The demand-led pattern of economic growth of the Spanish economy (1999-2017): understanding the change from recession to recovery.

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Abstract

Seven years after the onset of the economic crisis, Spain finally recovered positive GDP growth in 2014. There is an important debate on the factors explaining this recovery of the Spanish economy. National and European authorities exhibit the Spanish case as an example of the "success" of austerity policies and structural reforms.

In order to test to what extent the recovery currently under way is an export-led recovery due to recent supply-side structural reforms, this paper will present a demand-led growth model based on the Sraffian supermultiplier, to decompose the rate of GDP growth by contribution of demand-side factors. We also incorporate different econometric estimations, based on dynamic regression models for calculating investment and net exports functions.

Our analysis shows that the current recovery it is not mainly based neither on the contribution of the external sector, nor determined by recent supply-side structural reforms. The current recovery is fundamentally driven by the autonomous components of domestic demand, which have boosted investment up through the increase in the use of the installed capacity. The end of strong fiscal austerity, together with "tailwinds" (low interest rates and low oil prices), have also contributed to the return of economic growth during 2014-2016.

Keywords: Business cycle, Spanish economy, investment, oil prices, tailwinds

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The demand-led pattern of economic growth of the Spanish economy (1999-2017): understanding the change from recession to recovery.

1. Introduction

In the last ten years, after the onset of the economic crisis, the macroeconomic evolution of the Spanish economy has gone through two different periods.

Between 2008 and 2013, Spain suffered a double-dip recession, with dramatic consequences on GDP and employment. The origins of the first recession are linked to the imbalances accumulated during the expansive period of 1995-2007, following the creation of the monetary union (private indebtedness, housing bubble, financial fragility and current account deficit). The causes of the second recession can be attributed to the implementation of extremely restrictive (and mistaken) macroeconomic policies (fiscal austerity and internal devaluation). During these years, Spain has been one the countries most affected by the economic crisis, especially in terms of employment losses.

However, at the end of the year 2013 the economy recovered positive GDP growth, and has been growing clearly above the Eurozone average in 2015 and 2016 (3.2% versus 1.9%).

There is an ongoing debate on the factors explaining this recovery of the Spanish economy. National and European authorities exhibit the Spanish case as an example of the "success" of austerity policies and structural reforms (Government of Spain, 2017; European Commission, 2017). Other approaches tend to call into question this "success" (Uxó, Febrero and Bermejo, 2016), pointing out other factors to explain current growth. The aim of this paper is to shed light on this debate, and to help identify the determinants of the current growth of the Spanish economy.

To identify the factors that explain the economic growth of the economy during the period of 2014-2017, we present a demand-led growth model to decompose the rate of GDP growth by contribution of demand-side factors. We use the analytical framework corresponding to the Sraffian supermultiplier model. According to this model, economic growth is driven by demand-side factors and, more specifically, by the autonomous components of demand (credit-finance consumption, public spending and exports). We will apply this theoretical framework in order to test to what extent the recovery currently under way is an export-led recovery due to recent supply-side structural reforms or, on the contrary, it is a demand-led recovery explained by other factors.

In addition to using the methodology corresponding to the Sraffian supermultiplier model, we will deepen our analysis with different econometric tests, by estimating several investment and net exports functions based on dynamic regression models following the Box-Jenkins methodology for time series.

According to mainstream approaches, current account and financial imbalances accumulated by Eurozone peripheral countries during the period prior to the crisis were interpreted as the result of a loss of competitiveness towards core countries, due to a greater increase in unit labor costs and public spending. In order to correct those macroeconomic imbalances, EU and Spanish authorities insisted on the need to address strict fiscal austerity packages as well as an internal devaluation policy, through structural reforms aimed at reducing wages.

This policy agenda, focused on cuts in public spending and deepening labor market liberalization, would have resulted in a 'healthy' export-led economic recovery according to EU and Spanish authorities (Government of Spain, 2017; European Commission, 2017).

The main structural reforms carried out in recent years have been the labor market reforms of 2010 and, in particular, of 2012. In a nutshell, the 2010 reform facilitated the procedures and lowered the costs of dismissal (Cruces *et al*., 2015). The 2012 reform went much further, significantly reducing job protection legislation (dismissal costs and procedures). Moreover, the 2012 reform decentralized the wage setting mechanism to the company level, giving preference to company-level agreements over sectoral and provincial agreements. The reform deeply facilitated unilateral decisions by employers in collective bargaining, as well as the application of opt-out clauses by firms. A greater restriction on the criteria used for the extension of collective agreements is legislated, and ultra-activity was also substantially reduced.

The 2012 labor market reform achieves the intended objective: the decentralization of collective bargaining entails a sizeable cut in wages and, therefore, a significant reduction in unit labor costs. Between 2012 and 2017, Spanish unit labor costs have fallen by almost 10 per cent relative to the Eurozone average, and 17 per cent relative to the German benchmark.

The reasons why, according to the Spanish and European authorities, these structural reforms are strongly driving economic growth in Spain are fundamentally three:

1. The abovementioned reduction in unit labor costs relative to the EU core countries leads to a reduction in export prices and thus to an improvement in price competitiveness. The recovery of the competitiveness lost before the crisis determines a strong export growth and, as a result, an export-led recovery.

2. Reduction in unit labor costs drives economic growth because -according to mainstream approaches- there is a structural and important wage/employment trade-off in the Spanish economy, so wage constraint is needed to create jobs (Boscá *et al*., 2017). Indeed, Spanish and EU institutions consider that recent labor market reforms have caused a shift in the Okun curve, so that the Spanish economy now needs a lower GDP growth to reduce its unemployment rate than in the previous cycle expansion, due to wage devaluation. Therefore, wage reduction would explain job creation, and these new jobs (even if they are low-wage employments) would increase private consumption due to the higher propensity to consume of newly recruited workers (albeit compensation per employee may fall).

3. Wage devaluation has increased profit margins and profitability. This increase in corporate profitability, one of the fundamental determinants of investment, would have boosted gross fixed capital formation in corporations.

The Spanish and European authorities consider that these three paths caused by wage devaluation have led to a new and more robust model that has corrected the structural imbalances of the previous growth pattern (external deficit, high private leverage and inflationary pressures), since it is based on a greater weight of net exports.

We will verify in our research to what extent these three ways of influence are the main factors in explaining the Spanish economic recovery. We will also check the explanatory capacity of other possible factors driving economic growth in the 2014-2017 period.

Our initial hypothesis considers that structural reforms, particularly the internal devaluation policy, are not the key drivers to understand the economic recovery of Spain.

The Spanish economy does not experience neither an export-led recovery, nor an income policy-led recovery driven by profitability, but a demand-led pattern of growth driven by the autonomous components of domestic demand.

Furthermore, we also incorporate in our analysis the role of other growth factors -alternative to structural reforms- such as the different "tailwinds" coming from the external side (oil prices, tourism and monetary policy). Diverse empirical studies conducted by the IMF (2017) and the Bank of Spain (2017) clearly point out to the importance of these "tailwinds" to explain differential GDP growth during the period of 2014-2017 (relative to the rest of the Eurozone).

The paper is organized in six sections. After this introduction, the second section presents the stylized facts of the Spanish economic recovery after the crisis. The third section explains the analytical framework of the Sraffian supermultiplier model. In section four we analyze the main determinants of economic growth during the 1999-2016 period from a demand-side point of view. We highlight the importance of autonomous components and internal demand factors, and we present estimation results of the investment function. The fifth section of the paper addresses the analysis of the external factors and how tailwinds have contributed to the return of economic growth. The final section summarizes our conclusions.

2. Spanish economic growth in perspective

We examine GDP growth during the last two decades by demand-side components and sectors. To this end, we present three stylized facts: 1) the growth rates of the main components of aggregate demand; 2) their contribution to GDP growth; and 3) a close look at the evolution of the leading macroeconomic variables during the recovery period of 2014-2016.

In order to present the growth rates of the main components of aggregate demand, we adapt the National Accounts statistics in different ways, so that we can correctly compute the evolution of these components. Unfortunately, we only have data of Financial and Non-Financial Accounts for the Institutional Sectors since 1999. Therefore, our period of analysis is limited by this restriction.

To analyze household consumption, we follow Martinez and Urtasun's (2017) methodology for calculating household spending by product type, using Annual Spanish National Accounts (INE, 2017). We distinguish four categories of household consumption: staple goods, non-durable goods (without tourist`s consumption), durables and semi-durables, and finally, quasi-fixed expenditure. Furthermore, we also divide Gross Capital Formation (GCF) in four other categories: non-financial corporations, households, general government and financial companies. Finally, we disaggregate exports and imports of tourist and non-tourist services, given the enormous importance of the former in the Spanish economy. The result of these calculations is presented in Table 1.

