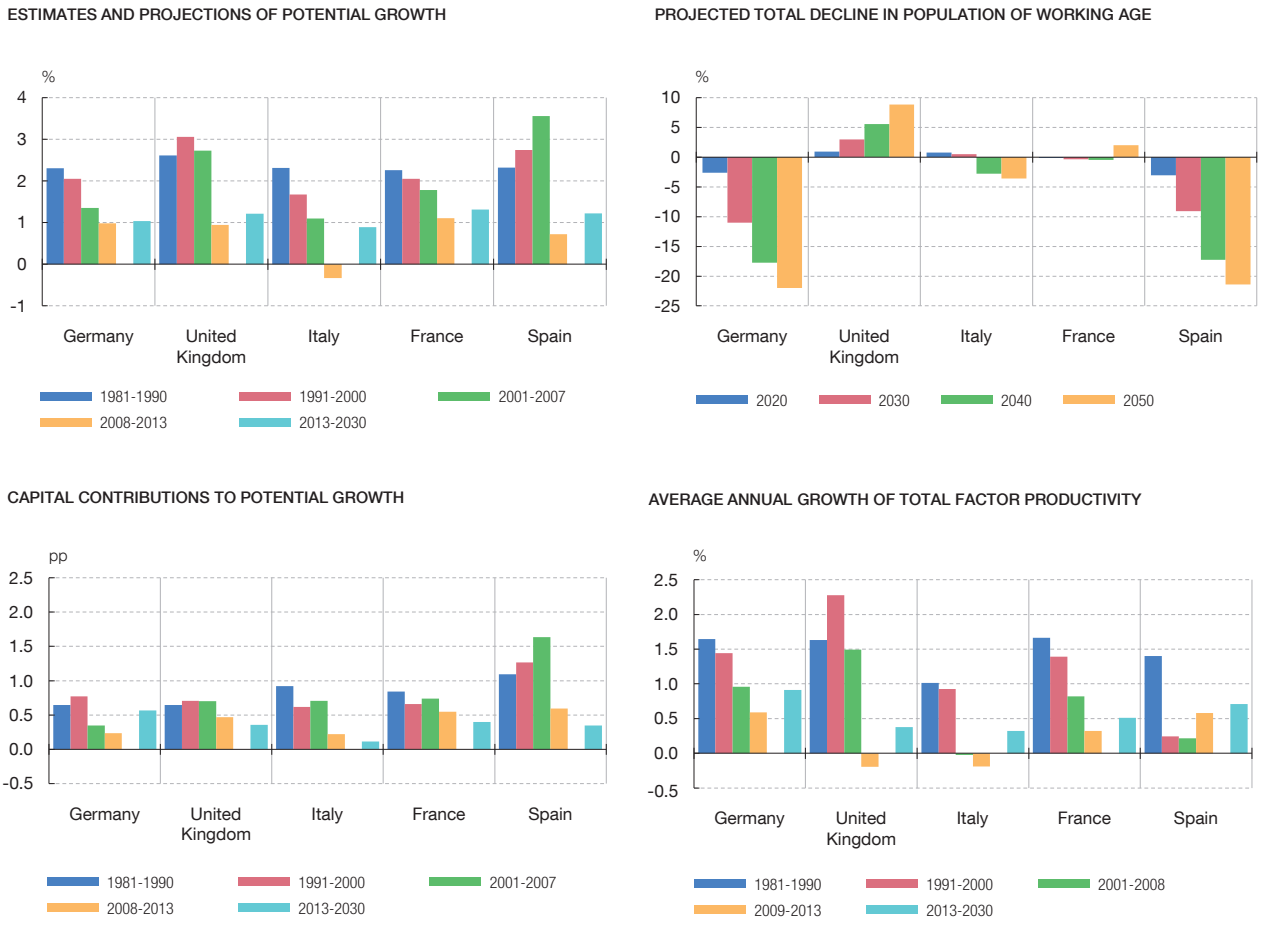
AVERAGE CONTRIBUTION TO THE QUALITY OF EMPLOYMENT FACTOR (b)



SOURCES: INE and Banco de España.

a Relates to apparent labour productivity growth held constant in different sectors, allowing only for temporary changes in their relative weights in the economy.
b See Cuadrado, Lacuesta and Puente (2008). The «selection» variable attempts to proxy the contribution of the differences in the productivity levels of workers with identical observable characteristics (education, age, etc.), and would therefore include the composition effect not attributable to these characteristics. For example, redundant (hired) workers foreseeably have the lowest (highest) productivity level within each group of workers with the same observable characteristics.

EUROPEAN COMMISSION ESTIMATES OF POTENTIAL GROWTH (a) CHART 3.3



SOURCE: Europena Commission.

a See «European Economic Forecast, Autumn 2014» and «The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies».

the participation rate of older employees was less than that observed in other recessionary periods. That might be linked to the pension system reforms approved in recent years. The increase in this variable since the mid-1980s was essentially determined by women, this participation rate climbed from 38.3% in 1983 to 69.7% in 2013.[8]

…and a significant increase in structural unemployment

The dramatic increase in unemployment observed in the Spanish economy as from 2008 passed through with force to its structural component, which is consistent with the strong increase in long-term unemployment (which exceeded 62% in 2014[9]) with the significant deterioration in unemployment outflows (especially for specific less-skilled groups) and with the greater degree of mismatch between the skills demanded by the labour market and those available among the unemployed.[10]

8 P. Cuadrado, A. Lacuesta, J. M. Martínez and E. Pérez (2007), *El futuro de la tasa de actividad española: un enfoque generacional,* Documentos de trabajo, no. 0732, Banco de España.

9 Measured as the percentage of the unemployed who have been looking for work more than one year. This percentage stood at 22% in 2007. The related percentage for the unemployed who have been looking for work for more than two years increased to 43.7% in 2014.

10 M. Izquierdo, S. Puente and P. Font (2013), «Evolución del desajuste educativo entre la oferta y la demanda de trabajo en España», *Boletín Económico,* June, Banco de España, pp. 43-50.

The negative trend of investment during the crisis also strongly impacted the stock of capital…

The contribution of the stock of capital[11] to growth was also checked appreciably, following a very positive impact in the previous period (see central left-hand panel of Chart 3.2). This was the outcome of a very buoyant investment cycle, in which investment expressed as a percentage of GDP rose to rates close to 30% in 2006 and 2007, far exceeding those recorded in other European countries, although the composition of this investment process was strongly biased towards residential construction and other buildings, which detracted from its positive effects on productivity and on infrastructure. As a result, the capital/output ratio moved on a rising trend, especially from the 1990s. With the onset of the crisis, investment accumulated very high declines, whereby its level in 2013 was 38% lower than that observed in 2007. Overall, investment as a proportion of GDP fell by almost 10 pp from the start of the crisis, to 19.3% in 2013, a level close to that observed in other euro area countries. This impact on capital formation is consistent with the strong financial component of the economic crisis, which gave rise to reduced incentives for investment in capital as a result of the decline in demand, the increase in uncertainty, the tightening of financing conditions and a more restrictive supply of credit.[12]

...while productivity is expected to have picked up slightly

As regards productivity, TFP – the variable that proxies the economy's efficiency[13] – slowed significantly during the upturn, to the point of posting slightly negative rates from 2000 (see the central right-hand panel of Chart 3.2). Since the start of the crisis there has been a rise in this variable, which grew at an estimated rate of 0.7% in 2013. The rise does not appear to be linked to possible composition effects derived from the reallocation of factors of production to sectors with higher levels of productivity over the course of the period in question. As can be seen in Chart 3.2 (bottom left-hand panel), had productivity levels[14] held constant in each sector in the period, productivity growth attributable to the temporary change in the weights of the different sectors would have been virtually zero. Also, composition effects in employment or lower capacity utilization during the crisis may explain, at least partially, the aforementioned rise in TFP in recent years. [15]

2.2 MEDIUM-TERM OUTLOOK

So as to distinguish the more or less durable effects of the recent economic crisis on the Spanish economy's growth capacity, an estimate of growth potential over the medium-term horizon (2014-2026) is presented hereafter. It should be stressed that this exercise is subject to high uncertainty, given that its construction requires that a series of what may be debatable assumptions be made. Specifically, a decline in structural unemployment to its historical average is assumed and, for the remaining components, trends similar to those observed during the recent recovery are expected to be maintained. The results and their interpretation are, therefore, conditional upon these assumptions holding.

---

11 The stock of productive capital is estimated adjusting for the differences in the depreciation rate (years of useful life) of each asset and for the different user costs of each sector of activity and asset. The statistical source used is IVIE (the Valencian Economic Research Institute), which provides a series aggregating 18 types of asset and 31 sectors of activity. The latest figure from the IVIE series is updated for subsequent years on the basis of the observed trend of investment according to the information provided by National Accounts and using the permanent inventory method.

12 See the Banco de España 2013 *Annual Report*.

13 Efficiency which would depend, inter alia, on technological improvements in productive processes and on organisational and management system innovations applied by firms.

14 This illustrates the sectoral composition effect on apparent labour productivity. The following section analyses in greater detail the effect on TFP.

15 An important factor when assessing TFP in Spain is that of composition effects in employment, derived from the fact that in recessions job destruction is concentrated among those groups of workers with a lower level of productivity (see bottom right-hand panel of Chart 3.2). Further, it should be borne in mind that TFP, as a residual variable, reflects all the measurement errors of the other factors. In particular, the potential capital stock estimate does not take into account the different degree of utilisation at different times in the cycle, which might also generate a countercyclical pattern in the TFP estimate.

The outlook for potential growth is for a recovery after the crisis, but at lower levels than during the previous upturn

On available estimates, a recovery in the Spanish economy's potential growth is projected in the coming years to around 1.5% on average between 2014 and 2026[16], based on a continuing positive contribution by TFP and of capital accumulation, combined with a positive contribution by employment (see top left-hand panel of Chart 3.2). This growth is lower than that observed in the pre-crisis period, essentially owing to the lesser dynamism of the population, although in per capita terms average growth (likewise around 1.5%) is expected to stand below the figure of 2.2% estimated for the 1983-2007 period. This outlook is in line with that estimated for the United Kingdom, Germany and France, and above that for Italy (see top left-hand hand panel of Chart 3.3).

Demographic developments will continue to exert downward pressure on the growth outlook and the cohort effects on the participation rate will progressively peter out

Potential employment will once again be highly influenced by demographic developments. Specifically, on INE projections, a continuous decline is foreseen in the population of working age over the coming years (-0.4% in annual average terms from 2014 to 2026). These developments are similar to those forecasts for other European countries, such as Germany, although more negative than those for Italy and France (see top right-hand panel of Chart 3.3). Over a longer-term horizon, these trends are expected to intensify, in parallel with population ageing, giving rise to a very marked decline in the population of working age. However, a somewhat more favourable course of immigration flows than that anticipated in these ultimately highly uncertain projections cannot be ruled out, in particular against a background of recovery and falling unemployment, which would provide for a higher increase in potential growth. As regards the participation rate, a still-positive contribution is projected in respect of the female participation rate, albeit on a declining trend that will detract from its significance as a driver of labour force growth.[17]

A progressive reduction in structural unemployment is expected…

The envisaged improvement in the contribution of employment to potential growth is closely linked to the projected reduction in the NAIRU, which is expected to move in the coming years on a progressively declining path (see top right-hand panel of Chart 3.2). In any event, changes in this variable are subject to a high degree of uncertainty. In principle, the absorption of the effects of the crisis might warrant a decline in the NAIRU, whose medium-term level would be determined by the institutional characteristics of the labour market and by the level around which it has fluctuated in recent decades. However, a more permanent impact of the sharp increase in unemployment recorded during the crisis, in particular on those groups among which a very notable increase in unemployment duration is observed, cannot be ruled out. Conversely, labour market reforms have been geared to increasing the degree of flexibility of the labour market and should, in this way, contribute to a lower level of structural unemployment.

… as is a moderate contribution of the stock of capital ...

With regard to the growth of the stock of capital, a small contribution to potential growth is expected following the high growth recorded in the previous upturn (see bottom left-hand panel of Chart 3.3).[18] This lower growth would be consistent with lower investment in residential capital and infrastructure, which is expected to hold at lower levels, given the need to absorb the imbalances in respect of the real estate sector and of private debt and to see through the process of fiscal consolidation.

… and the continuation of the recent recovery in TFP

Finally, TFP growth might stand at around 0.8% on average in the 2014-2026 period, in line with the average growth observed in recent decades. Nonetheless, it should be borne

16 European Commission estimates place this growth at around 1.2% on average between 2013 and 2030 (see Chart 3.3).

17 See J. M. Montero, P. Cuadrado and A. V. Regil (2015), "The cyclical resilience and the determinants of the participation rate in Spain", *Economic Bulletin,* May, Banco de España.

18 Under the assumption that the economy's capital/output ratio grows at the same rate as technological progress.

in mind that the slowdown in productivity is a generalised phenomenon in the European countries (see bottom right-hand panel of Chart 3.3). Further technological progress and a more efficient use of productive resources might boost TFP growth.

