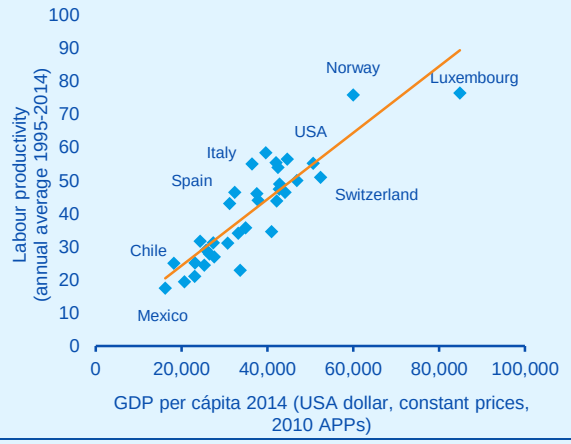
Box 1. Productivity of the construction industry in Spain

David Cortés, CFA – Real Estate Unit | Félix Lores – Spain Unit

Introduction

The analysis of the growth in productivity of an economy is pertinent given that it is the most important factor for explaining the improvement in citizens' welfare. Figure R.1.1 shows the positive correlation that exists between growth in the productivity of the labour factor, measured as the gross value added (GVA) per hour worked, and GDP per capita.

Figure R.1.1
Correlation between growth in productivity and GDP per capita in OECD economies



Source: BBVA Research based on OECD data

The contribution of the construction industry to the development of the Spanish economy has been relatively substantial over the past twenty years[4]. Spain's economic growth has largely relied on a industry which, historically, has had a lower rate of growth in productivity than other sectors. This study, like others[5], finds that the growth in the industry's GVA came mainly from the accumulation of productive factors, mainly the labour factor, and not from the accumulation of knowledge or technology.

However, international comparison shows that the Spanish construction industry is by no means the worst in this respect. In general, in all the countries analysed, construction is labour-intensive and shows growth in productivity at lower rates than the average for their economies.

Following the improvement in productivity seen by the industry in the years of this last crisis, the industry's recent recovery has once again been accompanied by an increase in employment, but also by a fresh reduction in productivity. Of course the industry's recovery will involve an increase in employment, given the brutal correction during the crisis, but the industry ought to endeavour to move ahead on a growth path in which technological capital and the knowledge economy play a more prominent role and favour growth in productivity in the medium and long term.

The purpose of this box is to analyse the productivity of the construction industry in Spain over the past twenty years. To do this we study two measures of productivity.

First we carry out an analysis of labour productivity, measured as GVA per hour worked, from a national viewpoint, comparing the various economic sectors, and from an international perspective, comparing the Spanish data with those of other major European countries. This analysis is carried out using the OECD's STAN database.

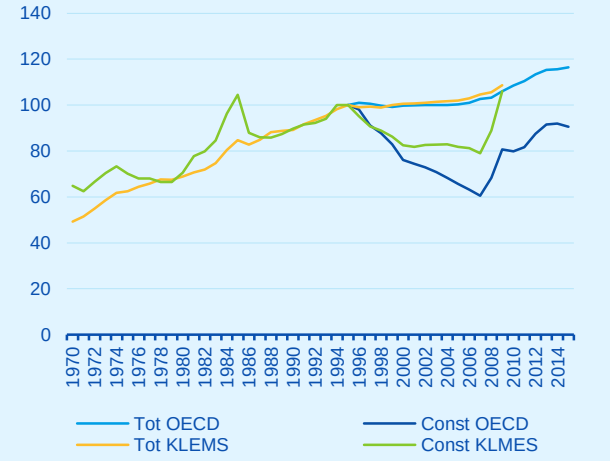
Next, we carry out an analysis of total factor productivity (TFP), using the data provided by the EU KLEMS database.[6] If the aim is to equate productivity with changes in the way productive factors are combined as opposed to the number of factors, then total factor productivity (TFP) is the more appropriate measure.

4: According to the INE's Quarterly National Accounting data, between 1998 and 2007 the construction sector was responsible for nearly 30% of Spain's GDP growth. Conversely, 75% of the fall in the economy between 2008 and 2013 was a consequence of the contraction of construction.
5: Mas and Robledo (2010) find that for the 1995-2007 period of expansion, the growth of the Spanish economy was due above all to a strong process of accumulation of factors.