Table 1. Main components of aggregate demand (year-to-year growth rate, %)			
	1999-2007	2008-2013	2014-2016
Gross domestic product	3,8	-1,3	2,6
Households consumption	3,6	-2,2	2,6
- Staple goods	1,3	-0,7	2,3
- Non-durable goods (without tourist consumption)	4,2	-3,8	3,0
- Durables and semi-durables	3,1	-4,4	3,8
- Quasi-fixed expenditure	5,4	1,5	1,0
Non-profit institutions serving households consumption (NPISH)	4,6	0,5	3,1
General government consumption	5,0	0,7	0,8
Gross capital formation	5,9	-7,7	5,2
- Non-financial corporations	7,2	-3,1	6,2
- Households	11,2	-18,4	7,7
- Government	7,9	-9,8	-1,4
- Financial companies	4,9	80,5	10,6
Exports of goods and services	4,8	1,7	4,5
- Exports of goods	5,3	2,6	3,7
- Exports of services	3,8	-0,2	6,5
- Exports of non-tourist services	6,4	0,1	7,2
- Exports of tourist services	0,8	-0,5	5,5
Imports of goods and services	7,0	-4,1	5,1
- Imports of goods	7,2	-3,8	4,6
- Imports of services	6,6	-5,4	7,5
- Imports of non-tourist services	5,7	-5,7	5,9
- Imports of tourist services	10,7	-4,4	12,8
Source: Own elaboration from the Quarterly National Accounts (INE Statistics; update 09/2017)			

Table 1 shows year-to-year growth rate in constant terms; we distinguish three periods. First, the expansion of 1999-2007 is characterized by the dominant role of domestic demand, notably GCF (residential investment) and consumption of households. During these years, debt-led growth determined a strong domestic demand, which entailed an increase in imports faster than exports, thus deepening the current account deficit.

Secondly, the period of the crisis (2008-2013) is characterized by a sharp collapse of domestic demand and, thus, by a sharp adjustment of the current account deficit. The external sector experiences positive contributions to GDP growth, but not because of the growth of exports but because of the collapse of imports.

During the period of recovery (2013-2016), we observe the recuperation of domestic demand and, again, a higher growth of imports than exports (see Table 1). As in previous expansions, domestic demand remains as the key factor explaining economic growth, with household

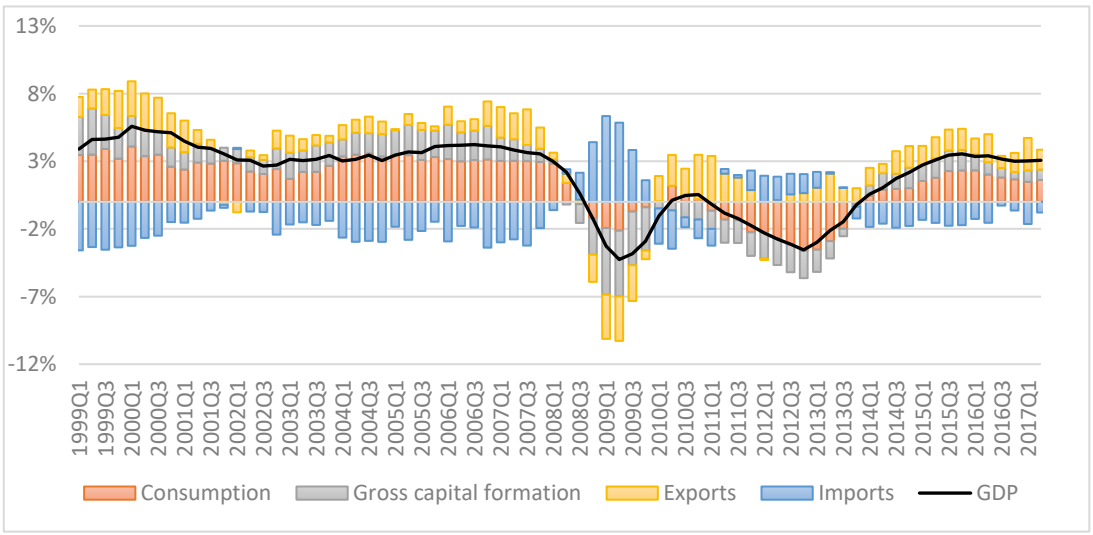
investment and household consumption (particularly in durables and semi-durables goods) being the most dynamic variables.

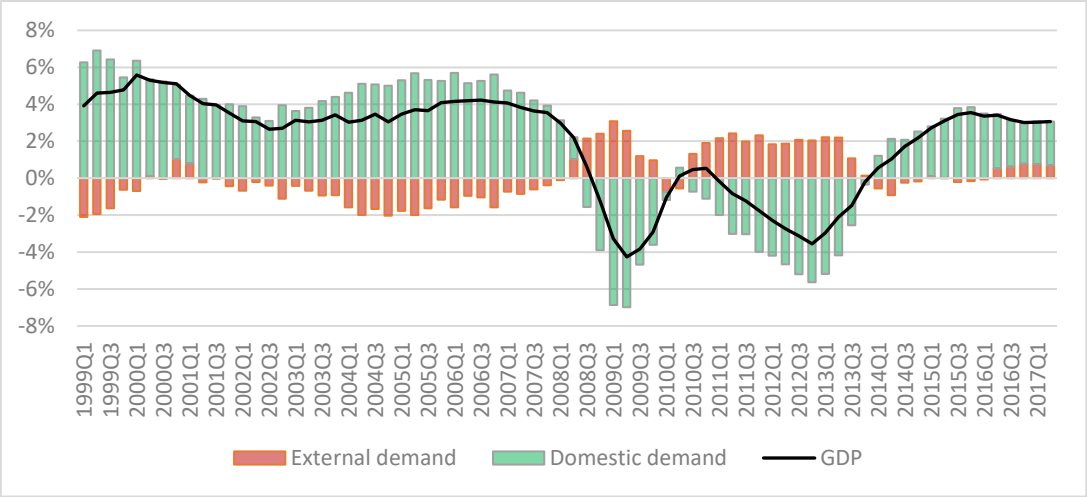
In Figure 1 we present the contributions to GDP growth of the different components of aggregate demand. We observe two persistent facts. First, the main driver of GDP growth is domestic demand, also in the current recovery phase. Second, the evolution of net external demand is counter-cyclical.

Traditionally, the Spanish economy has rested on a pattern of growth driven by domestic demand, where external demand does not make a positive contribution. Investment is the most volatile variable in the economic cycle, and consumption is the least volatile. This implies that investment determines cyclical variations in output. At the same time, consumption has a higher share of aggregate demand than investment, determining therefore the trend evolution of output.

The Spanish economy has a strong tendency to import goods in the expansion phases (especially capital goods and energy). Therefore, expansion phases usually lead to an intense growth of the current account deficit. In Figure 1 we see how the contribution of net exports to GDP growth falls during periods of expansion (1999-2007, for example). The contribution to GDP growth of net exports has been particularly positive during the years of the crisis, clearly showing the aforementioned counter-cyclical trend. Only in 2016, both domestic demand and net external demand record positive contributions to GDP. This fact –a recovery phase compatible with a slightly positive contribution of net exports to GDP growth– has led the Spanish and European authorities to claim the success of labor market reforms, as well as their usefulness in providing more robust and export-led growth.

Figure 1. Contributions to the growth of the Spanish economy





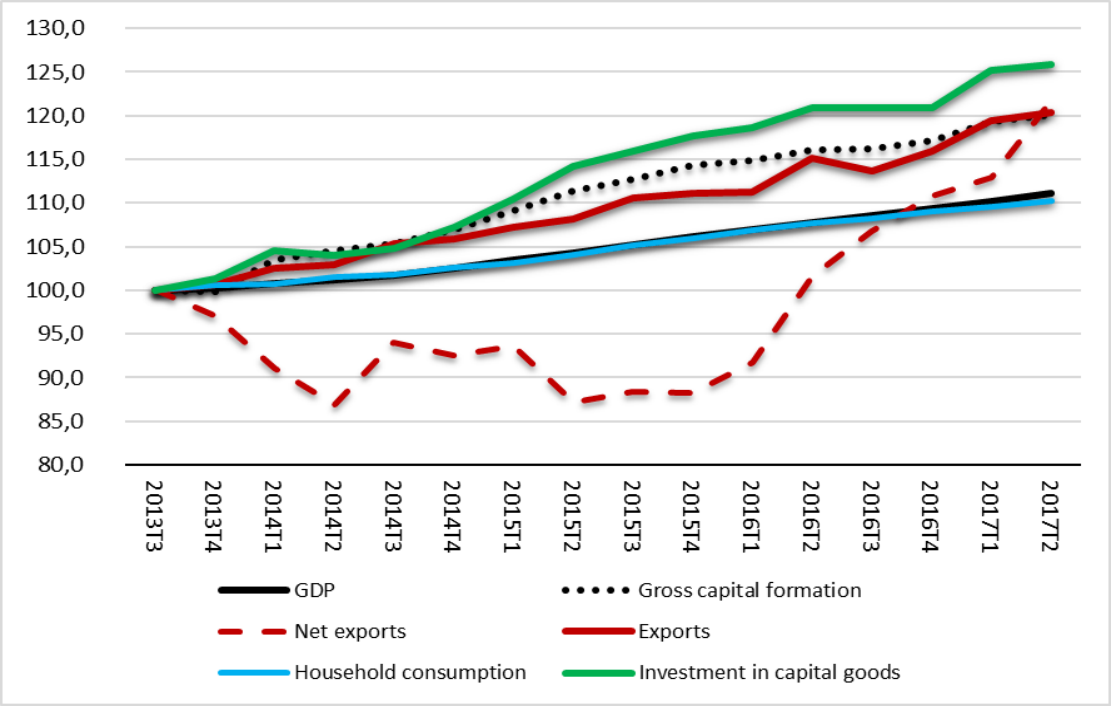
Source: Ibid.