The future growth outlook for the Spanish economy is conditional upon a series of factors, including most notably demographic developments, the high level of unemployment and its persistence, the tailing off of the cohort effects in the participation rate and the impact of public- and private-sector deleveraging, among others. While in the short term growth potential will be highly influenced by the capacity to reduce the unemployment rate, in the long term the chief factor constraining potential growth is productivity, which depends – inter alia – on the economy's capacity to efficiently reallocate resources across sectors and firms. The structural reforms approved in recent years, and those still outstanding, which are analysed in section 5 of this chapter, might help significantly improve this outlook.

3 Changes in the sectoral composition of the economy

The crisis has led to changes in the weight of different sectors, with that of construction, industry and real estate activities diminishing, and that of other services increasing

One of the specific features of the impact of the crisis on the Spanish economy is the scale of the sectoral restructuring it has brought about. The growth in the weight of construction in GDP seen during the expansion reversed notably during the crisis (see Chart 3.4). Conversely, both non-market services – in line with the countercyclical nature of the tiers of government included in this sector – and other services unrelated to real estate activities gained weight. Specifically, there were more favourable performances by trade, transport and accommodation and food services; professional, scientific, technical and auxiliary activities; other services, including most notably those relating to domestic staff; and the information and communications sectors.

Taking a broader time perspective, the share of the construction industry in the economy has moved on a declining trajectory in Spain over the past 20 years, as have agriculture and industry (see Chart 3.4). The greater weight of services, with the sole exception of the trade, transport and accommodation and food services sector, is also part of a context of continuous growth in recent decades, to which phenomena such as the externalisation of certain industrial firms' activities have contributed.

Most sectors have become more export-oriented, although there remains a bias towards exports of goods with a low technological content...

Against the background of a strong contraction in domestic demand, the most favourable developments during the crisis were to be found in those industries with a higher export content. Further, a widespread change can be seen in the behaviour of firms, at which the likelihood of them exporting goods has increased. Hence, if tourism and trade are excluded, around 53% of the manufacturing sectors improved their exports in the most acute period of the crisis. Spanish exports are biased towards medium-low technology content and labour-intensive goods[19] (following the OECD classification), a pattern which became more marked after the collapse of world trade in 2009, although recently there has been some pick-up in exports of medium-high (automobiles) and high (aircraft) technology content. The goods Spain exports also generally show a level of quality, proxied by the level of prices of goods exported to the same market, below that of the major euro area economies.

... a bias that is also maintained in production

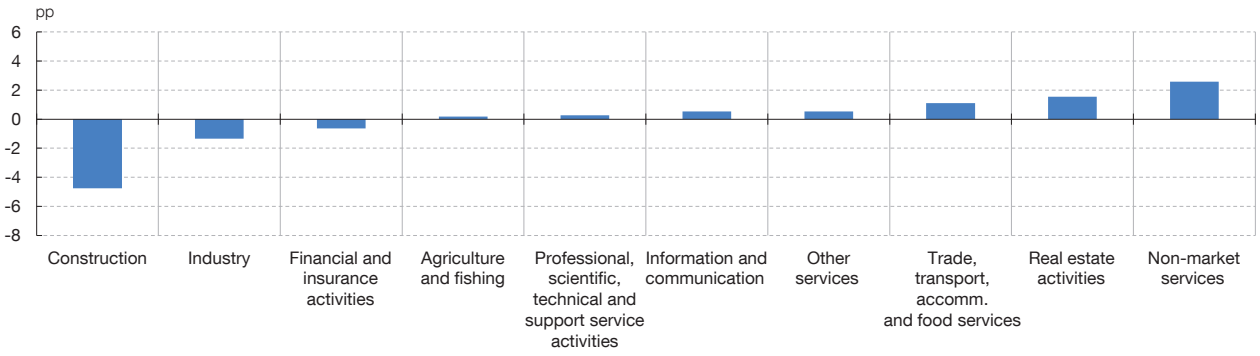
It is also notable that the medium-high and high-technology sectors only account for around 7% of GVA (6% of employment). That said, they are generally sectors that have

19 Notable under the medium-low technology heading are machinery and mechanical equipment construction, non-metal mineral products and basic metal industries, while the labour-intensive heading includes food and clothing.

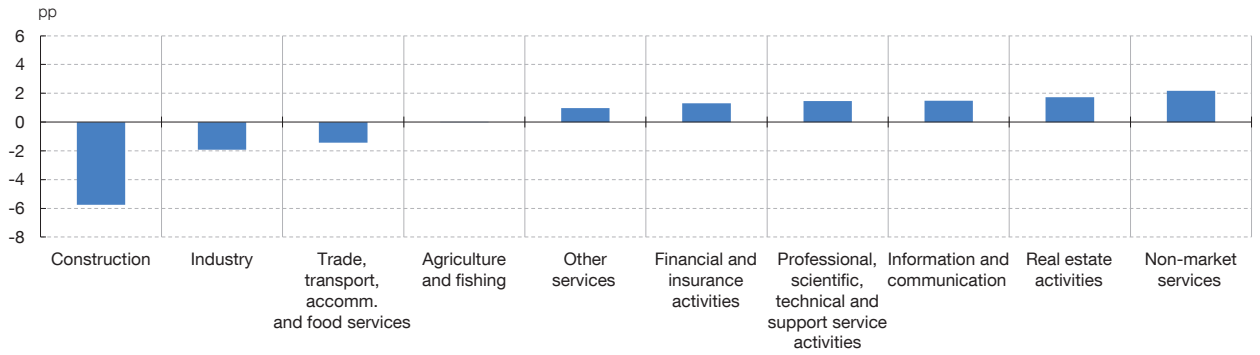
CHANGES IN THE SECTORAL COMPOSITION OF THE SPANISH ECONOMY (a)

CHART 3.4

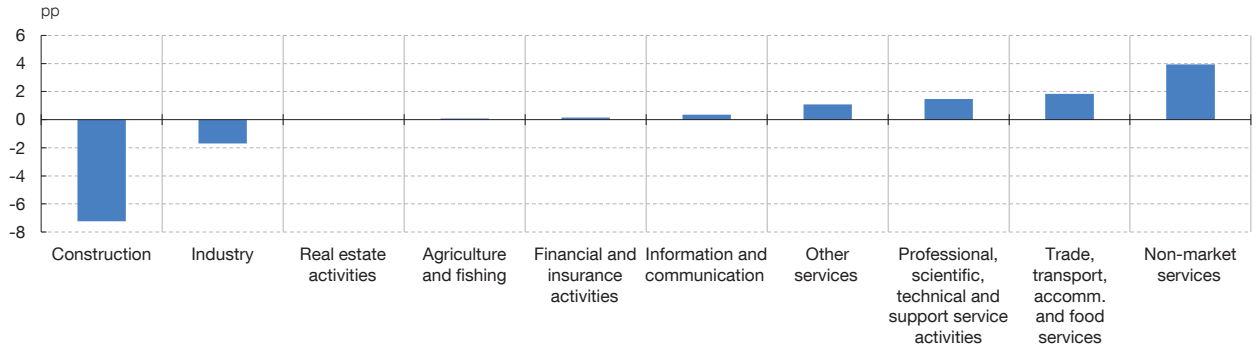
CHANGES IN GVA STRUCTURE BETWEEN 2013 AND 2007



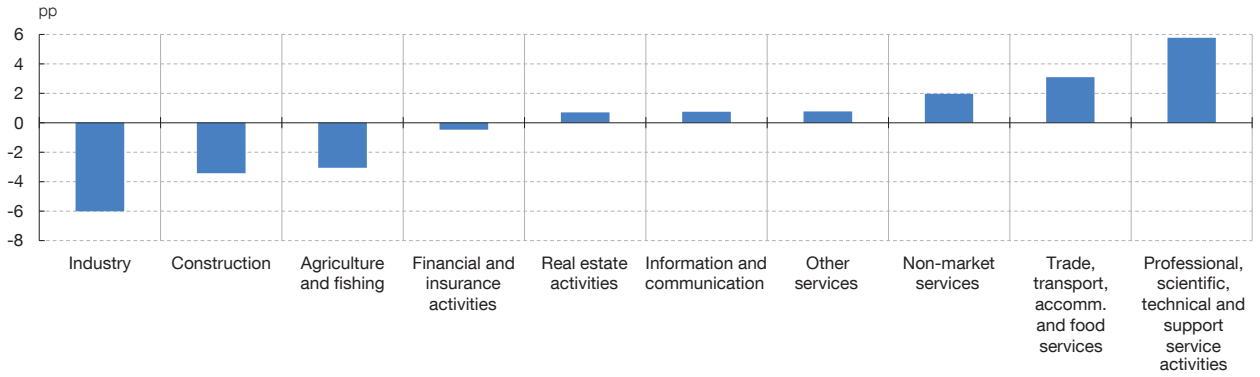
CHANGES IN GVA STRUCTURE BETWEEN 2013 AND 1995



CHANGES IN EMPLOYMENT STRUCTURE BETWEEN 2013 AND 2007



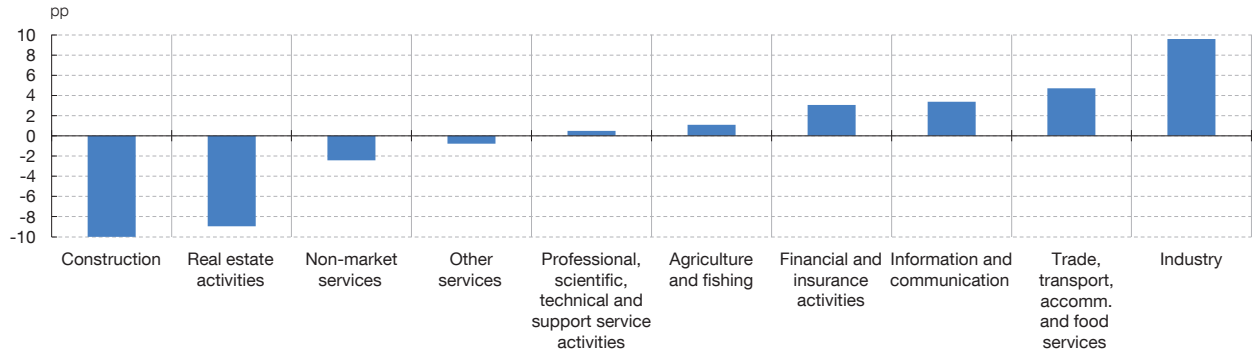
CHANGES IN EMPLOYMENT STRUCTURE BETWEEN 2013 AND 1995



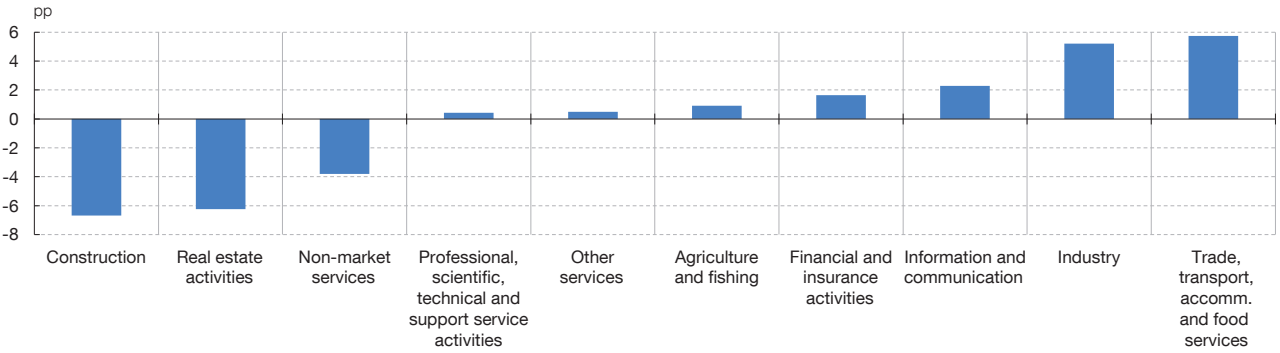
CHANGES IN THE SECTORAL COMPOSITION OF THE SPANISH ECONOMY (a) (cont'd)