Labour productivity

An analysis of the productivity series for the construction industry and the economy as a whole allows us to differentiate three periods. In the first period, from 1970 to the mid-1990s, the industry's productivity showed a similar trend to that of the economy as a whole. In the second period, from 1995 to 2007, the industry's productivity decreased significantly. And in the last one, which ran from 2007 to 2014, the years of the last economic crisis, the industry was particularly hard hit but productivity recovered (Figure R.1.2).

Figure R.1.2
Spain: labour productivity (gross value added per hour worked, 1995=100)*



* Note: OECD series at constant 2010 prices, KLEMS series at constant 2005 prices)
Source: BBVA Research based on OECD and EU KLEMS data

Table R.1.1 shows that over the past 45 years, growth in productivity in construction has been significantly lower than the average, depressing the increase in overall productivity. Differentiating the aforementioned periods, we see that except in the last seven years, productivity in the industry advanced at a slower pace than the national average.

During the expansive 1995-2007 period, growth in the industry's productivity was significantly negative. This sharp reduction made itself felt in the economy. In fact, had it not been for construction, the productivity of the economy would have grown at an average annual rate of 0.8%, 0.6 pp more than was actually the case. Lastly, between 2008 and 2015, we saw the reverse process - a sharp reduction in GVA of construction (-45.1%) accompanied by greater job destruction, over 60%. This led to a sharp increase in productivity, 5.4% as an annual average, which favoured the growth of productivity of the economy.

Table R.1.1
Spain: labour productivity (%, average annual change)*

	Total economy	Construction	Total without construction
1970-1995	2.9	1.9	3.0
1996-2007	0.2	-4.1	0.8
2008-2015	1.6	5.4	1.1

*Note: 1970-1995 with KLEMS; rest with OECD
Source: BBVA Research based on OECD and EU KLEMS data

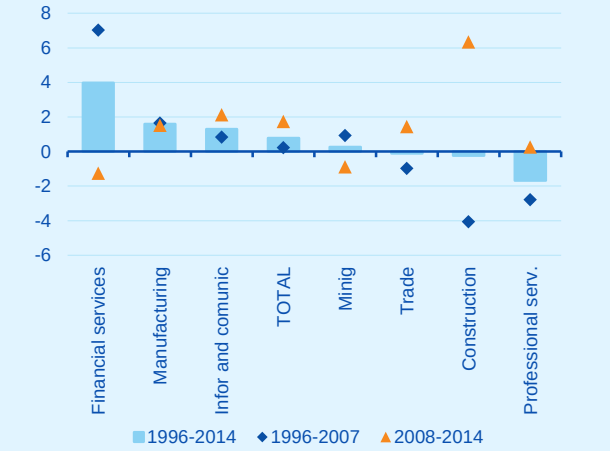
Notably, in 2015, when the industry started to recover, the trend in productivity switched. In fact it fell to an annual rate of 1.4% in 2015, the result of a 5.2% increase in GVA and an 8.1% increase in the number of persons employed.

In comparison with the main productive sectors of the economy, Figure R.1.3 shows how from 1995 to 2014 construction, together with professional services, showed the least growth in productivity, while financial services and manufacturing were the most productive sectors in over this 20-year period.

A greater chronological disaggregation shows how the in the period of expansion of the Spanish economy, construction was the industry in which productivity fell furthest, while the financial services sector showed the biggest improvement.

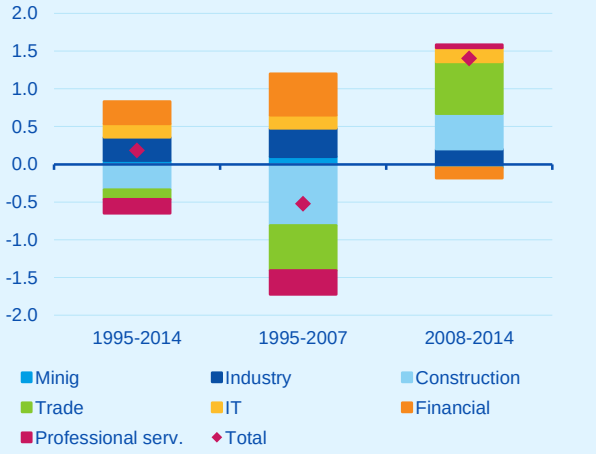
6: The productivity data for this article was taken from the EU KLEMS database (ISIC Rev.4) and the OECD's STAN database. For the analyses of labour productivity, which do not require estimates of capital, we used the OECD's database, which covers up to 2014, whereas the EU KLEMS database only covers up to 2009. However, for the analyses of TFP and the factors' contributions to growth, we used the EU KLEMS database exclusively, since it allows analysis with a greater degree of disaggregation by sector and has longer historical series, in some cases going back to the 1970s.