The third stylized fact that we want to present is a close look to the leading macroeconomic variables during the recovery period of 2014-2016, from trough (2013q3) to peak (2017q2, the latest available). In Figure 2 we analyze GDP on the demand side, and we can observe how the variable that goes ahead and leads the cycle change is private investment (particularly, investment in capital goods). The evolution of exports is somewhat slower. The accumulated gross capital formation growth of 20.1% during the recovery has been mainly based on gross fixed capital formation of residential structures (23.9%) and equipment (25.9%). The latter variable is the leading indicator of the recovery, as we see in Figure 2, since it begins to grow three quarters before trough (usually, this is the most spirited variable); once investment in capital goods changes its trend, it is followed by total Gross Capital Formation and by domestic consumption (starts to grow one quarter before trough). Thus, it is possible to state that output is mainly determined by fixed investment in the short run. The pro-cyclical nature of investment is a relevant factor to explain transition to recovery.

From the point of view of the external demand there are two remarkable facts. First, we see again how net exports are markedly countercyclical (see Fig. 2), which prevents the external sector from being the engine of aggregate demand during the recovery. In the first quarters of the expansionary period, while GFCF grows apace, net exports begin a sharp decline (which does not recover until 2016)[2]. However, after 12 quarters since the trough cycle, net exports recovered a positive accumulated growth. We have already pointed out this fact: from the beginning of 2016 external demand achieves positive contributions to GDP. This is due to an increase in the growth of exports from the beginning of 2016, but specially to a significant reduction of import expenditure. This change in the pattern of net exports is not due to the internal devaluation policy. The increase in tourists and the reduction of oil prices largely explain this improvement, as we will see later.

[2] Exports, unlike the other macroeconomic variables, have continued to grow steadily throughout the crisis. They experienced a drop in 2008-2009, but in 2010 already reach the same value they had before the crisis. Since then, and given that they are fundamentally determined by the growth rate of the Eurozone partners, they have continued to grow steadily and moderately. Nevertheless, after growing already in 2011 and 2012, it cannot be said that they have determined the change of the economic cycle experienced in the third quarter of 2013.

Figure 2. Leading macroeconomic variables, from trough (2013q3) to peak (2017q2). 2013q3=100



Source: Ibid.

3. The analytical framework: the Sraffian supermultiplier model.

According to the Sraffian supermultiplier model used in our research, economic growth is driven by demand-side factors and, more specifically, by the autonomous components of demand (autonomous consumption, public spending and exports). The Sraffian supermultiplier model explains how positive changes in autonomous demand shape and determine positive changes in output (Serrano, 1995 and 1996; Trezzini, 1995 and 1998; Park, 2000; Cesaratto *et al.*, 2003; Dejuán, 2005).

The main feature of this model is to capture the distinction between autonomous and induced components of aggregate demand. The induced components of aggregate demand are those consumption expenditures "that comes as a direct consequence of the contractual (wage) incomes that are paid when firms decide to undertake production", as well as those investment expenditures "of produced means of production required to endow the economy with sufficient productive capacity to meet the level of effective demand which is expected to rule in the immediately subsequent period" (Serrano, 1995: pp. 70-71).

Autonomous components of aggregate demand are "all those expenditures that are neither financed by the contractual (wage and salary) incomes generated by production decisions, nor are capable of [directly] affecting the productive capacity of the capitalist sector of the economy" (Serrano, 1995: pp. 71). For example, autonomous consumption refer to those expenditures taking place to fund consumer necessities (utilities, health expenses, car payments and mainly durable goods).

Demand-led growth implies that growth is driven by those autonomous components of demand that don't directly generate new productive capacity in the private sector. Capacity utilization of corporations raises when firms have to adjust their production levels to new effective demand.

Hence, when effective demand experiments exogenous non-transitory increases in its autonomous components (through public spending, or exports, for example), capacity utilization remains high and corporations are encouraged to invest in new equipment and labor, creating therefore new productive capacity.

According to Serrano (1995), the autonomous component of aggregate demand is the one that, in the long run, is more independent of the supply side of the economy (i.e., output and capacity). Serrano (1995) and Cesaratto *et al.* (2003) characterize economic growth as demand-led when these conditions are met:

(i) the aggregate marginal propensity to spend in induced investment and consumption is less than one (wherefore the combined share of the induced components of aggregate demand in output is less than one)
(ii) that autonomous expenditures in the long-period are positive

This model has been used to explain historical tendencies and recent economic growth in particular case studies. Freitas and Dweck (2013) use this approach to explain long-term tendencies in the case of the Brazilian economy in the 1970–2005 period, and Pinkfuseld and Silva (2016) applied this methodology to analyze recent economic growth in Portugal (from 1999 to 2007). Several attempts have been also made to empirically test the main predictions and implications of the model (Medici (2011) for the case of Argentina, and also Girardi and Pariboni (2015), for a multi-country empirical test).

We will apply this theoretical framework to analyze the case of the Spanish economy, in order to test to what extent the recovery currently under way is an export-led recovery due to recent supply-side structural reforms or, on the contrary, it is a demand-led recovery explained by other factors.

An open economy version of the model is used in our research, following Freitas and Dweck (2013). A simple baseline formalization of the output equation, using the demand-side components available in Spanish National Accounts, is the following:

$$Y = (CHND + CHD + IH + CG + IG + IPE + X - M) \quad [1]$$

where *CHND* is household consumption of non-durables goods defined as staple goods and non-durable goods (without tourist consumption); *CHD* is household consumption of durable and semi-durables goods, including quasi-fixed consumption; *IH* is household (residential) investment; *CG* is government consumption; *IG* is government investment; *IPE* is private enterprises investment; *X* refers to exports; and *M* refers to imports.

Total imports are related to total aggregate demand as expressed in equation [2], with μ being the share of domestic content in total demand:

$$M = (1 - \mu)(CHND + CHD + IH + CG + IG + IPE + X) \quad [2]$$

It is also assumed that household non-durable consumption and corporate private investment are induced expenditures:

$$CHND = cY \quad [3]$$
$$IPE = hY \quad [4]$$

where *c* is the household propensity to consume non-durable goods as income increases, and *h* is the propensity of corporations to invest as demand increases. The autonomous component of aggregate demand is given by Z, and it equal to:

$$Z = (CHD + IH + CG + IG + X) \quad [5]$$

To obtain the equation of the supermultiplier, we substitute the expressions [3], [4] and [5] in equations [1] and [2], and we obtain the following expression:

$$Y = \left(\frac{\mu}{1 - \mu\,(c + h)}\right) Z = \alpha Z \quad [6]$$

The supermultiplier (α) and the autonomous component of aggregate demand together explain economic growth, and depend on the propensity to consume (c), the propensity to invest (h) and the share of domestic content in demand (μ). Positive changes in Z cause positives changes in output, and growth is driven by autonomous components of demand.

The decomposition formula to compute autonomous and induced determinants of economic growth is the one used by Freitas and Dweck (2013), as follows[3]:

$$\begin{aligned} g = {} & \alpha(1)\left[\frac{CHND(0)}{Y(0)}\right] g_c + \alpha(1)\left[\frac{IPE(0)}{Y(0)}\right] g_h + \alpha(1)\left[\frac{CHD(0)}{Y(0)}\right] g_{CHD} \\ & + \alpha(1)\left[\frac{IH(0)}{Y(0)}\right] g_{IH} + \alpha(1)\left[\frac{CG(0)}{Y(0)}\right] g_{CG} + \alpha(1)\left[\frac{IG(0)}{Y(0)}\right] g_{IG} \\ & + \alpha(1)\left[\frac{X(0)}{Y(0)}\right] g_X + \frac{\alpha(1)}{\mu(1)} g_\mu \end{aligned} \quad [7]$$

where *g* is the real GDP growth rate, and g_i is the corresponding growth rate of every other variable. In the expression [7] we distinguish two terms: the autonomous expenditures contribution to GDP growth and the supermultiplier contribution (i.e., the induced expenditures contribution), as follows:

$$\begin{aligned} & \text{autonomous expenditures contribution} \\ & = \alpha(1)\left[\frac{CHD(0)}{Y(0)}\right] g_{CHD} + \alpha(1)\left[\frac{IH(0)}{Y(0)}\right] g_{IH} \\ & + \alpha(1)\left[\frac{CG(0)}{Y(0)}\right] g_{CG} + \alpha(1)\left[\frac{IG(0)}{Y(0)}\right] g_{IG} + \alpha(1)\left[\frac{X(0)}{Y(0)}\right] g_X \end{aligned} \quad [8]$$

$$\begin{aligned} & \text{supermultiplier contribution} \\ & = \alpha(1)\left[\frac{CHND(0)}{Y(0)}\right] g_c + \alpha(1)\left[\frac{IPE(0)}{Y(0)}\right] g_h + \frac{\alpha(1)}{\mu(1)} g_\mu \end{aligned} \quad [9]$$

[3] In these formulas we present only variables availables in Spanish statistics (see below). For a full overview of the model see the decomposition methodology contemplated at the appendix, in Freitas and Dweck (2013).

$$g = \text{autonomous expenditures contribution} + \text{supermultiplier contribution} \quad [10]$$

As we can see in equation [4], traditional Sraffian supermultiplier models consider aggregate investment fully induced by the evolution of aggregate demand. It is the so-called accelerator effect: rising output implies increased sales and profits, greater use of installed capacity encouraging corporations to invest. That is to say, corporations invest to provide themselves with the necessary capacity to meet existing demand. Propensity to invest, *h* in equation [4], is an endogenous variable that depends on the deviations between realized and normal capacity utilization (Freitas and Dweck, 2013).