CHART 3.4

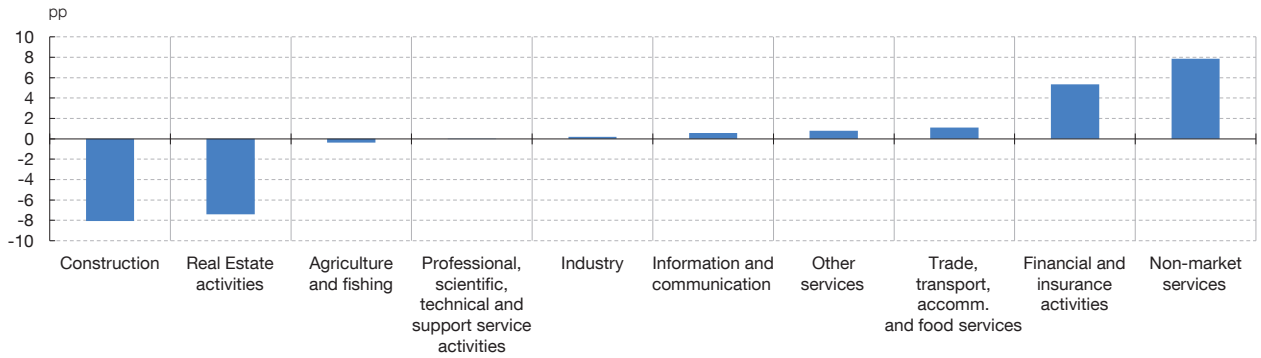
CHANGES IN REAL INVESTMENT STRUCTURE BETWEEN 2012 AND 2007



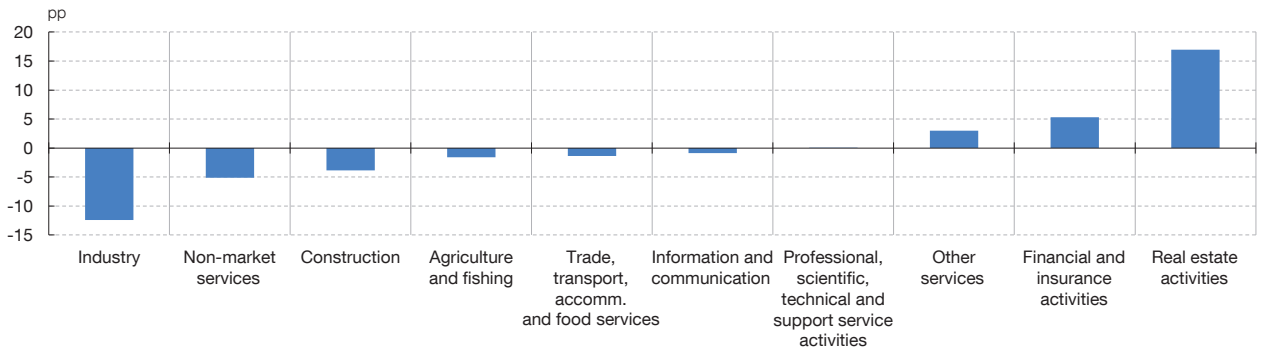
CHANGES IN REAL INVESTMENT STRUCTURE BETWEEN 2012 AND 1995



CHANGES IN CREDIT STRUCTURE BETWEEN 2013 AND 2007



CHANGES IN CREDIT STRUCTURE BETWEEN 2013 AND 1995



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

a Real estate activities do not include imputed rents. Credit data include credit extended to finance productive activites and general government.

better withstood the fallout of crisis in terms of activity. The pharmaceutical and vehicle manufacture industries even stepped up their rate of activity in relation to the pre-crisis years, while the chemical industry maintained its tempo.

Compared internationally, the productive structure of value added in Spain remains more biased towards trade, accommodation and food services, transport, construction, agriculture and other services

The move towards the tertiarisation of the economy and the decline in the share of construction, industry and agriculture are in step with what has been observed in the main EU countries (Germany, United Kingdom, France and Italy) (see Chart 3.5). Beyond these similarities, the sectoral weights of certain sectors which were under-represented in Spain, such as financial activities (see Chart 3.5), have drawn closer. Elsewhere, industry and the professional, scientific, technical and auxiliary sectors, along with the information and communications sector, have performed more unfavourably in Spain, despite initially being under-represented sectors. Finally, the composition of value added in Spain remains relatively more biased towards trade, accommodation and food services, transport, construction, agriculture and other services.[20]

The changes in the sectoral composition of employment have been similar, though on a greater scale

In relation to employment, developments have been similar to those in value added, although the sectoral reallocation is on a greater scale than that observed for production (see Chart 3.4). The weight of industry and of construction in employment fell to a greater extent than that observed in production, giving rise to a greater increase in apparent labour productivity in these sectors than in the rest. Meanwhile, the weight of the non-market services sector and that of other services increased during the crisis.

The sectoral composition of the stock of capital has, however, undergone few changes, while the weight of the real estate sector and agriculture has diminished in terms of credit extended

The sectoral breakdown of the economy's real stock of capital has shown few changes during the crisis, given the widespread decline in investment (in particular residential and public investment) and the greater relative depreciation of non-real estate private productive capital. A slight increase can be seen in the weight of investment in services, and in industry, although in this latter case it is because of the contribution of the energy supply sector (see Chart 3.4). In terms of financing, bank lending flows show that both construction and real estate activities and agriculture have diminished in weight in respect of aggregate credit in recent years, while the weight of services has increased (greater details are offered in Chapter 5 of the Spanish original of this Report).

Overall, the contribution of the ongoing sectoral restructuring to productivity growth has been limited

In order to analyse the effects of the sectoral changes on the economy's degree of capitalisation and productivity, a breakdown can be made, with firm-level data, of the trend of each of these variables (capital/employment ratio and TFP) into two contributions: that arising from changes in the relative weights of the sectors over time (sectoral reallocation) and that derived from intra-sectoral changes[21] (see Table 3.1). During the 2001-2007 expansion, the increase in the capital/employment ratio observed in the Spanish economy was due essentially to the fact that Spanish firms stepped up the use of capital-intensive technologies, whereas sectoral reallocation played a marginal role. From 2008 to 2011, the weight in the economy of sectors with a lower capital/employment ratio increased, while Spanish firms destroyed much more employment than capital, meaning

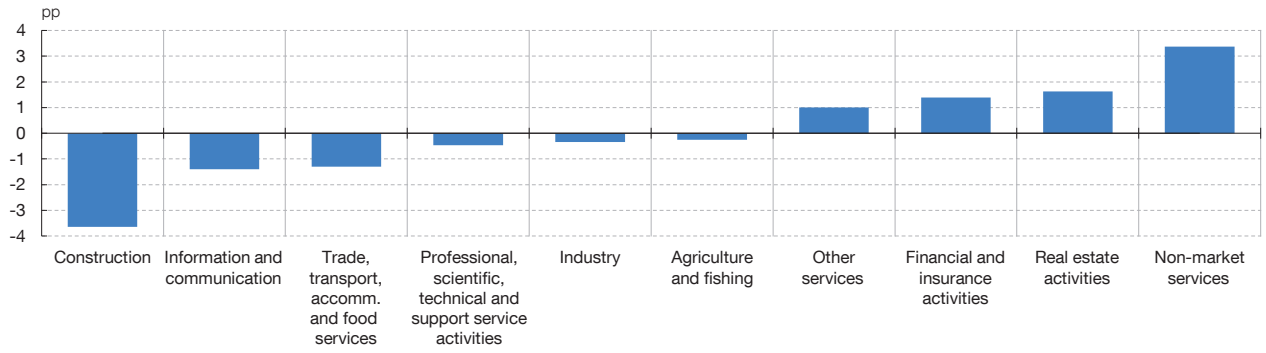
20 Indeed, the latter two sectors evidence a more favourable performance in Spain than in the other EU-4 countries.

21 See S. Olley and A. Pakes (1996), «The Dynamics of Productivity in the Telecommunications Equipment Industry», *Econometrica,* vol. 64 (6), pp. 1263-1297. In the case of the application for Spain, the analysis is made for a level of disaggregation of 25 sectors over the 2000-2011 period.

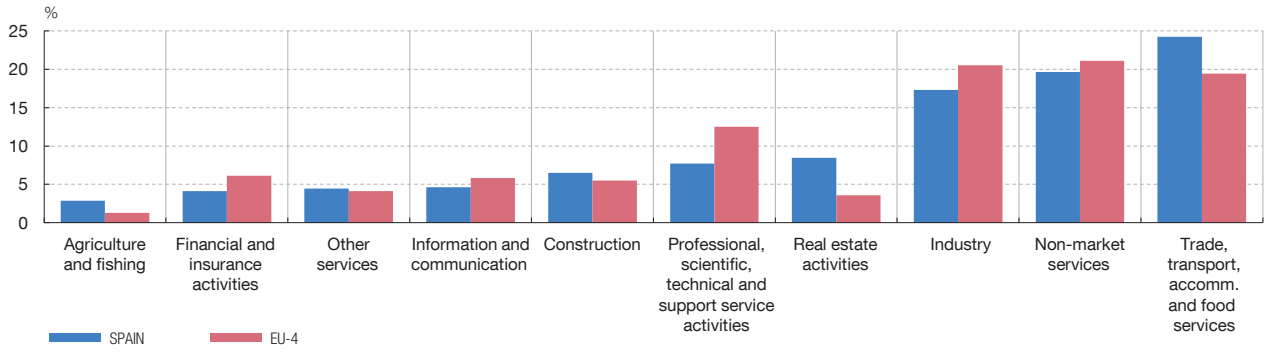
CHANGES IN GVA STRUCTURE BY SECTOR AND RELATIVE EMPLOYMENT IN SPAIN AND EU-4 (a)

CHART 3.5

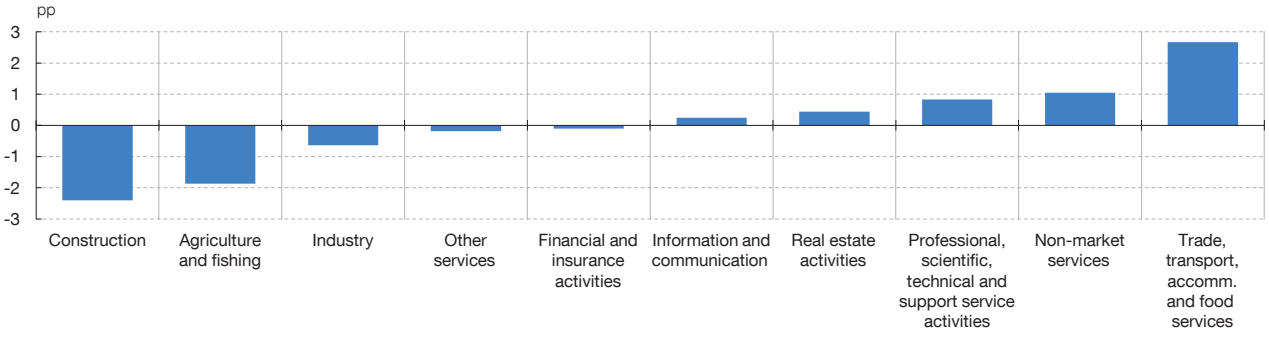
RELATIVE CHANGE IN SPANISH GVA VIS-À-VIS EU-4 BETWEEN 1995 AND 2013



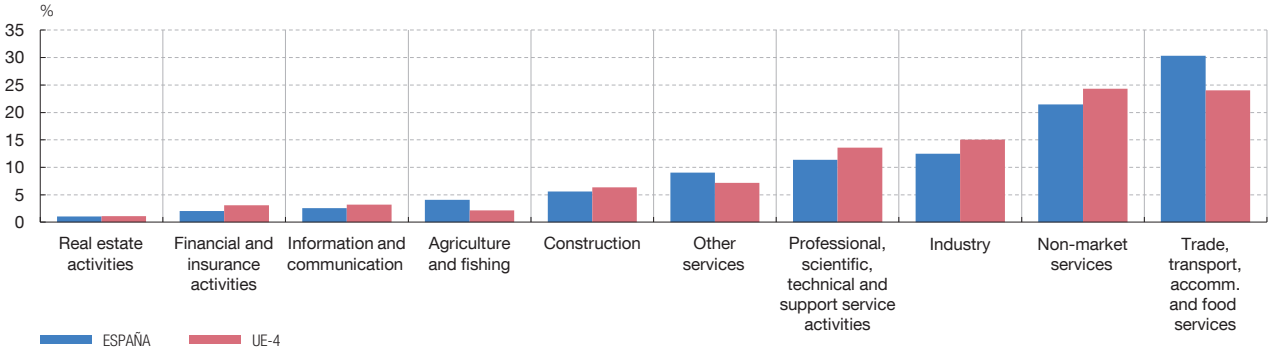
GVA STRUCTURE. 2013



RELATIVE CHANGE IN SPANISH EMPLOYMENT VIS-À-VIS EU-4 BETWEEN 1995 AND 2013



EMPLOYMENT STRUCTURE. 2013



SOURCES: Eurostat, INE and Banco de España.

a EU-4 countries: Germany, United Kingdom, France and Italy. Real estate activities include imputed rent.