Figure R.1.3
Spain: labour productivity (%, average annual change)



Source: BBVA Research based on OECD and EU KLEMS data

Figure R.1.4
Spain: contribution to growth in productivity by sector* (in pp)



* Note: productivity of non-agricultural sectors excluding real estate services
Source: BBVA Research based on OECD data

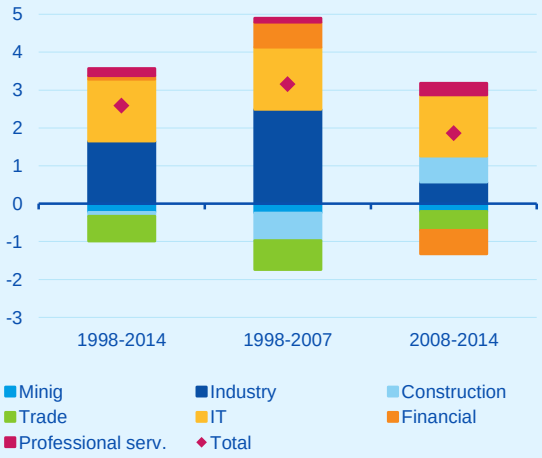
Conversely, during the crisis, construction was the industry with the biggest increase in productivity, while productivity in financial services declined.

When analysing contributions by sector, Figure R.1.4, we see that financial services, information and telecommunications and manufacturing are the sectors that managed to sustain growth in productivity over the past 20 years. Differentiating the various periods, we see that during the boom, construction was the main culprit for the contraction in Spanish productivity, together with trading and professional services. Conversely, in the crisis these sectors contributed positively to growth in productivity. Only the IT and manufacturing sectors made positive contributions in both periods. These data point to Spanish productivity as a whole having been heavily affected by that of the least productive sectors[7].

The question arises as to whether this pattern was peculiar to Spain or whether it was also seen in other European countries. To answer this question we compared productivity trends in Ireland, which experienced a property boom and bust similar to Spain's. In Figure R.1.5 we see how the Irish construction industry showed a trend similar to Spain's: a sharp fall in productivity in the boom years and recovery in the crisis. However, the fact that Ireland was less dependent on construction than Spain, and the greater contribution made by the productivity of other sectors such as manufacturing, IT and telecoms, were enough to neutralise the draining effect of construction on overall productivity in the period 1995-2007.

7: There is currently a debate in Spain on whether it should change its production model in order to improve productivity. Figures such as R.1.4 and R.1.5 may lead to the interpretation that indeed what lies behind Spain's low productivity is an excessive allocation of resources to the least productive sectors. However, recent studies such as those of García-Santana et al (2016) and Picazo et al (2016) have found evidence to suggest that the low productivity of the Spanish economy might be caused more by poor redistribution of resources among businesses in the same sector than by poor redistribution among sectors.

Figure R.1.5
Ireland: contribution to growth in productivity be sector* (in pp)



* Note: productivity of non-agricultural sectors excluding real estate services
Source: BBVA Research based on OECD data

Spain is the country with the most erratic productivity of those studied (Table R.1.2). In the period 1995-2007 it was the country in which productivity declined most (by 4.08%). And in the period 2008-2014 it was the country with the biggest increase (6.34%). This, plus the comparatively greater relative weight of the sector, makes the impact of these changes on the economy as a whole all the heavier[8]. Another interesting fact illustrated by Table R.1.2 is that, looking at the period 1995-2014 as a whole construction productivity did not evolve more unfavourably than in other countries. In fact productivity in Italy and France fell by more than it did in Spain on average. In this respect the Netherlands and the UK had the most productive construction industries of the sample between 1995 and 2014. What we do see in all the countries analysed is that labour productivity in the construction industry has been lower than that of the rest of the economy in the past 25 years, comparing the whole period 1995-2014.