As Girardi and Pariboni (2015) point out, this is an important difference with the majority of Post-Keynesian and neo-Keleckian demand-led growth models that tend to be investment-driven. To develop a more realistic approach and to consider other explanatory factors of investment, we will later drop this assumption in our econometric tests of the investment function. We are particularly interested in testing to what extent profitability can explain –even in a context of lack of aggregate demand– the growth of investment, given that on this determinant rests much of the mainstream explanation of the Spanish recovery.

4. Demand-led growth in Spain. The role of internal demand

4.1. Decomposing GDP growth according to the Sraffian supermultiplier model

In order to analyze the recent growth of the Spanish economy, and as has already been said, we use a demand side accounting decomposition methodology rather than a supply-side approach. In this way, we can capture the distinction among autonomous and induced variables established by the Sraffian supermultiplier model.

We adapt the National Accounts statistics in different ways, so that we can correctly compute the evolution of autonomous and induced components. All variables are calculated in constant terms. Unfortunately, we only have data for the Institutional Sectors since 1999, so our period of analysis is limited by this restriction. Again, we follow Martinez and Urtasun's (2017) methodology for calculating household spending by product type, in order to analyze consumption. Unlike Freitas and Dweck (2013), and Pinkfuseld and Silva (2016) we exclude inventory changes, since this indicator is not available; however discrepancies must be small. The definitions and sources of the variables used are in the data appendix.

Among the factors included in the autonomous component of aggregate demand, we consider household consumption of durable and semi-durables goods (CHD), government consumption (GC), household investment (IH), government investment (IG) and exports (X). Household investment is included among the autonomous components of demand since is basically residential investment, deeply widespread in a country like Spain. Induced expenditures include imports (M), private corporate investment (IPE) and household consumption of non-durables goods (CHND). These two groups of factors are presented in equation [11]:

$$Y = (CHD + IH + CG + IG + X) + (CHND + IPE - M) = Z + H \quad [11]$$

And the GDP growth rate is presented in equation [12].

$$g = \alpha(1)\left[\frac{Z(0)}{Y(0)}\right]g_Z + \alpha(1)\left[\frac{H(0)}{Y(0)}\right]g_H \qquad [12]$$

Where $\left[\frac{Z(0)}{Y(0)}\right]g_Z$ is the autonomous expenditures contribution and $\left[\frac{H(0)}{Y(0)}\right]g_H$ is the supermultiplier contribution to GDP growth rate. Moreover, the dynamics of supermultiplier is expressed as the difference between the rate of growth of GDP and the contribution of autonomous expenditures.

We use this decomposition methodology to analyze recent growth in the Spanish economy. Table 2 presents the decomposition results in three periods: expansion (1999-2007), recession (2008-2013) and expansion (2014-16).

In the obtained results we can verify how domestic sector was the main source of GDP growth in the two expansionary phases, being external contribution only relevant during the recession. The external sector had a negative contribution (-0.75) in the first expansionary period of 1999-2007, and very low impact in the recovery years of 2014-2016 (0.02). In the same way, we can also see how the autonomous components of demand are the main determinants of growth, both in the expansionary phase of 1999-2007 and in the recovery of 2014-2016. Hence, the Spanish economy shows a clear domestic demand-led growth pattern, with autonomous factors being the main drivers of the demand growth.

These results are consistent with the empirical literature that has used the Sraffian supermultiplier model to analyze GDP growth tendencies. Freitas and Dweck (2013), as well as Pinkfuseld and Silva (2016), and Medici (2011) obtain similar results for the cases of Brazil, Portugal and Argentina. Girardi and Pariboni (2015) present also close results for the cases of US, France, Germany, Italy and Spain. According to these authors, economic growth is mainly driven by the autonomous components of demand, as predicted by the model.

As already said, the main determinants of growth during the period of the recovery (2014-2016) are domestic factors driven by autonomous expenditures. Consumption and investment contribute with 2.7 points of economic growth, while the contribution of the external sector is limited to 0.02 points. Among internal factors, not only the change in consumption and private investment must be noted. There is also a relevant change in fiscal policy, from a negative contribution to growth of -0.3 percentage points in the period of the crisis, to a positive one of 0.1 in the period of recovery. The end of fiscal cuts has helped the private sector to restart economic growth.

In Table 2 we also report the dynamics of the induced component of expenditure, relatively low and even negative during the 1999-2007 expansion. Induced expenses tend to be negative in Spain due to the heavy weight of imports in the growth model. The positive value experienced by the induced component of the aggregate demand in the period of 2014-2016 (equal to 0.5) is mainly due to the lowering of the oil import prices, as we will see later.

Table 2. Average annual rate of growth decomposition by business cycles, Spain, 1999–2016 (constant 2010 prices)

1999-2007	Domestic sector		External Sector	Total	Autonomous Expenditure	Induced Expenditure (Supermultiplier)
	Consumption	Investment				
CG	0,84			0,84	0,84	
IG		0,23		0,23	0,23	
CHD	0,99			0,99	0,99	
CHND	1,11			1,11		1,11
IH		0,64		0,64	0,64	
IPE		0,73		0,73		0,73
M			-1,92	-1,92		-1,92
X			1,17	1,17	1,17	
Total	2,94	1,59	-0,75	3,79	3,86	-0,07
2008-2013	**Domestic sector**		**External Sector**	**Total**	**Autonomous Expenditure**	**Induced Expenditure (Supermultiplier)**
	Consumption	**Investment**				
CG	0,11			0,11	0,11	
IG		-0,39		-0,39	-0,39	
CHD	-0,36			-0,36	-0,36	
CHND	-0,87			-0,87		-0,87
IH		-1,07		-1,07	-1,07	
IPE		-0,48		-0,48		-0,48
M			1,25	1,25		1,25
X			0,44	0,44	0,44	
Total	-1,12	-1,94	1,69	-1,37	-1,27	-0,10
2014-2016	**Domestic sector**		**External Sector**	**Total**	**Autonomous Expenditure**	**Induced Expenditure (Supermultiplier)**
	Consumption	**Investment**				
CG	0,16			0,16	0,16	
IG		-0,06		-0,06	-0,06	
CHD	0,43			0,43	0,43	
CHND	0,98			0,98		0,98
IH		0,22		0,22	0,22	
IPE		0,92		0,92		0,92
M			-1,39	-1,39		-1,39
X			1,41	1,41	1,41	
Total	1,58	1,08	0,02	2,68	2,16	0,51

Source: Own elaboration from the Annual National Accounts (update 09/2017)

Accordingly, to these results, we must reject the first idea pointed out by mainstream analysis of Spanish economic recovery, which we had expressed in the introduction as follows:

> *The above mentioned reduction in unit labor costs relative to the EU core countries leads to a reduction in export prices and thus to an improvement in price competitiveness. The recovery of competitiveness lost before the crisis determines a strong export growth and, as a result, a positive contribution of the external sector to GDP growth.*

Table 2 shows that the contribution of the external sector to GDP growth in 2014-2016, according to our methodology, is almost null (0.02), and does not come from the export side but from the import side. During the period 2014-2016 exports contribute to growth relatively similar to the period 1999-2007 (1.41 vs 1.17). The improvement of the contribution of the external sector comes to a greater extent from the reduction of the contractive effect of imports (-1.92 vs -1.39), due to the reduction of oil prices.

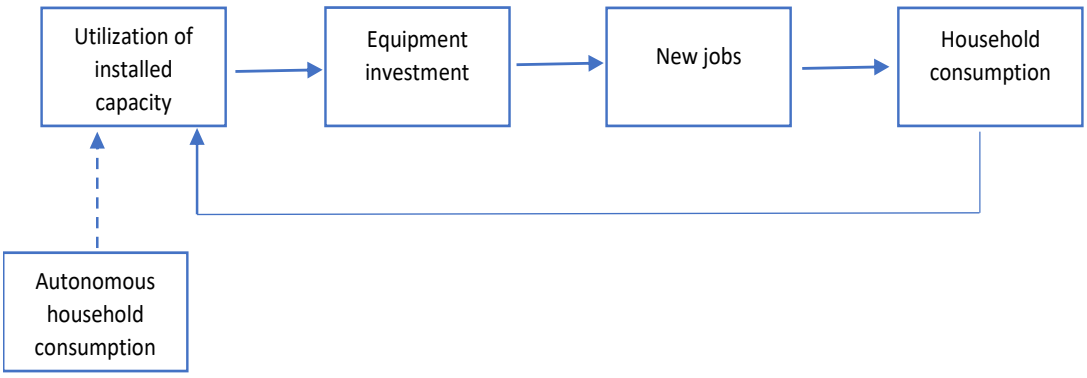
4.2. Investment, employment and consumption. The direction of causality.