BREAKDOWN OF THE CAPITAL/EMPLOYMENT RATIO AND TFP IN SPAIN TABLE 3.1

Percentage

	2001-2007	2008-2011
CAPITAL/EMPLOYMENT RATIO		
Observed annual average growth	1.8	4.1
Due to:		
Sectoral reallocation (a)	0.0	-0.4
Within-sector changes (b)	1.8	4.5
TOTAL FACTOR PRODUCTIVITY		
Observed annual average growth	-1.0	0.6
Due to:		
Sectoral reallocation (a)	-1.4	0.0
Within-sector changes (b)	0.4	0.7

SOURCES: Instituto Valenciano de Investigaciones Económicas and Banco de España.

a The effect of sectoral reallocation explains what would have happened if the capital/employment ratio for the year 2000 had been maintained and the relative weights of the sectors had changed.
b The effect of within-sector changes explains the changes in the capital/employment ratio or the TFP in each sector since the year 2000.

that in aggregate terms there was a greater increase in the economy's capital/employment ratio than in the previous period. The reallocation of resources across sectors in the 2001-2007 period contributed significantly to reducing TFP, an effect which disappeared during the crisis.[22] In any event, the reason for the increase in productivity observed during the crisis must be sought, above all, in the better reallocation of resources among firms.

4 Reallocation of resources among firms

Intra-sectoral reallocation accounts for a good part of the changes in productivity in the developed economies

In Spain's case, the reallocation of resources towards the more efficient firms fell off during the upturn, but it improved during the crisis

The economic literature emphasises the importance of the allocation of resources among firms within each sector of activity as a determinant of countries' aggregate productivity and of the differences between them.[23] Specifically, economies in which the more efficient firms of each sector absorb most resources tend to show a greater level of productivity, exceeding the effect exerted on this variable by sectoral composition.

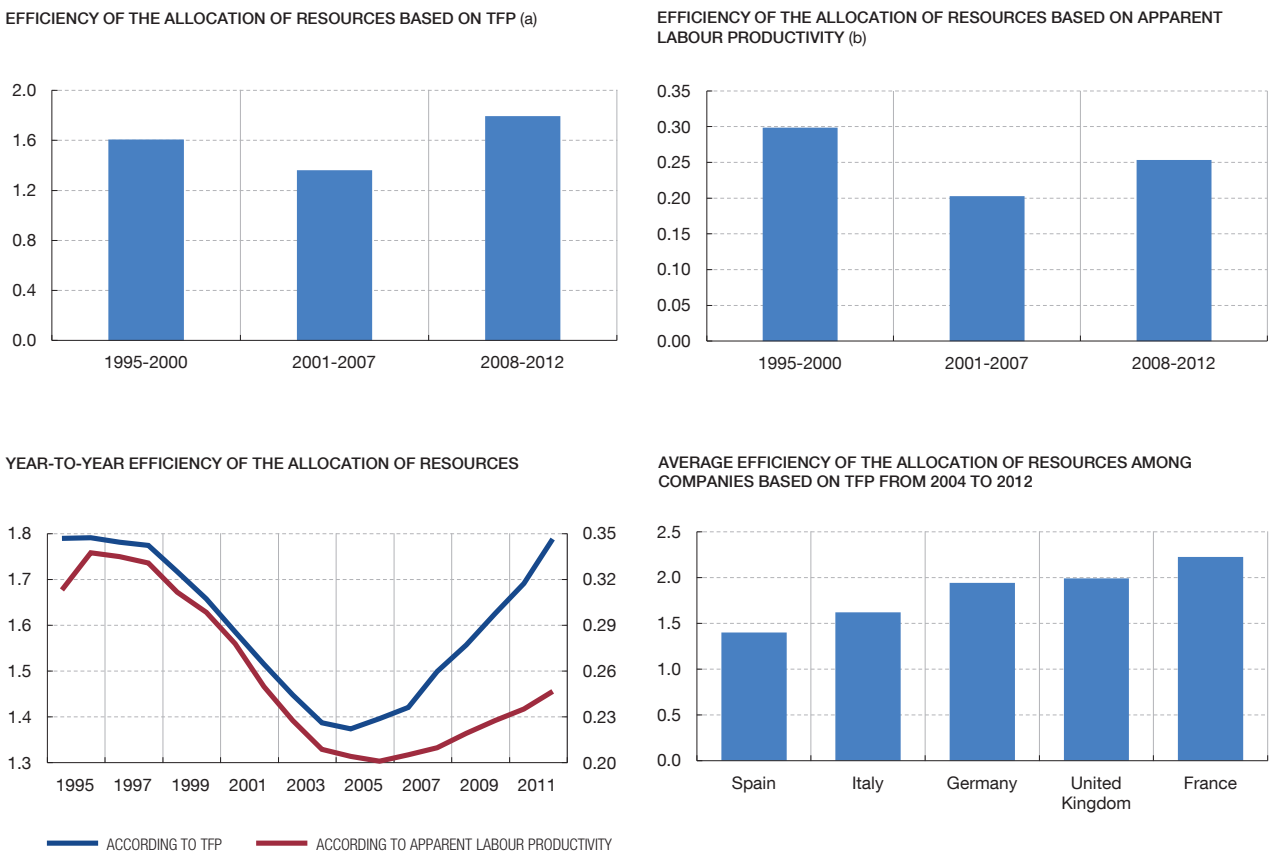
The role played by the reallocation of resources among firms in recent productivity developments in Spain is analysed by means of two measures intended to proxy the ratio of the relative weight of a firm in its sector to its level of efficiency or productivity, measured by TFP or apparent labour productivity.[24] In both cases, a higher value of these indicators can be interpreted as a better allocation of resources among firms, since it indicates that the more productive firms account for a larger percentage of the output (or employment) of the sector. These measures show a worsening in the allocation of resources among firms from 1995 to 2007, which is consistent with the scant dynamism of productivity in that period (see Chart 3.6). However, this trend has apparently reversed in recent years, which would indicate an improvement in resource allocation since the onset of the crisis. Specifically, productivity is observed to increase in a group of large firms which, moreover,

22 Analysis of job destruction and creation flows in the EU countries during the crisis confirms these results in this case in relation to the scale of the impact of the sectoral reallocation of employment on productivity. See J. M. Casado, C. Fernández-Vidaurreta and J. F. Jimeno (2015), *Worker Flows in the European Union During the Great Recession,* Documentos de Trabajo, forthcoming, Banco de España.

23 See, for example, D. Restuccia and R. Rogerson (2008), «Policy Distortions and Aggregate Productivity with Heterogeneous Establishments», *Review of Economic Dynamics,* vol. 11 (4), pp. 707-720.

24 Specifically, these indicators are calculated, for each sector and year, as the covariance between the market share of the firms (proxied by value added) and their TFP or apparent productivity relative to the average for the sector. To do this, use is made of the individual data reported by firms from more than 500 sectors to the Banco de España Central Balance Sheet Data Office in the period 1995-2012 (disaggregation to the four-digit level of the NACE Rev. 2 classification).

EFFICIENCY OF THE ALLOCATION OF RESOURCES AMONG COMPANIES OF THE SAME SECTOR IN SPAIN CHART 3.6



SOURCES: Amadeus, Eurostat, INE, Mercantile Register and Banco de España.

a The annual average in each of the periods of covariance between the market share of firms in each sector, calculated in terms of value added, and their total factor productivity relative to their sector average. The higher the covariance, the more efficient the allocation of productive resources among same-sector firms.
b The annual average in each of the periods of covariance between the share of employment of each firm in the sector and their apparent labour productivity relative to their sector average. The higher the covariance, the more efficient the allocation of productive resources among same-sector firms.

raised their market shares at the cost of a majority of small firms, whose productivity decreased.[25] Despite this improvement, according to these measures, Spain's level of efficiency is lower than that of some of the larger EU countries (see lower right-hand panel of Chart 3.6). Furthermore, the evidence for some countries does not show any relationship between efficiency and the business cycle, whereas it does in the case of Spain.[26]

The reallocation of resources to more productive firms during the crisis has been a key factor in the recently observed recovery of aggregate productivity

The effect of resource reallocation among firms on aggregate productivity can be illustrated by considering what would have been the hypothetical growth if the aforementioned measures of intra-sectoral efficiency had remained constant at their 1995 level. According to this exercise, the average growth of TFP would have been 0.7 pp higher between 1995 and 2007 and 1.5 pp lower between 2008 and 2012, which suggests that the low growth of productivity during the expansion is the result of a resource allocation which raised the relative weight of less productive firms. By contrast, during the crisis, resource reallocation seems to have worked in favour of more productive firms, acting as a key factor in the recent recovery of productivity. Analysis of these developments by sector of activity shows that the worsening/improvement in the intra-sectoral resource allocation during the

25 See L. Hospido and E. Moreno-Galbis (2015), *The Spanish productivity puzzle in the Great Recession,* Documentos de Trabajo, n.º 1501, Banco de España.
26 See E. Bartelsman, J. Haltiwanger and S. Scarpetta (2013), "Cross-Country Differences in Productivity: The Role of Allocative Efficiency", *American Economic Review,* vol. 103 (1), pp. 305-334.

ENTRY AND EXIT RATES OF FIRMS (a) CHART 3.7

SOURCE: INE.

a Rates calculated on the basis of total number of firms.

expansionary/contractionary phase is common to the three major sectors analysed (industry, construction and services).

The entry and exit of firms plays a crucial role in resource reallocation

To gain more insight into the determinants of resource reallocation among firms, a distinction can be made between resource allocation among active firms and that occurring as a result of the creation and destruction of productive units. Under normal conditions, the entry and exit of firms promotes productivity, since it allows more inefficient units to shut down, freeing their resources to be used by more efficient new firms, in a process known as "creative destruction". The economic literature reports that that the contribution of these industry dynamics to productivity growth may be between 20 % and 50 %.[27] However, this role may be constrained by various institutional factors, such as the existence of barriers to entry, high exit costs and the protection of less efficient firms by, for example, subsidies. Moreover, the intensity and duration of the crisis may have altered previously existing patterns, acting to hinder the creation of productive firms or to cause the shutdown of others which may have been viable and efficient in other circumstances.

This is also the case in Spain, where the changes in efficiency are closely related to entry and exit of firms

The role of these mechanisms of creation, destruction and persistence of firms in the changes in efficiency over time is analysed in Spain using the aforementioned measures of efficiency for a sub-sample of firms operating during the whole of the analysis period. This indicator behaves similarly to the aggregate, although its fall and subsequent recovery are both less pronounced, suggesting that a significant portion of the changes in efficiency may have been due to entry and exit of firms.

During the crisis there was a significant increase in closures of firms and a slowdown in the creation of new ones, concentrated in the construction and, to a lesser extent, services sectors

In the expansionary period the creation of firms amply outstripped their destruction (see left-hand panel of Chart 3.7). However, from 2007 the destruction of firms accelerated considerably and simultaneously their creation slowed, resulting in net falls in the number of firms until 2012. In 2013 there was a timid recovery in the net change in firms. Disaggregated sectoral analysis shows significant differences across sectors (see right-hand panel of Chart 3.7). Thus throughout the expansionary phase the number of firms being created in construction and in services considerably exceeded that of firms ceasing operations. In industry, however, this dynamism was less marked owing to a much lower rate of creation of firms. Qualitatively the recession had a similar impact across sectors,

27 For the Spanish case, see P. López-García, S. Puente and Á. L. Gómez (2007), *Firm productivity dynamics in Spain,* Documentos de Trabajo, n.º 0739, Banco de España.

BUSINESS DEMOGRAPHY AND PRODUCTIVITY (a) TABLE 3.2

Percentage

	Total		Industry		Construction		Services	
	1998-2007	2008-2011	1998-2007	2008-2011	1998-2007	2008-2011	1998-2007	2008-2011
Average of the relative levels of apparent labour productivity for the period								
Total corporations	100	100	100	100	100	100	100	100
New corporations in the current year and two previous years	80.1	86.9	82.1	85.6	83.5	97.4	79.0	85.3
Remaining corporations	114.2	112.1	109.2	111.7	112.5	108.3	116.0	111.9
Corporations closed in the current year and two subsequent years	73.1	56.9	70.4	55.0	80.5	59.8	71.9	63.8
Average of the contributions to apparent labour productivity growth for the period								
Total corporations	100	100	100	100	100	100	100	100
New corporations in the current year and two previous years (b)	-7.7	-2.7	-4.4	-2.4	-7.1	-0.8	-8.8	-3.6
Corporations closed in the current year and two subsequent years (c)	3.4	7.0	3.3	7.3	2.6	5.7	3.7	5.7

SOURCES: National Statistics Institute (INE) and Banco de España.

a Based on data from the microdata files of the Central Companies Directory (DIRCE), together with microdata from the Central Balance Sheet Data Office.
b Calculated as the change in the productivity level in a given period, by including corporations created in the current year and two previous years in the calculation of average productivity.
c Calculated as the change in the productivity level in a given period, by excluding the corporations closed in the current year and two subsequent years in the calculate.

but quantitatively it differed markedly. Specifically, the construction sector was the most severely affected, both in the decrease in entries and in the increase in exits, showing significant net falls in the number of firms from 2008. The crisis also had a major effect on the services sector, albeit smaller in magnitude, such that a slight net creation of firms persisted over the contractionary period. Finally, the industrial sector was the least affected by the crisis. Nevertheless, it has seen net falls in firms in the last few years due to the scant net creation in the expansion.