Table R.1.2
Productivity of the construction industry: GVA per hour worked (%, average annual growth)

	Spain		Italy		France		Germany	
	Total	Constr.	Total	Constr.	Total	Constr.	Total	Constr.
1996-2007	0.21	-4.08	0.44	-0.98	1.76	0.20	1.90	-0.07
2008-2014	1.73	6.34	0.17	-0.67	0.57	-2.33	0.49	0.83
1996-2014	0.77	-0.24	0.34	-0.86	1.32	-0.73	1.38	0.26

Source: BBVA Research based on OECD data

Table R.1.2 (cont.)
Productivity of the construction industry: GVA per hour worked (%, average annual growth)

	Ireland*		The Netherlands		UK	
	Total	Constr.	Total	Constr.	Total	Constr.
1996-2007	2.60	-2.29	1.67	1.53	2.10	0.73
2008-2014	2.21	3.43	0.57	0.31	-0.01	0.19
1996-2014	2.43	0.21	1.26	1.08	1.32	0.53

*Note: data since 1999
Source: BBVA Research based on OECD data

Total factor productivity

Labour productivity is a partial measure, which does not allow us to distinguish which part of its growth is due to a greater accumulation of factors and which to efficiency improvements in the use of these factors. In order to differentiate these effects, growth accounting and Total Factor Productivity (TFP) are calculated. Our analysis has used the EU KLEMS[9] database, which breaks down a sector's growth in value added into the increase in the volume of work, measured in number of hours, and the increase in its quality[10]. The increase in the quality of labour is determined by three other factors: i) improvements in the workforce's skills; ii) increases in capital allocations per hour worked and iii) TFP. Table R.1.3 shows the growth in value added of the main productive sectors of the Spanish economy and their contributions to this growth.

8: Between 1995 and 2007, GVA of construction in Spain was equivalent to 11.7% of GDP, as an annual average, whereas in the euro zone as a whole it was 5.9%. Between 2008 and 2015 its weight fell to an annual average of 7.9% of GDP in Spain while in the euro zone as a whole it held steady at 5.5% of GDP.
9: The methodology applied by EU KLEMS is based on the seminal work of Jorgenson and Griliches (1967).
10: What we refer to as the quality of labour is known as labour factor productivity in the literature. To avoid confusion with labour productivity as analysed in previous sections, we prefer to use the concept labour factor quality.