Analyzing the stylized facts in section 2, we saw (Fig. 2) how the leading indicator driving economic recovery is corporate investment in equipment, which begins to grow three quarters before the GDP does. Economic recovery is therefore not initiated because of the role of net exports, but because of the traditional endogenous factors of the business cycle that make GDP to bounce up after a recession period (Mitchell, 1913, Sherman, 1991). The investment in equipment plays a decisive role in explaining this turning point.

During the years of the crisis households reduce their consumption less than their income fall, so that the average propensity to consume is increasing. Particularly, household consumption in durable goods (autonomous consumption) experiences a smaller reduction than the reduction of the income (see Table 2)[4]. As the crisis evolves, consumption and GDP fall more and more slowly until the accelerator effect of investment, based on the utilization of installed capacity, finally causes the net investment to stop falling and starts having a slight increase (first two quarters of 2013). From that point, recovery begins.

In fact, from the decomposition of GDP growth developed with the Sraffian supermultiplier model, we obtain also the value of the investment multipliers (calculated as the ratio between GDP growth and total investment contribution, see Table 2). In the first expansionary phase (1999-2007) the investment multiplier was of 2.4, hereafter in the recession phase (2008-2013) fell to 0.7 and in the second expansionary phase (2014-2016) returned to 2.5. This value of the investment multiplier in the period of 2014-2016 determines that limited increases in private investment will gradually lead to progressive increases in income and employment. The recovery emerges thanks to the increase in equipment investment to respond to years of depreciation, disappearance of companies and mergers. This initial increase in net investment during the first two quarters of 2013 will mean more jobs and, through the multiplier, higher GDP growth and consumption by the end of this year.

Diagram 1. Investment, employment and consumption. The direction of causality in the transition from recession to recovery.



Source: Own elaboration

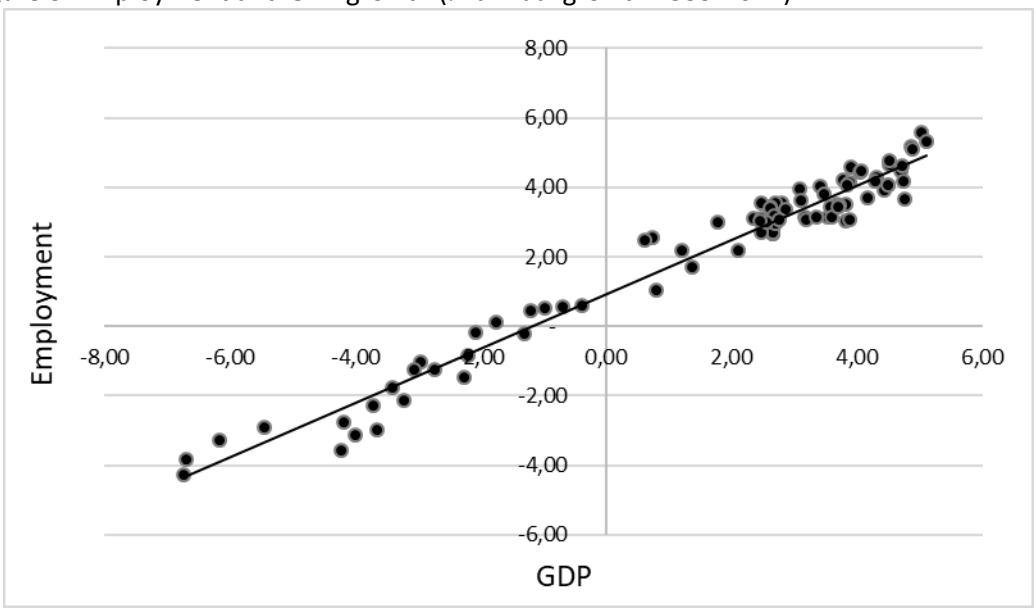
[4] The "counterweighting" role of consumption in durable goods is also reflected in the decline in the Gross Savings rate (gross saving/gross disposable income) during recession, going from 13% in 2010 to 7% in 2017, which implies an increase in the aggregate demand multiplier.

These endogenous factors of the business cycle will be strongly reinforced in 2014 and 2015 by other elements of major importance: end of the aggressive fiscal austerity, monetary policy of the ECB and reduction of oil prices.

Causality runs therefore from corporate investment recovery (fueled by the increasing utilization of installed capacity, that is to say, by demand-side factors) to employment, and from there to household consumption (see Diagram 1).

Over the whole period, there is a clear evidence of a direct determination from aggregate demand to employment, with employment performance being very pro-cyclical and aggregate demand pushing production through employment. The elasticity of employment to changes in demand during recovery remains relatively constant and similar to that observed in the period prior to 2007 (Figure 3). We cannot say therefore that in terms of job creation last expansion has been more intense than the previous one. While in the expansion cycle of 1995-2007, employment grew on average 3.7% and GDP did to 3.8%, in 2013-2017 employment growth is at 2.1% and GDP at 2.7%. If we take only the first quarters of the previous expansion (1995-1999, the recovery years), the data are also significantly higher (an annual average of 3.4% in employment and 3.7% GDP).

Figure 3. Employment and GDP growth (% annual growth 1999-2017)



Source: Own elaboration from the Annual National Accounts (update 09/2017)

The labor reform of 2012 has not facilitated a shift in the Okun curve, given that the employment-demand ratio remains relatively constant (Fig. 3). Household consumption is a key variable to explain the recovery, and the increase in this consumption is due to job creation (even low paid jobs). But changes in employment are not due to changes in wages, but to increased demand-led investment as well as to the labor intensive character of the Spanish economy.

This implies that we reject the second idea pointed out by mainstream analysis, presented in the introduction as follows:

1. *Reduction in unit labor costs drives economic growth because there is a structural and important wage/employment trade-off in the Spanish economy. Indeed, recent labor market reforms have caused a shift in the Okun curve, so that the Spanish economy now needs a lower GDP growth to reduce its unemployment rate than in the previous cycle expansion, due to wage devaluation. Therefore, wage reduction would explain job creation, and these new jobs (even if they are low-wage employments) would increase private consumption due to the higher propensity to consume of newly recruited workers.*

Although employment growth is significant in all sectors, the intensive employment branches are predominant. Since 2013(q3) the most dynamic sectors are tourism, accommodation and food services, retail trade and real estate activities.

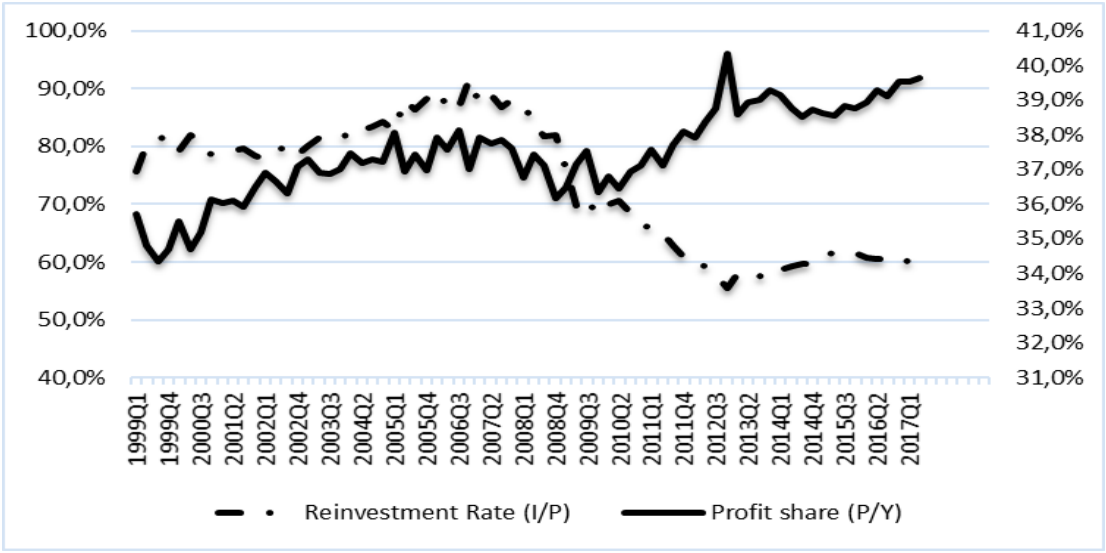
To this increase in investment demand and labor creation contributes also the change in fiscal policy in 2014 and, especially, during 2015-2016. In 2015 general Government consumption increased in 4.000 million of euros. This year was the first year during the recession in which this variable had a positive contribution to GDP growth. Although public investment in 2017 was 30 billion euros lower than the pre-crisis, the interruption of strong fiscal cuts helped aggregate demand. In 2015 government investment increased also in 4.740 million of euros and, likewise, had a positive contribution to GDP growth.

4.3. The link between investment and profitability. The investment function.

The reduction of labor costs has been passed only to a small extent to the decrease in prices, with both consumer and industrial goods experiencing positive inflation from 2012 to 2017. Most of the fall in unit labor costs has led to an increase in profit margins. Has this improvement in profits helped the recovery of investment?