The destruction of firms has been concentrated among the least productive ones

To comprehend the role that the entry and exit of firms has in productivity growth, it is useful to analyse the relative productivities of the firms being created and shut down (see top panel of Table 3.2). In the period of expansion, the average (apparent labour) productivity achieved by new firms in their first years of life was lower than that of already existing firms, so they contributed negatively to productivity in the short term. Meanwhile, the firms which ceased operations had substantially lower productivities than those which survived, so their disappearance had a positive effect on average productivity. The arrival of the recession altered these patterns quantitatively, but not qualitatively. Thus the differences in productivity between the new firms created since the onset of the crisis and already-existing ones were somewhat smaller than the differences before the crisis, while shutdowns became even more concentrated in the low-productivity segment of firms.

The improved allocation of resources among firms observed since 2008 is therefore apparently related to the disappearance of a considerable number of scantly productive firms

The impact on aggregate productivity of these changes can be quantified by estimating how much productivity has changed in each period as a result of the entry/exit of firms (see bottom panel of Table 3.2). The contribution of new entrants to aggregate productivity growth was nearly -8% up to 2007 and it stood at nearly –3% in the crisis, as a result of the smaller number of entries in this second period and a somewhat higher productivity of the entrants. Meanwhile, the exit of less productive firms contributed around 3.5% to productivity growth in the expansionary phase and it more than doubled during the crisis

as a result of higher exit rates and a higher negative productivity difference of these firms. Thus the net contribution of the entry and exit of firms has gone from being negative in the run-up to the crisis to having a positive sign during the recession. The better allocation of resources among firms since 2008 therefore seems to be related, at least partly, to the shutdown of numerous scantly productive firms.

In all sectors the firms shut down during the crisis were the less productive ones

During the crisis the relative productivity of the new firms improved in the three sectors of activity analysed, although particularly in construction (see Table 3.2). In the case of exits, the selective effect of the destruction of firms was also significant in all sectors. In the case of manufacturing industry, the productivity of the firms which closed was 45% lower than that of surviving firms. Overall, the net entry of firms made a positive contribution to the three sectors of activity, although it was stronger in manufacturing industry and construction.

5 Barriers to resource reallocation

The foregoing analysis demonstrates the importance of resource allocation for strengthening potential growth. Economic policy must therefore facilitate the process of allocation by removing the barriers which hinder it. The factors which may influence sectoral specialisation and resource reallocation among firms and sectors in an economy and which merit special attention in economic policy actions include the level of sectoral completion, the regulation of product, services and factor markets and the quality of the available factors of production, to mention the ones normally highlighted in the literature as being most important.[28]

5.1 SECTORAL COMPETITION

A lower degree of competition is associated with a lower level of output, employment and productivity

The degree of competition is a basic determinant of the allocation of resources in an economy. Generally speaking, in the absence of market failure, perfect competition would provide a suitable allocation of resources. In contrast, restrictions on competition tend to make for a higher equilibrium price, which reduces the amount of goods exchanged and produced by market participants. Thus, the lower the level of competition in an economy, the farther its level of production and employment will be from the potential level to which it could aspire. Moreover, higher competition can have a positive effect on productivity.[29] Market regulation is one of the factors determining the degree of sectoral competition, although cost and demand conditions engender differences in the degree of competition between sectors. Inadequate regulation may limit the entry of competitors or permit collusion of incumbents, thereby leading to higher business margins and lower production.[30]

The lower productivity of the Spanish economy may be related to barriers to entry/exit of firms…

Market regulations often tend to limit competition by restricting firm entry and exit flows, which may hinder the efficient allocation of resources among firms and have negative effects on productivity. Spain is notable for its low rate of creation, and particularly destruction, of firms,[31] which be detrimental to aggregate productivity. The correlation between the sum of entries and exits into and out of a sector and the measure of efficient allocation used in the preceding section is positive, suggesting that the improvement in

28 The role which may be played by financial factors is analysed in Chapter 5 in the original Spanish version of this Report.

29 See, inter alia, Nickell (1996), "Competition and Corporate Performance", *Journal of Political Economy,* 104 (4), pp 726-746. This positive effect of competition on productivity comes about because greater competition stimulates incumbent firms to move towards their production possibility frontier, thus reducing so-called "X-inefficiency", motivates more efficient firms to grow and displace less efficient ones (which may even disappear and be replaced by new, more productive entrants) and may enhance firms' willingness to engage in research and innovation. This latter effect is, however, more controversial at both theoretical and empirical level, because investment in R+D+I usually entails high fixed costs and requires some time before it delivers benefits, and only firms with monopolistic profits will have the necessary resources to undertake such investment.

30 A recent study using microdata of Spanish firms by C. Fernández, A. Lacuesta, J. M. Montero and A. Urtasun (2015), *The cyclical behaviour of mark-ups: composition versus changes in pricing strategies,* Documentos de Trabajo of the Banco de España, forthcoming, finds that sectors with fewer firm entries and exits have higher margins.

31 See S. Núñez (2004), "Salida, entrada y tamaño de las empresas españolas", *Boletín Económico,* March, and European Commission (2013), *Product Market Review: Financing the real economy.*

CORRELATION BETWEEN ENTRIES AND EXITS OF FIRMS AND INTRA-SECTOR REALLOCATION

TABLE 3.3

Correlation

	Intra-sector reallocation (a)	
	COV (1995-2012)	ΔCOV (b) (2008-2012)
Entries and exits (c)	1.1833*	0.28469*
Observations	778	56
R^2	0.069	0.053

SOURCE: Banco de España.
NOTE: * Significance ratio at 10%.

a Measures efficiency in resource allocation in each sector quantified by the covariance between the productivity and market share of each company.
b Change in the efficiency measure for resource allocation of each sector between 2008 and 2012, mentioned in footnote (a).
c Sectoral data based on NACE-93 and NACE-09 two-digit level of disaggregation. The intra-sector reallocation variable refers to the covariance within a sector of the size of the firms and their TFP. The entry and exit variable is the sum of the entry and exit rates as a ratio of these variables divided by the total of firms in existence that year. The level regression of the first column includes dummy variables for the year.

intra-sectoral resource reallocation observed in the period 2008-2012 is concentrated in those sectors that underwent a greater reallocation of resources through the turnover of firms (see Table 3.3).

… which seem to be associated with higher entry costs and administrative barriers

Examination of the OECD indicators on the degree of product market regulation (PMR) shows that Spain has greater difficulty than other EU countries in creating firms and greater administrative complexity, although notable progress has been made in both these areas in recent years. These results are confirmed by other available indicators, such as the index measuring the business-friendliness of regulations formulated by the World Bank and used in its *Doing Business* project. In this respect there still seems to be room to rationalise the administrative burden on firms, particularly that derived from the existence of multiple levels of government. Here it is essential to continue the work of the *Comisión para la Reforma de las Administraciones Públicas* (Commission for Government Reform), to expedite agreements in sectoral conferences held under the Law to Ensure Market Unity and to allow the so-called puntos de atención al emprendedor (entrepreneur service points), particularly the virtual ones, to manage directly all the procedures for setting up a company.

In the sectoral arena, the distributive trade, transport and professional services sectors are subject to more restrictive regulation than in other European countries

The aforementioned PMR indicators are intended to approximate, on the basis of the regulations in each country, the relative severity of the restrictions. According to these indicators, the distributive trade, transport and professional services sectors are more heavily regulated in Spain than in other OECD countries and in the main euro area economies.[32] Specifically, the case of retail trade, which is described in Box 3.1, is a good example of the channels through which regulation, particularly at regional level, affects the allocation of resources. As regards transport, there is room for making more efficient use of transport infrastructure by improving the connection between different means of transport and increasing competition, particularly in the railway sector, where some progress has been made recently. For their part, entry barriers in professional services take the form of qualifications required to enter the profession which are generally higher than in other developed countries.

32 See J. S. Mora-Sanguinetti and M. Martínez (2014), "La regulación en el mercado de productos en España según los indicadores de la OECD", *Boletín Económico,* December, Banco de España.

The low level of competition in these sectors is confirmed by other measures, such as profit margins

Profit margins also provide an approximation of the degree of competition in markets. Various studies have found a positive relationship between this variable and PMR indicators[33]. Assuming that the international differences in the demand structure faced by the various sectors and their technology are small, the comparison of sectoral margins across countries allows the relative severity of regulatory restrictions to be approximated. This analysis shows that Spain had higher margins than other developed countries in distributive trade, professional services and, to a lesser extent, transport.[34] Also, in these sectors the price-cost margin tended to increase over the crisis, perhaps reflecting, as discussed in greater detail in Chapter 4 of this Report, apart from financial tensions, the persistence of a low degree of competition.[35]

5.2 FIRM SIZE

The average firm size in Spain is smaller than in other developed countries…

The available evidence shows a positive relationship between firm size and productivity, both at individual level and in the aggregate of the economy. Specifically, the economies with a higher proportion of large firms, such as the United States and Germany, have a higher productivity.[36] In this respect, the average firm size in Spain is smaller than in other developed economies, as a result of a higher proportion of SMEs.[37] This pattern holds in every sector.

… which may explain, at least partially, the low productivity of the Spanish economy

Therefore, part of the difference in productivity between Spain and other developed countries may be due to the lower weight of large firms. The skewing of firms in Spain towards those of small size is explained on the basis of assumptions associated with market inefficiencies, such as limitations on competition in the services markets or the difficulties of SMEs in accessing stable sources of funds for new investments and growth, or with firms' internal organisation and management systems. However, these assumptions do not seem sufficient to explain the bias towards small firm size.[38]

The small size of firms may be associated with different regulations which discourage company growth.

A complementary argument emphasises the disincentive to business growth stemming from certain regulations intended to favour small and medium-sized enterprises.[39] For example, taxwise there are advantages in corporate income tax (e.g. lower tax rates) and laxer tax scrutiny for SMEs, or, in the labour field, a *workers' committee* is compulsory for firms with more than 49 employees. The available evidence indeed shows a significant reaction of Spanish firms to these thresholds (see Chart 3.8),[40] which indicates the need to adapt existing legislation to avoid disincentives to business growth.

5.3 LABOUR MARKET FUNCTIONING

Different aspects of the functioning of the labour market, which bear on wage-setting and on incentives for training, effort and labour mobility, may hinder the reallocation of

33 See R. Griffith and R. Harrison (2004), *The link between product market reform and macro-economic performance,* Economic Paper, n.° 209, European Commission, and Hoj *et al.* (2008). Despite the foregoing, the price-cost margin may not be an adequate measure of the degree of competition in a market insofar as there may be differences between firms in the technology used, the degree of product differentiation/quality and other demand specificities which prompt reallocation of resources to more efficient firms [Boone (2008)], whose margins tend to be higher regardless of the degree of competition.

34 See Á. Estrada (2009), *The mark-ups in the Spanish economy: international comparison and recent evolution,* Documentos de Trabajo, n.º 0905, Banco de España.

35 C. Fernández, A. Lacuesta, J. M. Montero and A. Urtasun (2015), *The cyclical behaviour of mark-ups: composition versus changes in pricing strategies,* Documentos de Trabajo del Banco de España, forthcoming.

36 See OECD (2012), "Entrepreneurship at a Glance, 2012".

37 See OECD (2014), "Entrepreneurship at a Glance, 2014".

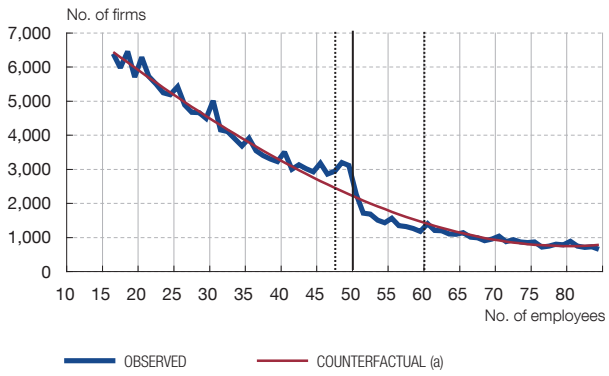
38 See La Caixa (2012), "Crisis y fractura social en Europa. Causas y efectos en España", Colección Estudios Sociales, n.º 35, and OECD, *Structural and Demographics Business Statistics*.

39 See European Commission (2013), *Product Market Review: Financing the real economy.*

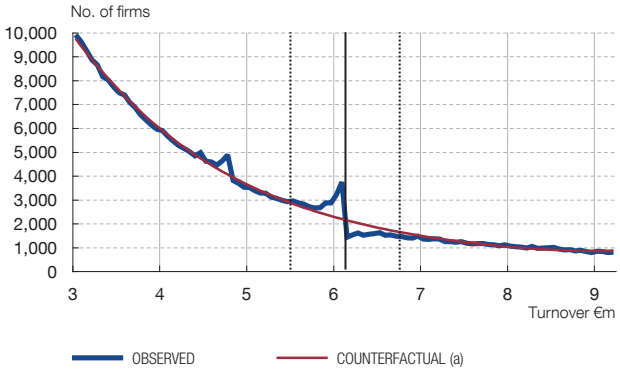
40 See M. Almunia y D. López-Rodríguez (2014), *Heterogeneous Responses to Effective Tax Enforcement: Evidence from Spanish Firms,* Documentos de Trabajo, n.º 1419, Banco de España.