Table R.1.3
Spain: Growth* in GVA and contributions to growth by sector

	Growth in GVA	Hours Worked	Quality of Work	Skills Improvements	ICT K per hour	NON-ICT K per hour	TFP	Knowledge Economy
	a = b+c	*b*	*c = d+e+f+g*	*d*	*e*	*f*	*g*	*h = d+e+g*
1995-2007								
TOTAL (TOT)	3.47	1.92	1.53	0.33	0.44	1.40	-0.65	0.13
Agriculture (A)	0.71	-0.77	1.48	0.18	0.01	0.53	0.76	0.95
Manufacturing (C)	2.25	0.39	1.86	0.38	0.32	0.86	0.30	0.99
Energy Supplies (D-E)	3.63	0.85	2.78	0.12	0.18	1.81	0.67	0.97
Construction (F)	4.82	4.50	0.32	0.24	0.15	2.05	-2.12	-1.74
Automotive sales and repairs (G)	4.22	2.08	2.14	0.45	0.34	1.42	-0.07	0.72
Information and communications (J)	5.50	1.40	4.10	0.58	1.53	2.38	-0.39	1.72
Finance and insurance (K)	5.94	0.48	5.46	0.13	1.27	-0.12	4.19	5.58
Real estate (L)	3.91	0.87	3.04	0.06	0.08	3.41	-0.52	-0.37
Professional & administrative (M-N)	4.84	5.57	-0.73	0.65	0.77	1.37	-3.51	-2.10
Public Admin. & other services (O-U)	2.89	1.88	0.88	0.38	0.40	0.71	-0.61	0.17
Public Admin. (O)	2.55	0.83	1.72	0.65	0.43	0.50	0.14	1.22
2008-2009								
TOTAL (TOT)	-1.31	-1.73	0.43	0.52	0.20	1.15	-1.44	-0.72
Agriculture (A)	-2.07	-1.67	-0.40	0.18	0.00	-0.29	-0.29	-0.11
Manufacturing (C)	-7.99	-5.42	-2.57	0.93	0.10	0.43	-4.03	-3.00
Energy Supplies (D-E)	0.77	0.54	0.23	0.22	0.05	1.99	-2.03	-1.77
Construction (F)	-4.27	-10.23	5.96	0.85	0.05	1.51	3.55	4.45
Automotive sales and repairs (G)	-0.55	-2.08	1.53	0.52	0.06	0.46	0.50	1.07
Information and communications (J)	0.13	0.94	-0.81	0.50	0.23	0.65	-2.19	-1.46
Finance and insurance (K)	-0.55	-0.19	-0.35	0.47	1.47	4.38	-6.67	-4.73
Real estate (L)	0.42	-0.10	0.52	0.09	-0.01	2.67	-2.23	-2.15
Professional & administrative (M-N)	-0.78	1.97	-2.76	0.78	0.29	0.56	-4.40	-3.32
Admin. Public & other services (O-U)	3.37	2.53	0.90	0.28	0.20	0.72	-0.30	0.18
Admin. Admin. (O)	3.99	3.53	0.46	0.07	0.28	0.66	-0.55	-0.20

* The growth rates are the arithmetic means of the annual growth rates. Contributions are in percentage points
Source: BBVA Research based on EU KLEMS data

Available data allow us to analyse only up to 2009, so in order to be consistent with the foregoing analysis, and bearing in mind the significant differences between periods, we have differentiated the analysis into the periods 1995-2007 and 2008-2009.

During the boom period of 1995-2007, the sectors in which GVA grew most were construction, professional services, financial services and ICT. If we analyse the growth pattern of these sectors, we see a clear difference between the behaviour of the construction and professional services sectors on the one hand and financial services and ICT on the other. In the first two, growth is explained almost entirely by the increase in the number of hours worked, with the contribution from quality of labour being practically immaterial. The opposite is the case in the finance and ICT sectors. In these sectors it is the quality of labour and not the quantity that makes the real contribution to growth.

This translates into the construction and professional services sectors showing greater contractions of TFP. This result is very similar to that obtained by analysing labour productivity. Moreover, growth accounting reveals that the contribution of non-technological capital was much more than that of technological capital. This shows that the sector's strong growth in the period 1995-2007 was basically due to the intense accumulation of factors, mainly labour, and non-productive capital, and not to increased technological development as was the case in other productive sectors[11].

If we compare the Spanish construction industry with that of other major European countries (Table R.1.4) we also see that Spain's TFP declined by more than that of any other country during the boom years.

Table R.1.4
Spain: Growth* in GVA and contributions to growth by sector

	Growth in GVA	Hours Worked	Quality of Work	Skills Improvements	Technological K per hour	Non-technological K per hour	TFP	Knowledge Economy
	a = b+c	*b*	*c = d+e+f+g*	*d*	*e*	*f*	*g*	*h = d+e+g*
				1995-2007				
The Netherlands	1.05	1.27	-0.22	0.49	0.22	0.34	-1.27	-0.56
UK	2.13	0.87	1.25	0.25	0.17	0.60	0.23	0.65
Germany	-2.87	-2.66	-0.21	0.18	0.02	-0.05	-0.36	-0.16
Italy	1.84	1.66	0.19	0.03	0.14	1.14	-1.12	-0.95
France	1.10	0.77	0.33	0.19	0.14	0.41	-0.41	-0.08
Spain	4.82	4.50	0.32	0.24	0.15	2.05	-2.12	-1.74
				2008-2009				
The Netherlands	-1.25	0.04	-1.29	-0.16	0.07	0.43	-1.63	-1.72
UK	-8.68	-2.70	-5.98	1.13	0.02	-0.12	-7.02	-5.86
Germany	-3.45	-0.17	-3.28	0.22	0.07	-0.10	-3.48	-3.19
Italy	-5.60	-1.73	-3.88	0.44	0.05	0.14	-4.50	-4.02
France	-3.91	0.54	-4.46	0.17	0.07	0.80	-5.50	-5.25
Spain	-4.27	-10.23	5.96	0.85	0.05	1.51	3.55	4.45

* The growth rates are the arithmetic means of the annual growth rates. Contributions are in percentage points
Source: BBVA Research based on EU KLEMS data

However, although Spain shows the smallest contribution of productivity in the period, productivity in construction contracted in all countries except the UK. However, Spain's poor productivity would be explained by greater growth of hours worked.