Since the beginning of the crisis there has been a progressive fall in the reinvestment rate (I/P). On the contrary, the profit share (P/Y) has grown during these years. The relationship between both variables during recovery it is not straightforward, because the profit share is rising and the reinvestment rate is stagnated. By these reason, there are serious doubts about the existence of a profit-led growth model, with the reduction of wages explaining, through an improvement of profitability, the increase of private investment. The increase of reinvestment rate has been very modest and practically had an inverse behavior to profit share during the 2014-2016 period.

Figure 4. Profit share and reinvestment rate



Source: Ibid

In order to test the main determinants of investment, we estimate an investment function for the Spanish economy for the period of 1999(Q1)-2017(Q1). To test our hypotheses, several estimates have been made using the Box-Jenkins methodology for time series and dynamic regression. Our sources (see appendix) are Quarterly Spanish National Accounts (QSNA) and "Spanish database of business cycle series" (BDSICE). All variables are in terms of seasonal differences of logarithms, to facilitate the interpretation of the results, and values are in constant terms.

Empirical literature has traditionally pointed to several determinants of investment function in the case of Spain. First, there is research where the degree of capacity utilization is included as an explanatory variable (e.g. Felipe, 2002). Furthermore, Arestis, Gonzalez and DeJuán (2012) have estimated an investment function incorporating as explanatory variables: i) the expected growth of aggregate demand, ii) deviations of capacity utilization, iii) long term interest rates, iv) deviations of profit share and iv) a confidence index. Their results show the relative importance of these variables in different sample periods for both, the Spanish and the US economies.

From a neoclassical approach, Posada, Urtasun and Gonzalez (2014) have estimated an error correction model for the period 1995-2013 to explain equipment investment. These authors find that the following variables are significant in the long run: i) aggregate production; ii) the relative prices of labor and capital; and iii) Tobin Q. Whereas, in the short term the explanatory variables that are significant are the aggregate demand, the degree of utilization, the financial position of companies, profit margins and a proxy variable based on the demand uncertainty.

There is evidence that residential investment is largely linked to future output (Álvarez and Cabrero, 2010), employment (Cosculluela and Flores, 2013) and aggregate investment. Thus, Arrazola, *et al.* (2015) argued that housing demand, in the period 1975-2009, was linked to demographic and labor market changes, in addition to the facilities in the credit concession, with an inelastic demand and a very elastic price supply. Arestis and González (2014) find that the relationship between mortgage credit and residential investment is very high in the Spanish case, so that the supply has responded quickly to demand by facilitating credit; while external

financing increased, largely supported by the increase in the value of residential assets used as collateral.

Our hypothesis with respect to investment is as following: "investment is growing by the traditional endogenous factors of the business cycle, as well as the autonomous components of demand: increased use of installed capacity, increased investment in housing and lower interest rates and debt burden. The large increase in profits and profitability in recent years has a low impact on aggregate investment". To test these expectations, we propose the next investment functions to be estimated:

$$I_t = \gamma_0 + \gamma_1 Ut_{t-1} + \gamma_2 Emp_{t+1} - \gamma_3 HFB_t + \gamma_4 RGCF_{t-4} + \gamma_5 P/Y_{t+1} \quad [13.1]$$

$$I_t = \gamma_0 + \gamma_1 Ut_{t-1} + \gamma_2 Emp_{t+1} - \gamma_3 CFB_{t+1} + \gamma_4 RGCF_{t-4} + \gamma_5 P_{t+1} \quad [13.2]$$

Where explanatory factor are Capacity utilization (Ut), number of Employees (Emp), Household Financial Burden (HFB) and Corporate Financial Burden (CFB), and finally Residential Gross Capital Formation (RGCF). We expect positive signs in all variables except for household and corporate financial burden. Our economic interpretation is the following: i) first variable (capacity utilization, Ut) reflects the "accelerator effect" (i.e., a proxy of expected demand), and so is a leading indicator; ii) the employment variable shows the effect of housing demand on aggregate demand; iii) household financial burden and corporate financial burden imply a negative effect of interest rates on investment; iv) we expect lagged residential gross capital formation (RGCF) to be positive related to investment, since expectations of residential investment open new business opportunities and therefore encourage new types of investments (trade, transport, utilities); and v) We would expect profitability expectations to have a direct and positive relation with investment, although we have already seen that during the recovery there is a certain disconnection between both variables.

The investment function was estimated with (dependent and explanatory) variables measured as seasonal differences of natural logarithms, so they are stationary variables. It is necessary to include several time dummies in the estimated models, because of the existence of outliers on residuals. In addition, we also include lagged residuals (α), which are an AR(1) process. About notation, we use $(L)^{-1}$ to denote one lag and $(F)^{+1}$ to mean one forward or lead time period.

Table 3 reports the results of several estimations[5]. First, capacity utilization has been lagged one quarter and it is positive and significant in all models, with the coefficients indicating an elasticity less than 1. The employees number is also significant, with investment responding positively and elastically (about 1.6) to an increase in the employment (which was leaded one quarter). This shows what we represent in Diagram 1, in the previous section: employment is a strong driver of household demand and, with it, of new business investment. On the contrary, the coefficient on the contemporary financial burden is negative, which it was expected.

One year lagged residential gross capital formation represents how higher equipment investment is induced by recent housing demand, since residential investment open new business opportunities for other sectors. This variable is also significant in all models. Finally, profitability expectations proxies (as leaded gross profit and leaded profit share) show negative

[5] All results of residual test are available upon request. In all models, residuals are white noise. We used "dynlm" package of "R" software (Zeileis, 2010).

and not significant coefficients. Consequently, it is possible to state that these indicators have not influence on investment decisions.

Table 3. Regression results for investment function

Δln GCF	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	−0.014***	−0.014***	−0.007**	−0.005	−0.005
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
$\Delta \ln Ut(L)^{-1}$	0.557***	0.522***	0.446***	0.463***	0.432***
	(0.077)	(0.072)	(0.070)	(0.070)	(0.073)
$\Delta \ln Emp(F)^{+1}$	1.922***	1.945***	1.515***	1.484***	1.600***
	(0.086)	(0.082)	(0.085)	(0.087)	(0.125)
Δln HFB	−0.037***				
	(0.009)				
$\Delta \ln CFB(F)^{+1}$		−0.039***			
		(0.009)			
$\Delta \ln RGCF(L)^{-4}$			0.123***	0.130***	0.123***
			(0.020)	(0.020)	(0.020)
$\Delta \ln P/Y(F)^{+1}$				−0.270	
				(0.152)	
$\Delta \ln P(F)^{+1}$					−0.114
					(0.122)
α	0.410**	0.432**	0.373**	0.274*	0.360**
	(0.133)	(0.127)	(0.129)	(0.136)	(0.131)
Dummy37	−0.097***	−0.094***	−0.087***	−0.096***	−0.091***
	(0.022)	(0.021)	(0.020)	(0.021)	(0.021)
Dummy41	0.078***	0.072***	0.078***	0.078***	0.079***
	(0.021)	(0.020)	(0.019)	(0.019)	(0.019)
R-squared	0.94	0.94	0.95	0.95	0.95
N	66	66	63	63	63
AIC	−323.51	−328.81	−318.04	−316.50	−316.80

Source: Own elaboration

The results obtained in the investment function lead us to reject the third idea pointed out by mainstream analysis:

> *Wage devaluation has increased profit margins and profitability. The increase in corporate profitability, one of the fundamental determinants of investment, would have boosted gross fixed capital formation in corporations.*

As we have seen in the estimates of Table 3, the main determinant of investment is the accelerating effect of demand, given the role played by capacity utilization and employment. The influence of profitability is not significant. In addition, we have implemented a "Chow test" of our estimations, in order to analyze whether or not structural change exists in our times series. The results of the test points to the stability of the parameter throughout the period (see Appendix 2). This stability indicates that the results obtained are valid to analyze the recovery period of 2014-2016, and can therefore be used for that purpose.

5. The role of tailwinds: an additional impulse to autonomous components of demand.

5.1. The monetary policy

The ECB has progressively reduced official interest rates during last years, reaching the main refinancing rate 0% in March 2016, while marginal deposit facility rate has remained negative since 2014 (reaching -0.4% in 2016). Additionally, the central bank has implemented during the crisis other monetary stimulus, as the non-conventional monetary policy measures through asset purchase programs of public and private bonds. As a result, real interest rates in Spain have remained even lower during the recovery period than during the first years of the recession (about 6.0% in 2008 compared to the 2.5% recorded in 2017).

The reduction in interest rates by the ECB has had a clearly positive effect on the recovery of growth in Spain. A fall in interest rates involves a financial burden decrease for households and non-financial corporations and, with it, an increase in household disposable income and in profit margins, leading to higher consumption and investment.

The Bank of Spain considers in its Annual Report that the monetary policy is one of the fundamental drivers of growth during the period of recovery. According to the bank estimates, monetary policy has had an additional contribution to GDP growth of 0.6 percentage points per year during the 2014-2016 period (see table 4).