FACTORS DETERMINING COMPANY SIZE. EFFECTS OF FISCAL AND LABOUR REGULATIONS CHART 3.8

DISTRIBUTION OF FIRMS BY NUMBER OF EMPLOYEES BETWEEN 1995 AND 2007



DISTRIBUTION OF FIRMS BY TURNOVER BETWEEN 1995 AND 2007



SOURCES: Mercantile Register and Banco de España.

a Distribution of firms estimated in the absence of fiscal and labour regulation. See Almunia and López-Rodríguez (2014).

The geographical mobility of Spanish workers continues to be very low…

resources in the economy. In Spain, the labour market is characterised by low inter-regional mobility, despite the very different regional unemployment rates. During the crisis, inter-regional mobility even decreased slightly from 0.9% of the total population in 2007 to 0.8% in 2013, this figure being even lower among the population of Spanish nationals (0.6%) and unrelated to regional unemployment rates (see top left-hand panel of Chart 3.9).

…and labour mobility is concentrated in temporary workers, with negative consequences for productivity

Mobility between the different types of employment, unemployment and inactivity is concentrated above all in temporary workers. This gives rise to a very high level of labour turnover in Spain compared with other European countries,[41] which coexists with a highly protected group of workers who are practically insulated from the flow of labour market entries and exits. Several studies have underlined the negative effects of this marked duality of the Spanish labour market on variables such as productivity,[42] decisions to invest in human capital or collective bargaining.[43] In occupational mobility, the changes also involve temporary workers (see top right-hand panel of Chart 3.9), since the greater job protection enjoyed by permanent employees reduces the incentive to change jobs.[44] Also, this turnover occurs between temporary jobs and, to a lesser extent, as a result of moves to permanent employment, which again may have negative consequences for productivity (see middle left-hand panel of Chart 3.9). In an international comparison, Spain is among the countries with the highest labour turnover, mainly due to the high incidence of temporary employment. That turnover thus occurs mostly within the same sector of activity, while changes of sector are less frequent than in other countries (see middle right-hand panel of Chart 3.9).

41 See ECB (2015), *Comparisons and contrasts of the impact of the crisis on euro area labour markets,* Occasional Paper series, no. 159.

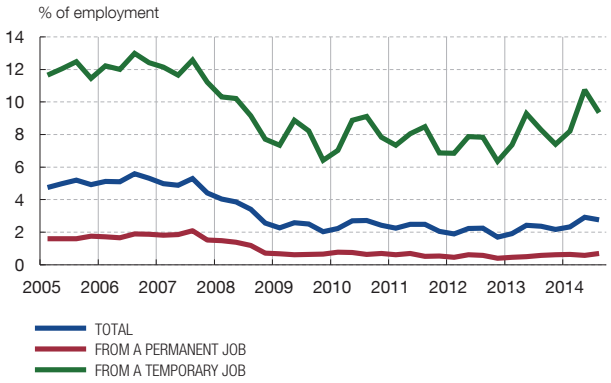
42 In terms of the impact of temporary employment on TFP, L. Hospido and E. Moreno-Galbis (2015), *The Spanish Productivity Puzzle in the Great Recession,* Documentos de Trabajo, n.º 1501, Banco de España, find a negative correlation between TFP and the incidence of temporary employment, although it should be noted that, since the onset of the crisis, temporary employment may have helped the reallocation of factors in firms, with the correlation turning positive. J. J. Dolado, S. Ortigueira and R. Stucchi (2012), *Does dual employment protection affect TFP? Evidence from Spanish manufacturing firms,* CEPR Discussion Papers 8763, report a positive relationship between labour market duality and the sharp slowdown in TFP between 1990 and 2005.

43 See C. Albert, C. García Serrano and V. Hernanz (2005), "Firm-Provided Training and Temporary Contracts", in *Spanish Economic Review,* vol. 7, n.º 1, pp. 67-88.

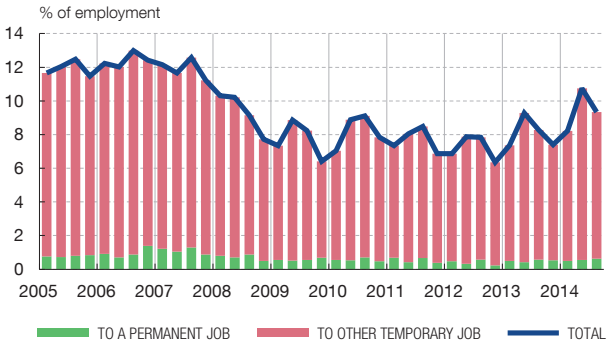
44 See A. Bassanini and A. Garnero, Andrea (2013), "Dismissal protection and worker flows in OECD countries: Evidence from cross-country/cross-industry data", *Labour Economics,* vol. 21 (C), pp. 25-41 and A. C. Gielen and K. Tatsiramos (2012), "Quit behaviour and the role of job protection", *Labour Economics,* vol.19 (4), pp. 624-632.

INTER-REGIONAL NET MIGRATION AND UNEMPLOYMENT RATE INCREASE SINCE 2008

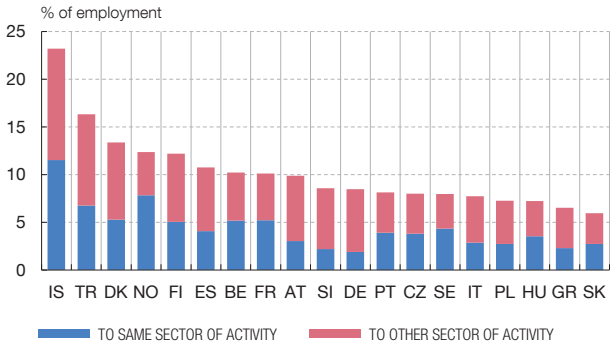
EMPLOYMENT TO EMPLOYMENT FLOWS



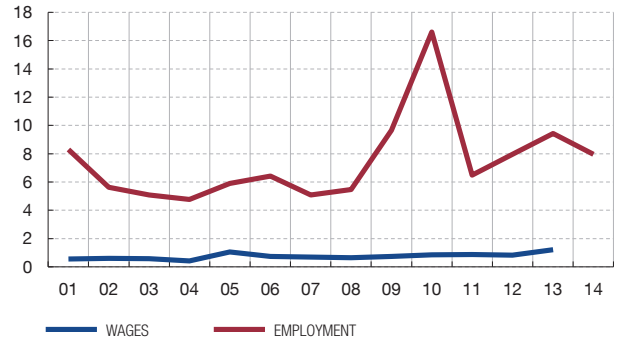
EMPLOYMENT TO EMPLOYMENT FLOWS FROM A TEMPORARY JOB



CHANGE OF EMPLOYMENT



WAGE AND EMPLOYMENT DISPERSION BY SECTOR OF ACTIVITY (a)



EDUCATIONAL MISMATCH INDEX (b)

SOURCE: Banco de España.

a Measured using the standard deviation of wage increases and changes of employment across sectors, at the NACE two-digit level of disaggregation.
b Index comparing the distribution, by education level, of labour demand, proxied by the number of people in employment, with labour supply, proxied by the number of unemployed people.

The degree of sectoral wage dispersion continues to be very low and the proportion of workers receiving the minimum wage has increased following the crisis

An additional factor which may limit job reallocation among sectors of activity is that wages are only weakly related to the specific conditions of sectors and firms. The dispersion of the wage increases negotiated in the various sectors of activity is slight and much lower than that of employment growth (see bottom left-hand panel of Chart 3.9). Underlying this phenomenon is the collective bargaining structure, characterised by the prevalence of sectoral agreements which are automatically extended to all firms and by a

low incidence of firm-level agreements, which affect only 10% of workers.[45] These sectoral agreements may act as barriers to entry, hindering market access by new firms which have to equal, from inception, the employment conditions negotiated in industry-, region- and nationwide agreements. Moreover, this collective bargaining structure limits wage dispersion between firms and sectors with different economic conditions. During the crisis the greater dispersion in employment behaviour between sectors of activity did not give rise to larger wage differences. Against this background, the various labour reforms adopted in recent years have sought to move to a more decentralised collective bargaining system by fostering the non-application of industry-, region- and nationwide agreements and the prevalence of firm-level agreements. The available information tends to show a limited increase in the use of the opt-out options of firm-level agreements, although the incidence of other flexibility measures has enabled firms, especially large ones, to adjust employment conditions to the minimums negotiated in collective bargaining agreements. Thus wages have moved towards these minimum levels. In the current setting of low or even negative inflation, and given the current nominal rigidities, this wage trend generates an accumulation of near-zero wage changes which now affect around 30% of wage-earners in the private sector. This reduces wage dispersion and its links to firm-specific conditions.

There is a need to reduce contractual duality further and, in line with the recent labour reforms, to advance in wage flexibility

In short, the high differences in unemployment across regions in Spain do not induce high geographical mobility. Among other things, this may point to inefficiencies in the unemployment benefits system and in the functioning of the housing market, which reduce incentives for labour mobility. Also, the recruitment framework generates a markedly dual labour market in which changes in employment almost exclusively involve temporary workers. The excessive labour turnover derived from the high incidence of temporary employment does not provide incentives to invest in human capital, while the protection of permanent employment discourages the labour mobility of these workers. Finally, greater wage differentiation between firms and between workers would make for the smoother absorption of differences in employment across educational levels or across regions. This would be helped by greater decentralisation of collective bargaining, which would raise the cyclical sensitivity of wages and tighten their relationship with the specific conditions of workers and firms.

5.4 HUMAN CAPITAL

The fact that a significant portion of the unemployed have developed skills in very specific sectors may condition the allocation process in the Spanish economy

The re-absorption of unemployment hinges crucially on the human capital of job-seekers. In this respect, the occupational skills of the unemployed in Spain are generally low and associated with expertise and experience in very specific sectors, such as construction, which may pose an obstacle to factor reallocation insofar as labour demand needs cannot be met by existing labour (see Box 3.2).

The educational mismatch between labour supply and demand has increased during the crisis

The crisis has caused a concentration of job destruction among the low-skilled and, in this way, it has substantially raised the degree of educational mismatch between labour supply and demand (see bottom right-hand panel of Chart 3.9). Hence the percentage of the employed with a primary education or less has declined from 18% in 2007 to 10.3% in 2014, while the weight of employees with a university education has increased from 23.1% in 2007 to 29.4% in 2014. The opposite is seen among the unemployed, since 22% of the

45 L. Hospido and E. Moreno-Galbis (2015), *The Spanish Productivity Puzzle in the Great Recession,* Documentos de Trabajo, n.º 1501, Banco de España, find a positive relationship between TFP and firm-level agreements which has become stronger since the onset of the crisis, suggesting that firms with their own firm-level agreement are better able to adapt to change in the economic situation.

PROBABILITY OF TRANSITION IN RELATIVE TERMS OF EMPLOYEES WITH UNIVERSITY EDUCATION IN RESPECT OF THOSE WITH BASIC EDUCATION (a) TABLE 3.4

	2005-2014	2005-2007	2008-2014
Exit from unemployment			
To employment	1.19	1.14	1.20
To temporary employment	1.16	1.12	1.17
To permanent employment	1.12	1.15	1.11
To inactivity	0.83	0.80	0.84
Exit from employment			
Total	0.79	0.87	0.74
From permanent employment	0.66	0.78	0.61
From temporary employment	0.88	0.92	0.86

SOURCES: INE and Banco de España.

a Values over one imply that individuals with higher eduction are more likely to make each employment transition than individuals with basic studies. For example, in the transitions from unemployment to employment between 2005 and 2014, unemployed individuals with higher education had a 19% higher probability of finding employment than unemployed individuals with basic studies. The results are obtained using a probit model to calculate the probabilities of each transition using the following variables: gender, age, level of studies, time in unemployment, autonomous community and GDP growth in exit from unemployment; and gender, age, level of studies, activity sector, type of contract, seniority and occupation in exits from employment.

total have primary-level studies or less and only 13.7% have a university education. This educational mismatch might hinder the employability of the least skilled groups, given that the probability of exiting unemployment increases with level of educational attainment.[46]

Low-skilled workers have greater difficulties both finding and holding on to new jobs

Indeed, since the start of the crisis difficulties have increased for low-skilled workers seeking both to hold on to a job and find a new one from unemployment. While it is true that the likelihood of losing a job is always lower for more skilled workers, the differences in comparison with the least skilled have widened since 2008. Moreover, once unemployed, the probability of finding a job is much greater among those with higher levels of training and, once again, the relative difficulties of less skilled workers have increased since the start of the crisis (see Table 3.4). As a result, less skilled workers are more likely to abandon job-search and move to a situation of inactivity, which heightens the risks of labour market exclusion for this group.