The period of expansion covers 12 years of information, allowing a more complete analysis; however for the period of adjustment we have data for only two years, 2008 and 2009. This prevents us from drawing conclusions as to what exactly happened during the years of correction (2008-2014), but it does allow us to see how the sectors and the other countries reacted in the first few years of the crisis.

In terms of sectors, during the period 2008-2009 two facts stand out: Firstly, that the sectors which had relied most on knowledge and technological development for their growth during the period of expansion, such as the finance and ICT sectors, were those that contracted least in these two years of adjustment. Secondly, that TFP of the

11: García-Santana et al (2016) find evidence to suggest that in Spain resources have not always gone to the businesses that invested most in technological capital, training and technology. And these results are even more severe in the construction sector.

construction industry grew at a very high rate, the highest of any sector. Thus it seems that the volatility of the sectors that are most intensive in hours worked and least intensive in quality of labour is much higher than that of the sectors in which the quality of labour is more significant.

Bearing in mind the characteristics of the industry, the strong growth in productivity in these two years was due not to any technological leap, but to the sharp contraction in employment. If we analyse the quality of labour, we see that investment in capital per hour of employment falls for both technological and non-technological capital.

From these results we infer that the construction industry is highly labour-intensive and, more than any other sector, resorts to the labour factor to adjust activity to the different phases of the economic cycle.

This behaviour is similar to the pattern observed internationally (Table R.1.4). It is striking that in all the other countries compared, GVA and productivity fall at the same time. In Spain, the sharp fall in GVA was accompanied by a significant upturn in productivity. The reason for this is that in the other countries the adjustment of the contribution of hours worked is more moderate than in Spain, and most of the adjustment is explained by the quality of labour.

Another interesting point that we observe is the appreciable improvement in the skills of the workforce in the construction industry during the period 2008-2009. Their 0.24 pp contribution to GVA growth in the boom years rose to 0.85 pp in 2008-2009. The explanation for this could be that the contraction of employment was largely centred on the least skilled employees, the segment whose numbers had particularly increased during the last property boom.

Table R.1.5
Spain: Level of education in the economy as a whole and in the construction industry (2002)

	2002			
	% Basic education only		% 15-29 years	
	Construction	Total	Construction	Total
SP	73.0	51.0	31.5	26.2
NETH	43.9	29.3	26.5	26.3
RU	27.6	25.5	23.9	26.0
FRA	37.7	28.3	22.9	21.7
ITA	71.5	45.8	22.9	19.4
GER	17.5	15.9	23.3	20.7

Source: BBVA Research based on EU KLEMS data

Table R.1.5 (cont.)
Spain: Level of education in the economy as a whole and in the construction industry (2009)

	2009			
	% Basic education only		% 15-29 years	
	Construction	Total	Construction	Total
SP	60.4	40.5	28.8	19.5
NL	37.4	25.1	24.0	25.6
RU	22.9	19.5	26.5	24.3
FRA	31.6	22.9	28.0	20.9
ITA	61.1	36.5	21.4	15.0
GER	15.1	14.1	21.5	21.0

Source: BBVA Research based on EU KLEMS data

In fact, in the Spanish construction industry, the percentage of young people with only basic education in the boom years was much higher than in the rest of the Spanish economy and in other major European countries with the exception of Italy (Table R.1.5). In 2002, the percentage of employees with only basic education was 73% in Spain's construction industry, whereas in Germany's it was 18%. With the onset of the recession we see how in all countries the percentage of employees with only basic education falls, in the case of Spain from 73% in 2002 to 60% in 2009. This confirms that young people with only basic education were the worst affected by the crisis.