Table 4. Estimated cumulative contributions of various factors to the changes in Spanish and euro area GDP in 2014-2016

	2014		**2015**		**2016**		**Average**	
	Spain	Euro area	Spain	Euro area	Spain	Euro area	Spain	Euro area
Monetary policy	0.1	0.0	1.0	0.6	1.7	1.5	0.6	0.5
Fiscal policy	0.0	-0.1	0.3	0.2	0.8	0.2	0.3	0.1
Global markets	0.1	0.1	-0.3	-0.8	-1.5	-1.8	-0.5	-0.6
Oil prices	0.0	0.0	0.3	0.3	1.1	0.6	0.4	0.2
Total effects	**0.2**	**-0.1**	**1.2**	**0.2**	**2.2**	**0.6**	**0.7**	**0.2**

Source: Bank of Spain. *Annual Report* (2017: p. 55)

Monetary policy has boosted growth in Spain more than the Eurozone due to the fact that Spain was one of the most vulnerable economies during European sovereign debt crisis, and therefore has been one of the countries most benefited by a policy aimed at stabilizing markets. Furthermore, in Spain there is a high prevalence of variable-rate mortgages, and the important fall in interest rates has reduced household interest payments, increasing the margin for private consumption.

5.2. Oil (and energetic) prices. Impact on the trade balance.

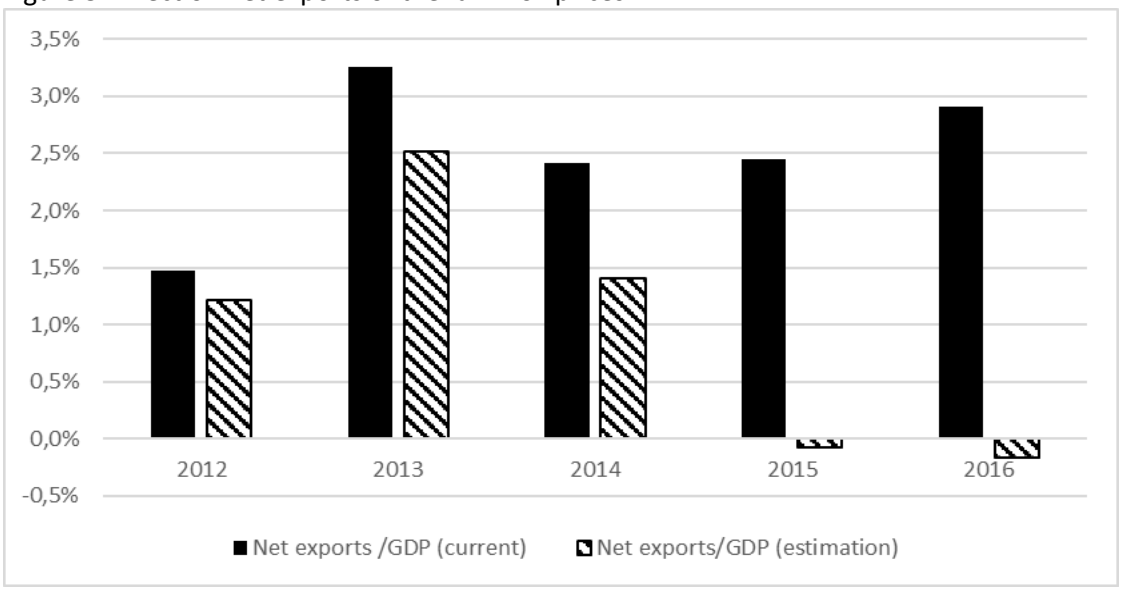
The surplus of the foreign trade balance in goods and services is presented, by the Spanish government and other authorities, as evidence of an improvement in external competitiveness. However, net trade balance of goods, and specifically energy products, is explained essentially by the dynamics of oil prices. In Table 4 we have seen how the Bank of Spain considers that the

evolution of oil prices has been another fundamental driver of Spanish recovery, with an additional contribution to GDP growth of 0.4 percentage points per year in 2014-2016.

Oil consumption is clearly pro-cyclical, and once the economy has started to grow, it has increased again. Therefore, correction of the Spanish economy's trade imbalances during recovery is not due to a decrease in consumption. It has been the result of the downturn in oil import prices, starting in 2014.

If the oil prices existing in 2012 had been maintained (about 617€/ton), the share of net exports on GDP would have been negative during the years 2015 and 2016 (Figure 5). That is to say, the main cause of the net trade surplus achieved lies in the sharp fall of oil prices. Given the current rate of export growth, the positive balance has only been maintained because oil import prices have significantly fallen (536€/ton in 2014, 330€/ton in 2015, and 259€/ton in 2016).

Figure 5. Effect on net exports of the fall in oil prices



* The estimated value is calculated assuming the same energetic import value as in 2012.
Source: Own elaboration from "Spanish database of business cycle series" (BDSICE) and QSNA

This simulation does not include other short and medium-term effects on the transfer of oil import prices to domestic prices and wages. Therefore, the total stimuli of a fall in oil prices are greater than those computed here (Gómez-Loscos, Montañés and Gadea, 2011).

Furthermore, we must discard possible effects of "import substitution" to explain the fall in imports. The amount of intermediate non-energetic goods imported in 2016 is very similar to that of 2007. Once the economy grows again, it requires virtually the same imported inputs as before the crisis.

5.3. The determinants of the external sector contribution to GDP growth.

In order to analyze the determinants of the external sector contribution to GDP growth we estimate a net exports function. The methodology that we follow is the same used to estimate the investment function in the previous section: Box-Jenkins methodology for time series and dynamic regression for the period of 1999(Q1)-2017(Q1), using quarterly national accounts.

We want to know to what extent the positive contribution of net exports to GDP growth –trough foreign trade surplus– is determined by the policy of internal devaluation (i.e., by the reduction of unit labor costs), or is the consequence of other factors. Our hypothesis is that the positive contribution of the external sector to GDP growth does not respond to the reduction of unit labor costs, but to the evolution of oil prices. As we have just seen, if the Spanish economy were to face the same oil prices that in 2012, the external balance would be negative today. For that purpose, we present the following equations:

$$Exp_t^N = \gamma_0 - \gamma_1 Oil_{t-1} - \gamma_2 Y_t + \gamma_3 Y_{t+1}^{OECD} - \gamma_4 ER_{t-1} - \gamma_5 ULC_t \quad [14.1]$$

$$Exp_t^N = \gamma_0 - \gamma_1 Oil_{t-1} - \gamma_2 Y_t + \gamma_3 Y_{t+1}^{OECD} - \gamma_4 REER_{t+1} - \gamma_5 ULC_t \quad [14.2]$$

where explanatory factors are: crude oil import prices (euros/ton), real gross domestic product (Y), GDP of OECD countries (Y^{OECD}) also in constant terms, dollar/euro exchange rate (ER) or real effective exchange rate (REER) based on Consumer Price Index deflators of Eurozone, and unit labor costs in manufacturing sector (ULC Man).

We expect a positive sign in the intercept (γ_0), because export growth trend is very stable along business cycle. Our economic interpretation for the rest of the coefficients is as follows: i) first variable reflects the impact of oil prices and, consequently, we expect that as energy imports become more expensive, net exports will deteriorate; ii) related literature (Álvarez, Uxó and Febrero, 2016) explains how net exports will depend positively on the income of the rest of the world, and negatively on the national income (due to the greater elasticity of imports); iii) nominal and real exchange rates capture the effect of changes in relative prices and, therefore, in price competitiveness. We expect these coefficients to be negative; and iv) finally, unit labor costs reflect the internal devaluation effect: it is often argued that an increase in unit labor costs would lead to a worsening of price competitiveness and, consequently, to a reduction in net exports so, according to this argument, we would expect this coefficient to be also negative.

The dependent variable on the net exports function is measured as seasonal differences of net exports value. Independent variables are measured as seasonal differences of natural logarithms. Again, we include lagged residuals (α) to consider autocorrelation AR(1), and we use the same notation than before for lag and lead variables. The nominal variables are incorporated with one lag, given that these variables take some time to be transmitted to the real variables. On the contrary, the real variables enter the model with one lead, with the idea that they are variables that form current expectations.

Table 5 reports model fitted results. As we can see, lagged crude oil import prices it is significant in all models, with negative coefficient as expected. In this case, the coefficients indicate a semi-elasticity, so a 1 percent increase in the oil prices contributes to a 2800 million decrease in net exports.

The Spanish gross domestic product (as a proxy of national income) and the OECD GDP (as a proxy of trade partners income) significantly contribute to explain net exports behavior. On the one hand, Spanish GDP determines imports and, on the other hand OECD GDP explain exports. As we can see, imports are more relevant to determine net exports, because their semi-elasticity is higher.

Since net exports respond negatively and elastically to an increase in GDP (due to the high income elasticity of imports), and crude oil import prices present a strong negative coefficient as expected, we can conclude that crude oil price is a very relevant tailwind to explain positives contribution of net exports to GDP growth, since these prices significantly reduce the import bill.

Similarly, the coefficients on the lagged real effective exchange rate and the leaded nominal exchange rate are both negative. As expected, an increase of these variables implies a contraction of net exports. We must bear in mind in this regard that monetary policy of the ECD has involved a 13% depreciation of the Euro against the dollar in the period of June 2013 to June 2017. This depreciation helped to keep net exports in positive terms, boosting exports and restraining imports upward.