Improving the skills of the unemployed and adapting them to labour demand are crucial for their employability

Overall, the Spanish labour market faces a situation of growing educational mismatch, on which action must be taken to improve the employability of the unemployed. Measures should focus on fomenting the return to formal education of those young people with a low level of educational attainment, especially in those vocational training sectors in which firms can be seen to have needs. It would also be desirable to modernise public employment services so as to help define training activities for each unemployed person, on the basis of their training and professional experience.

Furthermore, a sectoral change in the medium term will unavoidably involve an increase in the population's level of educational attainment and quality improvements

The human capital available in the economy, in terms both of average educational attainment and of distribution across the population, conditions productive specialisation.[47] In Spain's case, the improvement observed since 1993 in the quality of labour has been highly significant. However, there is still room for educational convergence on the part of the labour force in comparison with other European countries.[48] In particular, the Spanish education system stands out in terms of its early school-leaver rate, the under-use of the

46 See M. Izquierdo, S. Puente and P. Font (2013), «Evolución del desajuste educativo entre la oferta y la demanda de trabajo en España», *Boletín Económico,* June, Banco de España.

47 See M. Bombardini, G. Gallipoli and G. Pupato (2012) «Skill Dispersion and Trade Flows», *American Economic Review,* vol. 102 (5) pp. 2327-2348.

48 See, inter alia, OECD (2008), *OECD Economic Surveys: Spain 2008.*

vocational training system and a low level of quality.[49] In this respect, it is necessary to ensure the implementation of the new education legislation provides both for a reduction in early school-leavers and an improvement in the quality of compulsory education. In parallel, headway is required in reforming vocational training and university education. On this latter point, it is important to amend key areas such as the selection of teaching staff, the governance of universities and financing, in line with the 2013 conclusions of the Expert Committee for the Reform of the Spanish University System.

5.5 TECHNOLOGICAL CAPITAL

The Spanish economy's stock of technological capital is limited...

A characteristic feature of the Spanish economy is that its stock of technological capital is significantly lower than that of other developed countries. Specifically, its weight in GDP was 25% below the average for the euro area countries in 2012. The level of spending on both R + D+ i and on information and communications technologies (ICT) remains significantly lower in Spain than in our peer countries. The low intensity of investment in R + D + i activities affects both the public sector and, especially, the private sector.

... a phenomenon that is linked to various structural factors

The Spanish economy's low technological capitalisation is no doubt related to aspects such as workers' relative skills, the excessive weight of small firms, which habitually have a lesser propensity to innovate, and the limited development of alternative financial markets, such as the private equity market, which is widely used in other countries by technology start-ups.[50] Spanish firms are further seen to have low technological absorption capacity.[51] The public-sector research system is, for its part, characterised by its high fragmentation and its scant connections to business.

Turning this pattern around will call for a reform of the national R + D + I system

The European Commission's 2014 assessment report of innovation underscores the need to review crucial aspects of the innovation system, such as the number and degree of specialisation of centres, the rigid and bureaucratic governance of the related institutions, the introduction of evaluation and incentives-based schemes in their funding, and the review of researcher hiring and career-monitoring mechanisms. The new State Agency for Research, which is scheduled to be set up this year, should see through the necessary changes for improvement in these areas. Also, despite the headway made with the recent 2011 Law on Science, certain obstacles to public-private initiative projects have been identified and it is estimated that the current tax incentives for business R + D are very costly and relatively ineffective, in particular in the case of SMEs and start-ups, meaning they should be revised.

49 In this respect, for example, the results of the OECD PIAAC (2013) (http://www.mecd.gob.es/inee/Ultimos_informes/PIAAC.html) highlight the fact that the Spanish population's poor scores in maths are extensive to individuals with different levels of educational attainment, including tertiary education.

50 Indeed, there is evidence that investment in R + D + i by Spanish firms is significantly affected by difficulties in access to bank lending and the absence of alternative financing mechanisms [see P. López-García, J. Montero and E. Moral-Benito (2013), "Business Cycles and Investment in Productivity-Enhancing Activities: Evidence from Spanish firms", *Industry and Innovation,* 20 (7), pp. 611-636)].

51 See P. López-García and J. Montero (2012), "Understanding the Spanish business innovation gap: the role of spillovers and firms' absorptive capacity", *Economics of Innovation and New Technology,* 21 (7), pp. 589-612.

The degree of competition is a fundamental determinant of an economy's productive structure and may affect its sectoral composition and the effective allocation of resources among firms in each sector. Regulation is one factor that can influence the degree of sectoral competition. Indeed, in some cases regulation is justified precisely as a means of bringing competition to markets that could intrinsically be oligopolies.[1] However, excess or, in general, inappropriate regulation can be a barrier to entry for competitors or can permit collusion between established firms, boosting profit margins and reducing output and efficiency.

This box aims to show how regulatory changes may have affected the degree of efficiency of the intra-sectoral reallocation of resources, based on the analysis of a specific sector, namely Spanish retail trade. This is a highly important sector, owing not only to its share of GVA (6.7%) and employment (13.4%), in both cases in terms of the market economy, but also to the role the distribution channels play in productivity and price formation. Regulation of retail trade is extensive and complex and has traditionally posed numerous barriers to competition. In Spain, powers over domestic trade are devolved to the regions, which are responsible for regulating retail trade, although the central government has the power to establish basic general rules. As a result, sector regulations vary significantly from region to region.

1 Aside of regulation, there are demand conditions and cost structures that would lead to natural differences in the degree of competition between sectors.

These differences and how they have evolved can be illustrated by building synthetic regulation indicators by region.[2]

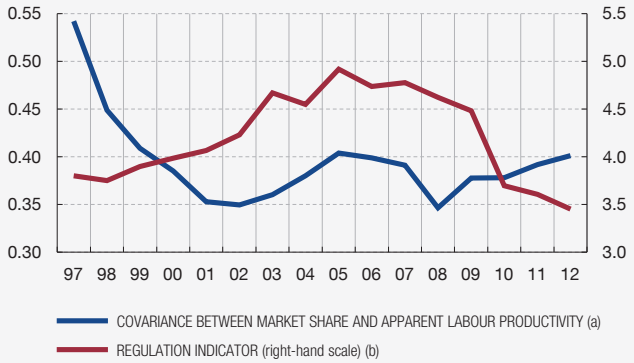
As shown in Panel 1, which aggregates the synthetic regulation indicators of the regions, weighted by population, 1999 saw the start of a period of intense regulatory activity in the retail trade sector, with the regional authorities, in an endeavour to protect traditional retailers, introducing increasingly stringent regulations. Restrictions – moratoria – were set on new openings[3] and second trading licences were required of ever smaller retailers and even of hard discount stores,[4] pitching them in together for that purpose

2 See Matea and Mora (2012), "El comercio minorista y regulación autonómica: efectos en la densidad comercial, el empleo y la inflación", *Revista de Economía Aplicada*, no. 59, vol. XX, pp. 5-54. In that article, synthetic indicators are built reflecting a series of legislative aspects of the sector, aggregated using the factorial analysis method. These are, specifically, regulation on Sunday and public holiday trading, weekly opening hours, sales periods, taxes on large retail outlets, moratoria on new openings, the definition of large retail outlet which entails the need for a regional licence (save in Madrid in recent years) and the need for a regional licence for hard discount stores. By design, these indicators take values between 0 (no regulation) and 10 (maximum regulation). Evidence is found to show that greater regulation of retail trade in Spain is associated with higher inflation, lower employment in the sector and higher retail density.

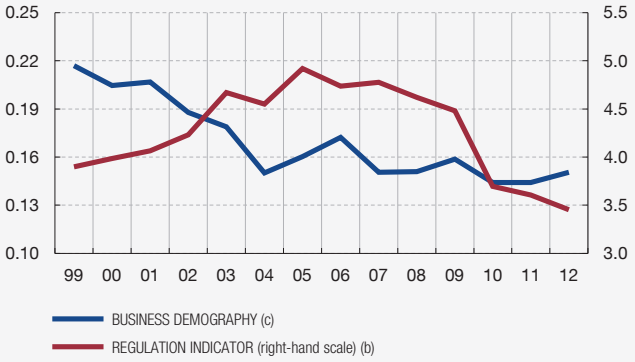
3 A ban on new openings of large retail outlets in a specific region in a given period.

4 The definition of hard discount stores varies somewhat from region to region but is based on a minimum number of own (private label) brand products on sale and a minimum number of stores of the same size trading under the same name.

RETAIL TRADE: REGULATION AND PRODUCTIVITY



RETAIL TRADE: REGULATION AND BUSINESS DEMOGRAPHY



SOURCE: Banco de España.

a The annual average in each of the periods of covariance between the share of employment of retail sector firms and their labour productivity relative to their sector average has been calculated using the CBSO and mercantile registers. The higher the covariance, the more efficient the allocation of employment among sector firms. The covariance has been calculated for NACE Rev. 2, Division 47, retail trade, except for retail trade, except for motor vehicles and motorcycles, excluding groups 47.3, 47.8 and 47.9 and class 47.73 as they are not affected by the regulatory aspects considered.

b Population-weighted average of the synthetic regulation indicators of the regions. The synthetic indicator of each region takes into account regulation on Sunday and public holiday trading, weekly opening hours, sales periods, taxes on large retail outlets, moratoria on new openings, the definition of large retail outlet and the regional licence for hard discount stores. By design, this indicator takes values between 0 (no regulation) and 10 (maximum regulation). See Matea and Mora (2012).

c The Central Companies Directory (DIRCE) has been used to calculate the sum of the entry and the exit rates of firms over existing firms in the retail sector. The data to 2007 have been taken using NACE Rev. 1.1 and the data from 2008 using NACE Rev. 2.

with large retail outlets. Also during the period, a special tax on large retail outlets was first introduced in some regions. This regulatory surge peaked in 2005 when opening hours were reduced (in terms of Sunday and public holiday trading and maximum opening hours per week), with the brunt of these regulations borne by the large outlets.

However, in 2009, some regions started to adopt measures ahead of the transposition of the Services Directive in March 2010 and the regulatory surge was brought to a halt. The Services Directive marked a turning point, as from then on barriers to competition were gradually eliminated or at least lowered. Specifically, although large retail outlets still need a regional licence (except in Madrid), most authorities have raised the threshold for stores to be considered large outlets, withdrawn the specific licence for hard discount stores and removed the moratoria on new openings. In addition, the administrative procedures for opening small stores have been simplified and the restrictions on opening hours and sales periods have been eased. The criteria to be met to be deemed a "major tourist area"[5] have also been relaxed, meaning that more areas now have unlimited opening hours. More recently, in 2013 and 2014, the rules on opening hours and sales periods were further relaxed.

The impact of these regulatory changes on sector efficiency may be approximated by the relationship between the regulation indicator described above and various efficiency measures (see section 4 of this chapter). Based on the information supplied by the Central Balance Sheet Data Office (CBSO), Panel 1 depicts the aforementioned regulation indicator together with a sector efficiency indicator calculated as the covariance between the share of employment of the retail sector firms and their labour productivity relative to the sector average. The higher the value of the indicator, the higher the proportion of employment concentrated in the most productive firms and, in consequence, the better the allocation of employment among the sector firms. The relationship between the two indicators shows, broadly speaking, that more (less) stringent legislation is associated with lower (higher) aggregate sector productivity. Specifically, it is observed that when regulation was most stringent (between 1997 and 2001) the allocation of employment was increasingly inefficient; subsequently, when regulation eased (between 2008 and 2012) the allocation of employment became more efficient. A similar message can be drawn from the relationship between the regulation indicator and a measure of sectoral momentum such as business demography (entry and exit rates of retail trade firms; see Panel 2) which traces a continuous downward pattern until 2005, holds steady until 2010 and then turns upward.[6]

5 Major tourist areas may be municipalities or areas of municipalities that meet at least one of the following criteria: a) have sufficient concentration of tourist accommodation or second homes; b) are declared a world heritage site or house a site or building of cultural interest; c) border on or consist of areas of influence of border zones; d) host certain national or international sporting or cultural events; e) are close to tourist cruise ports; f) are key shopping tourism areas; g) meet other criteria that warrant their inclusion. These areas have unlimited opening hours.