Another interesting aspect that we observe when comparing the level of education in the Spanish construction industry with others sectors and

countries, is that in all the countries of the sample, the qualifications of the workforce in the construction industry are less than the average for the economy as a whole, Germany being the country with the smallest difference. Moreover, although the crisis improved the level of qualifications of the construction sector's workforce, in 2009 Spain was still far below the levels of Germany, the UK, the Netherlands and France.

Closing Remarks

The first thing to highlight is that the rate of growth in the productivity of the construction industry has historically been lower than that of the rest of the Spanish economy.

We have also seen that the growth in the productivity of the construction industry is one of the most volatile in the whole economy. During the expansive cycle of 1995-2007 it was the sector in which it deteriorated most, while in the period 2008-2014 it was the sector with the sharpest upturn. This is so at both national and international level. The analysis of TFP shows that sector grew and contracted faster by adjusting the intensity of its productive factors, especially the quantity of labour, and not by changing its productive efficiency.

When we compare the industry internationally, we see that Spain's growth in productivity for the period 1995-2014 was not the worst of the sample. Italy and France show relatively low growth, while UK, Germany and the Netherlands are those with the highest growth rates. What is common to all countries however is that growth in productivity of the construction industry has been historically lower than that of the rest of the economy. On this point, growth accounting shows how in nearly all countries construction has grown by accumulating productive factors, especially employment and non-productive capital, and not by developing new technological processes.

As construction gradually recovers, it would be positive for both the industry and for the economy as a whole, the sector's growth to be increasingly underpinned by the companies that bet most on technological capital, training and knowledge.

Bibliography

García-Santana, M., Moral-Benito, E., Pijoan-Mas, J., and Ramos, R., (2016). Growing like Spain: 1995-2007. Barcelona GSE Working Paper 888. March 2016.

Gil-Pareja, S., Llorca-Vivero, R., and Picazo-Tadeo, A., (2016). Crecimiento y productividad en la economía valenciana. Papeles de Economía Española, Nº 148, abril (2016)

Mas, M., and Robledo, J.C., (2010). Productividad. Una perspectiva internacional y sectorial. BBVA Foundation.

Measuring Productivity. Measurement of Aggregate and Industry-Level Productivity Growth. (2001). OECD Manual.

O'Mahony, M., and Timmer, M.P., (2009). Output, Input and Productivity Measures at the Industry Level: The EU KLEMS database. The Economic Journal, 119 (June).

Pekuri, A., Haapasalo, H., and Herrala, M., (2011). Productivity and Performance Management – Managerial Practices in the Construction Industry. Journal of Performance Management, 2011, Vol.1, 39-58

Sanaú-Villarroya, J., Barcenilla-Visús, S., and López-Pueyo, C., (2006). Productividad Total de los Factores y Capital Tecnológico: Un Análisis Comparado. Productividad y Competitividad de la Economía Española. March-April 2006. No. 829.

Timmer, M., Moergastel, T., Stuivenwold, E., Ypma, G., O'Mahony, M., and Kangasniemi, M. (2007). EU KLEMS Growth and Productivity Accounts. Version 1.0. Part I Methodology.

DISCLAIMER

This document has been prepared by BBVA Research Department, it is provided for information purposes only and expresses data, opinions or estimations regarding the date of issue of the report, prepared by BBVA or obtained from or based on sources we consider to be reliable, and have not been independently verified by BBVA. Therefore, BBVA offers no warranty, either express or implicit, regarding its accuracy, integrity or correctness.

Estimations this document may contain have been undertaken according to generally accepted methodologies and should be considered as forecasts or projections. Results obtained in the past, either positive or negative, are no guarantee of future performance.

This document and its contents are subject to changes without prior notice depending on variables such as the economic context or market fluctuations. BBVA is not responsible for updating these contents or for giving notice of such changes.

BBVA accepts no liability for any loss, direct or indirect, that may result from the use of this document or its contents.

This document and its contents do not constitute an offer, invitation or solicitation to purchase, divest or enter into any interest in financial assets or instruments. Neither shall this document nor its contents form the basis of any contract, commitment or decision of any kind.