6 This upturn continued throughout 2013 and 2014.

ESTIMATION OF RELATIONSHIP BETWEEN EFFICIENCY IN ALLOCATION OF RESOURCES AND REGULATON IN RETAIL TRADE (1997-2012)

Dependent variable: efficiency in allocation of resources (a)

Regression	Explanatory variables (b)	Estimate not population-weighted	Estimate population-weighted
1	Synthetic regulation indicator (c)	-0.095*	-0.131*
2	Sunday and public holiday trading	-0.176*	-0.155*
3	Weekly opening hours	-0.073*	-0.084*
4	Sales period	-0.108*	-0.149*
5	Taxes on large retail outlets	-0.011*	-0.013*
6	Moratoria on new openings	-0.008	-0.018*
7	Definition of large retail outlets	-0.006	-0.015*
8	Regional licence hard discounters	-0.002	-0.001*

SOURCE: Banco de España.
NOTE: * Significant coefficicent at 5%.

a Measured as the covariance between labour productivity and the share of employment calculated for NACE Rev. 2, Division 47, retail trade, except for motor vehicles and motorcycles, excluding groups 47.3, 47.8 and 47.9 and class 47.73 as they are not affected by the regulatory aspects considered.
b In regression 1 the explanatory variable is the synthetic regulation indicator, whereas in the other regressions the explanatory variable is each of the separate regulatory aspects that make up the synthetic regulation indicator. All the variables are calculated by region and year. Annual dummy variables are included in all cases.
c The synthetic regulation indicator is built on the basis of regulation on Sunday and public holiday trading, weekly opening hours, sales periods, taxes on large retail outlets, moratoria on new openings, the definition of large retail outlet and the regional licence for hard discount stores. See Matea and Mora (2012).

In order to analyse the extent to which the different regulatory policies have determined the degree of sector efficiency, the regulatory differences from region to region over time are exploited to estimate the impact of different regulatory aspects on the first of the efficiency measures mentioned (see table).[7] As can be seen, greater regulation, measured by the synthetic indicator, results in less efficient allocation of employment (equation 1).[8] The adverse effect of stricter regulation is also observed in the relationship with each of the regulatory aspects separately (equations 2 to 8), although the taxes on large retail outlets, the moratoria on new openings and the licence for large retail outlets and hard discount stores have a lesser impact than aspects such as opening hours (Sunday and public holiday trading and opening hours per week) and sales periods.

In short, this analysis illustrates how economic regulation can affect economic efficiency. In the specific case of retail trade, the analysis performed confirms that transposition of the Services Directive and other recent measures adopted relating to opening hours and sales periods has boosted productivity in the sector.

7 This exercise cannot be conducted with entry and exit rates of firms as these rates are not available for the sector by region.

8 The regression made includes annual dummy variables to prevent temporary factors, such as the crisis, which should affect all regions equally, from being confused with the regulation effect. In this respect, the regulation difference by region is being exploited. The findings also hold if regional dummy variables are included in the above equations, in this case to exploit the change over time of the covariance and regulation in each region.

During the economic crisis, certain employment segments bore the brunt of job destruction. In particular, approximately 60% of all jobs lost since 2008 are in the construction sector, which accounted for 5.7% of total employment in 2014, down from 12% in 2008. It is important to analyse how construction workers have been affected, not only because of the scale of the job losses in the sector but also because of the workers' particular characteristics,[1] such as their lower skill levels, which could, *a priori,* make them less employable in other sectors, even against a backdrop of economic recovery such as that envisaged for Spain in the coming years.

It is possible to analyse the employment situation of construction workers who lost their jobs during the crisis using the social security administrative labour records (MCVL).[2] Panel 1 traces the change, in the period 2007 to 2013, in the employment situation of construction workers who were employed in the sector at the start of 2007, according to whether they continue to work in the sector, found work in another sector or are unemployed. Panel 2 shows the same information for workers from the rest of the economy. As a result of the high level of job destruction, by 2009 less than 50% of construction workers were still in their jobs and by 2013 only 17.6% were still employed in the industry. These figures are much lower than for the rest of the economy, where almost 50% of workers continued to be employed in the same sector throughout the period.

Moreover, the percentage of workers who found jobs in a different sector is relatively low. Specifically, only 22.9% of those employed in the construction sector at the start of 2007 were working in other industries in 2013, which is 27.8% of those who lost their jobs in construction, compared with 40% for those who lost their jobs in other industries in the period. Analysing the sectors in which workers found employment, Panel 3 shows that more former construction workers than those from other sectors found jobs in manufacturing and in certain service industries, such as transport, trade or hotels and catering, reflecting a greater similarity between the skills required in these industries and the skills offered by former construction workers. Conversely, significantly fewer former construction workers than workers from the rest of the economy found jobs in financial services, healthcare or education. As regards geographical mobility, 18.9% of construction workers who found employment in other industries did so in a different province than where they were working in 2007, which would indicate greater labour mobility than in other sectors (13.2%).

In order to identify the characteristics of construction workers that may explain the problems involved in their sectoral reallocation, Table 1 analyses the effect of certain personal characteristics on the likelihood of finding oneself unemployed, employed in the same sector or employed in another sector, drawing a distinction between workers who were employed in construction at the onset of the crisis and those who were employed in the rest of the economy. The table shows that older, less-skilled workers with more years of service have had particular difficulties finding other work, which probably reflects their higher level of firm-specific human capital and the greater obstacles they face to achieve professional re-training. Specifically, younger workers are less likely to be unemployed, which is because they are more employable in other sectors, since the likelihood of their remaining in the construction industry is similar to that observed among older workers. By skill level, construction workers with higher skill levels are less likely to be unemployed, because more of them keep their jobs in construction and because it is also easier for them to find jobs in other sectors. Workers with fewer years of service at the onset of the crisis were more likely to lose their jobs and are more likely to be unemployed in 2013. However, they are also more likely to have found work in other sectors than workers who had more years of experience at the start of the crisis.

This sectoral reallocation process may be analysed further by examining the wages received[3] by these workers in 2013. Table 2 shows how median wages evolved between 2007 and 2013, according to the sector of employment during that time. Among workers who remained in the construction industry, wage adjustment was not consistent with the severity of the crisis in the industry, since wages remained steady in real terms (0.3%). Indeed, workers with higher skill levels saw their wages grow by 3.3% in cumulative terms, similar to the wage rise observed in the rest of the economy, although the increase in real terms in less-skilled workers' wages was lower than in the rest of the economy.

Among workers who found jobs in other sectors, former construction workers experienced a significant wage adjustment in real terms (10.6% less than in 2007) that is not observed among other workers. The drop in wages was most severe among less-skilled workers with fewer years' experience, which would reflect, among other factors, the loss of firm-specific human capital by former construction workers who found jobs in other industries. This wage adjustment could approximate the cost, in terms of loss of productivity, associated with the sectoral reallocation process.

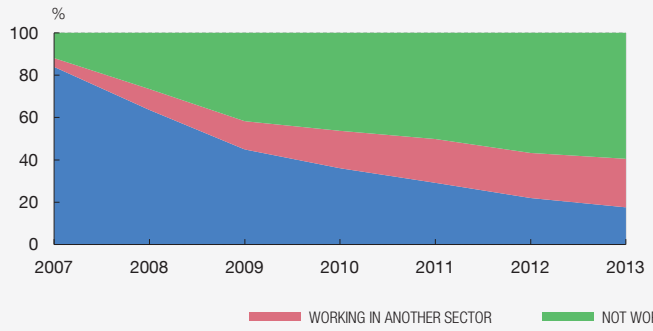
1 According to the Spanish Labour Force Survey (EPA), compared with the unemployed from other sectors, they have more years of service and lower skill levels, they have had less ongoing training and they have been mostly employed in low-skilled posts.

2 For a description of this database, see S. Galán and S. Puente (2015), "Minimum Wages: Do They Really Hurt Young People?" in *The B.E. Journal of Economic Analysis and Policy*, 15 (1), pp. 299-328.

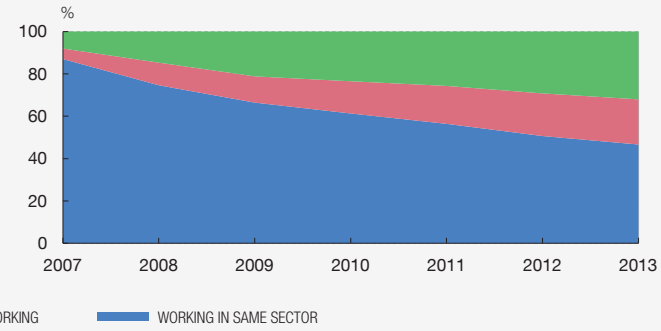
3 The social security administrative labour records (MCVL) contain information on reported contribution bases which approximate the wages received by workers, save for those whose wages exceed the maximum contribution base. The calculations presented are not affected by the exclusion of these workers from the analysis.

(cont'd)

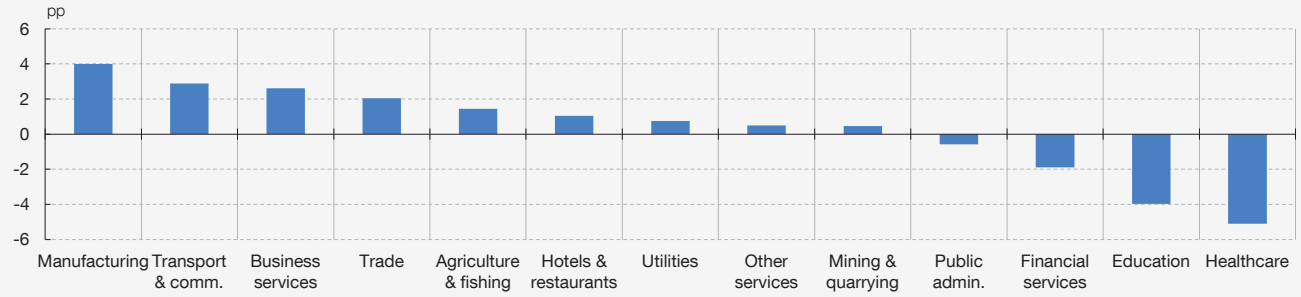
1 LABOUR MARKET SITUATION BETWEEN 2007 AND 2013 OF WORKERS EMPLOYED IN THE CONSTRUCTION SECTOR AT THE START OF 2007



2 LABOUR MARKET SITUATION BETWEEN 2007 AND 2013 OF WORKERS EMPLOYED IN OTHER SECTORS AT THE START OF 2007



3 SECTOR OF DESTINATION FOR WORKERS CHANGING SECTOR BETWEEN 2013 AND 2007
DIFFERENCES IN PERCENTAGE POINTS BETWEEN WORKERS FROM THE CONSTRUCTION SECTOR AND WORKERS FROM OTHER SECTORS



1 IMPACT OF PERSONAL CHARACTERISTICS ON PROBABILITY OF EMPLOYMENT SITUATION IN 2013 BY SECTOR OF ORIGIN IN 2007 (a)

	Workers in construction sector in 2007			Workers in rest of economy in 2007		
January 2007	Without employment	In same sector	In another sector	Without employment	In same sector	In another sector
Foreign nationals	0.189 ***	-0.103***	-0.086***	0.210***	-0.178***	-0.031***
Male	0.048***	-0.005	-0.042***	0.009***	-0.032***	0.023***
Aged between 16 and 35	-0.165***	0.005	0.159***	-0.047***	-0.077***	0.124***
Aged between 35 and 45	-0.109***	0.012***	0.097***	-0.063***	-0.001*	0.065***
Length of service: < 6 months	0.185***	-0.227***	0.042***	0.200***	-0.286***	0.086***
Length of service: 6 to 12 months	0.138***	-0.176***	0.038***	0.153***	-0.212***	0.059***
Length of service: 1 to 3 years	0.096***	-0.120***	0.024***	0.086***	-0.119***	0.032***
Contribution group: between 1 and 3	-0.144***	0.112***	0.031***	-0.099***	0.112***	-0.012***

2 PERCENTAGE CHANGE IN MEDIAN WAGE BETWEEN 2013 AND 2007 BY SECTOR IN 2013 AND SECTOR OF ORIGIN IN 2007 (b)

	Construction in 2007		Rest of economy in 2007	
	Same sector in 2013	Other sector in 2013	Same sector in 2013	Other sector in 2013
Total	0.3	-10.6	3.0	5.0
Skill level				
High	3.3	-5.5	2.7	5.8
Low	0.8	-11.3	2.7	4.6
Experience				
More than one year in company	-0.2	-8.1	1.1	0.1
Less than one year in company	0.2	-14.2	8.6	11.4

SOURCES: Ministerio de Empleo y Seguridad Social and Banco de España.
NOTE: *, ** and *** Significance coefficients at 1%, 5% and 10%, respectively.

a Probability of being unemployed, employed in the same sector or employed in another sector, by sector of activity in 2007 and workers' personal characteristics, estimated using a multinomial logit model. Reference group: female, Spanish national, over 45, with more than three years' service and contribution group between 4 and 11.
b CPI-deflated wages.

In short, the above analysis shows that the process of sectoral reallocation of construction workers who have lost their jobs since the onset of the crisis is far from over, as the proportion of workers having found employment in other sectors is still relatively low. Moreover, this is proving to be a particularly costly process for certain groups, such as older and less-skilled workers, who may be less employable in other sectors. Active employment policies should focus on providing these groups of workers with the skills needed in other sectors of the economy.