In regard to investment in financial assets related to economic variables this document may cover, readers should be aware that under no circumstances should they base their investment decisions in the information contained in this document. Those persons or entities offering investment products to these potential investors are legally required to provide the information needed for them to take an appropriate investment decision.

The content of this document is protected by intellectual property laws. It is forbidden its reproduction, transformation, distribution, public communication, making available, extraction, reuse, forwarding or use of any nature by any means or process, except in cases where it is legally permitted or expressly authorized by BBVA.

This report has been produced by the Spain Unit

Chief Economist for Developed Economies
Rafael Doménech
r.domenech@bbva.com
+34 91 537 36 72

Spain
Miguel Cardoso
miguel.cardoso@bbva.com
+34 91 374 39 61

Ignacio Archondo
ignacio.archondo@bbva.com
+34 91 757 52 78

Joseba Barandiaran
joseba.barandia@bbva.com
+34 94 487 67 39

Ignacio Belenguer
ignacio.belenguer@bbva.com
+34 91 757 52 78

Juan Ramón García
juanramon.gl@bbva.com
+34 91 374 33 39

Félix Lores
felix.lores@bbva.com
+34 91 374 01 82

Antonio Marín
antonio.marin.campos@bbva.com
+34 648 600 596

Myriam Montañez
miriam.montanez@bbva.com
+34 638 80 85 04

Matías José Pacce
matias.pacce@bbva.com
+34 647 392 673

Virginia Pou
virginia.pou@bbva.com
+34 91 537 77 23

Juan Ruiz
juan.ruiz2@bbva.com
+34 646 825 405

Pep Ruiz
ruiz.aguirre@bbva.com
+34 91 537 55 67

Camilo Andrés Ulloa
camiloandres.ulloa@bbva.com
+34 91 537 84 73

With the contribution of:

Economic Scenarios
Julián Cubero
juan.cubero@bbva.com

Europe
Miguel Jiménez
mjimenezg@bbva.com

Financial Systems
Ana Rubio
arubiog@bbva.com

Financial Inclusion
Alfonso Arellano
alfonso.arellano.espinar@bbva.com

José Félix Izquierdo
jfelix.izquierd@bbva.com

Macarena Ruesta
esperanza.ruesta@bbva.com

BBVA Research

Group Chief Economist
Jorge Sicilia Serrano

Developed Economies Area
Rafael Doménech
r.domenech@bbva.com

Spain
Miguel Cardoso
miguel.cardoso@bbva.com

Europe
Miguel Jiménez
mjimenezg@bbva.com

US
Nathaniel Karp
Nathaniel.Karp@bbva.com

Emerging Markets Area

Cross-Country Emerging Markets Analysis
Alvaro Ortiz
alvaro.ortiz@bbva.com

Asia
Le Xia
le.xia@bbva.com

Mexico
Carlos Serrano
carlos.serranoh@bbva.com

Turkey
Alvaro Ortiz
alvaro.ortiz@bbva.com

LATAM Coordination
Juan Manuel Ruiz
juan.ruiz@bbva.com

Argentina
Gloria Sorensen
gsorensen@bbva.com

Chile
Jorge Selaive
jselaive@bbva.com

Colombia
Juana Téllez
juana.tellez@bbva.com

Peru
Hugo Perea
hperea@bbva.com

Venezuela
Julio Pineda
juliocesar.pineda@bbva.com

Financial Systems and Regulation Area
Santiago Fernández de Lis
sfernandezdelis@bbva.com

Financial Systems
Ana Rubio
arubiog@bbva.com

Financial Inclusion
David Tuesta
david.tuesta@bbva.com

Regulation and Public Policy
María Abascal
maria.abascal@bbva.com

Digital Regulation
Álvaro Martín
alvaro.martin@bbva.com

Global Areas

Economic Scenarios
Julián Cubero
juan.cubero@bbva.com

Financial Scenarios
Sonsoles Castillo
s.castillo@bbva.com

Innovation & Processes
Oscar de las Peñas
oscar.delaspenas@bbva.com

Contact details:

BBVA Research
Azul Street, 4
La Vela Building - 4 and 5 floor
28050 Madrid (Spain)
Tel.: +34 91 374 60 00 and +34 91 537 70 00
Fax: +34 91 374 30 25
bbvaresearch@bbva.com
www.bbvaresearch.com