Table 5. Regression results for net exports function

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
(Intercept)	775.855***	2331.217***	2012.097***	2349.648***	2406.057***	2214.114***
	(164.535)	(177.355)	(246.232)	(199.941)	(183.415)	(217.313)
Δln Oil(L)$^{-1}$	−2560.792***	−1352.146**	−2007.025***	−1116.095	−2079.840***	−1280.470*
	(547.520)	(481.670)	(515.105)	(569.708)	(509.962)	(614.639)
Δln Y		−94399.733***	−107390.309***	−92961.810***	−98917.227***	−99067.110***
		(5754.502)	(7520.543)	(6534.673)	(6019.479)	(7260.148)
Δln Y ^{OECD}(F) $^{+1}$			26412.733*			
			(13007.881)			
Δln ER(L)$^{-1}$				−6799.502***		−7516.957***
				(1746.469)		(1972.689)
Δln REER(F)$^{+1}$					−17051.208***	
					(2642.069)	
Δln ULC Man						23613.705**
						(7821.638)
α	0.909***	0.855***	0.847***	0.892***	0.921***	0.803***
	(0.047)	(0.063)	(0.066)	(0.081)	(0.084)	(0.091)
Dummy37	5987.903***	4015.791**	4503.068***	3135.541*	2374.531	3929.020*
	(1378.677)	(1226.502)	(1267.017)	(1396.853)	(1297.171)	(1508.326)
Dummy39	−3817.541**	−3891.688**	−3044.398*	−3367.287*	−4765.864***	−2511.306
	(1365.724)	(1199.810)	(1348.858)	(1386.119)	(1253.046)	(1477.663)
Dummy43	4399.042**	4536.686***	4277.791***	4512.735**	3687.955**	3941.977**
	(1317.135)	(1175.446)	(1201.362)	(1347.303)	(1269.280)	(1443.131)
Dummy44						3746.691*
						(1426.481)
R-squared	0.89	0.92	0.92	0.90	0.91	0.89
N	67	67	66	67	66	67
AIC	1158.76	1141.88	1127.32	1158.79	1130.36	1169.56

Source: Own elaboration

Finally, unit labor costs in manufacturing sector show a positive and statistically significant coefficient. Conventional wisdom affirms that negative coefficient must be expected, but the well-kwon "Kaldor paradox" holds that in advanced countries there is no negative relationship between the growth of unit labor costs and the growth of net exports, and the relationship may be even the opposite. The results of our estimates point in this direction: higher ULC in manufacturing imply higher net exports.

This means, one more time, that we must reject the first idea pointed out by mainstream analysis, which claimed that –through internal devaluation– *a reduction in unit labor costs*

relative to the EU core countries leads to a reduction in export prices, and thus to an improvement in price competitiveness and to a positive contribution of the external sector to GDP growth.

6. Conclusions

In this paper, we had discussed how is growing the Spanish economy and the causes of the actual recovery.

To identify the factors that explain the economic growth of the economy during the period of 2014-2017, we presented a demand-led growth decomposition methodology based on the Sraffian supermultiplier model. Our results show that economic growth during 2014-2017 is driven by demand-side factors. Government austerity policies and the reduction of wages, due to internal devaluation policy and "structural reforms", are not the causes of economic recovery. The Spanish economy does not experience neither an export-led recovery, nor an income policy-led recovery driven by profitability, but a demand-led pattern of growth driven by the autonomous components of domestic demand. Our main conclusions can be summarized as follows (see Table 5).

Table 5. Summary

Argument	Mainstream arguments	Our findings
Export-led recovery vs. domestic demand-led recovery	The fall of ULCs implies a recovery of the competitiveness lost before the crisis, and determines a strong contribution of the external sector to GDP growth.	Net exports growth is explained by the falling of crude oil prices, reduction of GDP, trade partners GDP growth and currency depreciation. Manufacturing ULCs are positively linked to net exports.
Job creation	There is a wage-employment trade-off in the Spanish economy, so wage constraint is needed to create jobs.	Causality runs from corporate investment recovery (and GDP) to employment, and from there to household consumption. Job creation is determined by demand-side factors.
Investment	Wage devaluation has increased profit margins and profitability. This increase in corporate profitability has been transmitted to investment.	Investment is determined by the "acceleration effect". The recovery of profitability has not been transmitted to the investment.

First, the recovery of the Spanish economy is not export-led. On the contrary, it is clearly driven by domestic demand factors. Autonomous components of demand have a great role to explain recent expansion of GDP. Supply-side policies such as internal devaluation have been, at best, futile and probably self-defeating. While net exports contribution to GDP growth in early quarterlies of recovery has remained low, the contribution of autonomous components of aggregate demand (especially household`s investment and consumption) has been remarkable.

Second, the leading variable of recovery is the investment in capital goods and not exports. Equipment investment turns upwards by the effect of the capacity utilization (the acceleration

effect). Since consumption falls more slowly than GDP along recession (i.e., the average propensity to consume increases),the accelerator effect of investment finally causes the net investment to stop falling and starts having a slight increase. Recovery begins at that point. In the estimated investment function we obtain a significant effect of capacity utilization, employment, housing investment, household financial burden and residential investment in order to explain investment growth. Even if, as a robustness check, we include in the investment function profits and profit share as explanatory variables, the coefficients of these variables are negatives and no significant. It cannot be said that the significant increase in profits and profitability during recent years has been transferred to a higher investment.

Third, job creation is motivated by investment and GDP growth. As we saw in Figure 3, employment-to-GDP elasticity has remained constant during the expansion, the crisis and the later recovery. Hence, job creation is not stimulated by wage contraction, but by the recovery of domestic demand. Causality runs from corporate investment recovery (fueled by demand-side factors) to employment, and from there to household consumption. So there is no trade-off between employment and wages. If anything, internal devaluation policy would have operated in the opposite way: reducing propensity to consume of households and therefore postponing the recovery.

Four, there is also a relevant change in fiscal policy in 2014-2016, from a negative contribution to growth of -0.3 percentage points in the period of the crisis, to a positive one of 0.1 in the period of recovery. The end of fiscal cuts has helped the private sector to restart economic growth, activating the fiscal multiplier.

Five, important external “tailwinds” push the economic recovery of Spain, and explain the positive contribution of the external sector to the economy. The behavior of crude oil imports price has boosted net exports (although this effect would be only provisional). Furthermore, lower interest rates (caused by the ECB monetary policy) have reduced households and corporate financial burden, and have also increased net exports through currency devaluation. The Spanish economy is more sensitive to these tailwind effects than other European economies due to its intensive use of labor (that amplifies this effect), and also to the widespread number of households with variable-rate mortgages, and to a model of energy consumption very dependent on oil.

In the estimated net exports function we have verified how the improvement of the external sector contribution is not due to a fall in unit labor costs, but to the role of these tailwinds. The improvement of the current account balance is, mainly, the consequence of lower oil prices. “Tailwinds” in the external sector increase net exports through the reduction of the energy deficit, and not through a “structural change” in Spanish external competitiveness.

Unlike what mainstream economists say, wage devaluation and fiscal consolidation are not the causes of the recovery of the Spanish economy. On the contrary, these policies have deepened the fall in both government and household consumption throughout recession. Consequently, internal devaluation and austerity policies have prolonged the recession five and half years, being very counter-productive to stimulate the real drivers of economic growth in Spain (autonomous components of demand, and particularly domestic demand). These policies have also been unable to transform the growth model, which is still based on internal demand and shows similar weaknesses to those before the crisis.

References

Álvarez, L. J., & Cabrero, A. (2010). Does Housing Really Lead the Business Cycle in Spain?. In de Bandt, et al. (Eds.). Housing markets in Europe: A macroeconomic perspective. pp. 61-84; Berlin, Springer.

Álvarez, I., Uxó, J., & Febrero, E. (2017). Internal devaluation in a wage-led economy. The case of Spain (No. 1705). Universidad Complutense de Madrid, Instituto Complutense de Estudios Internacionales.

Arestis, P., & Gonzalez, A. R. (2016). House Prices and Current Account Imbalances in OECD Countries. International Journal of Finance & Economics, 21(1), 58-74.

Arestis, P., Gonzalez, A. R., & Dejuán, Ó. (2012). Private productive investment in Spain and the United States. Análise Econômica, 30(58).

Arrazola, M., de Hevia, J., Romero-Jordán, D., & Sanz-Sanz, J. F. (2015). Long-run Supply and Demand Elasticities in the Spanish Housing Market. Journal of Real Estate Research, 37(3), 371-404.

Bank of Spain (2017). Annual report, 2016. https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesAnuales/InformesAnuales/16/Files/inf2016e.pdf

British Petroleum (2017). BP statistical review of world energy (1965-2016). http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

Boscá, J. E., Doménech, R., Ferri, J., & García, J. R. (2017). Los desplazamientos de la curva de Beveridge en España y sus efectos macroeconómicos. WP 17/12. BBVA Research.

Cesaratto, S., Serrano, F., & Stirati, A. (2003). Technical change, effective demand and employment. Review of Political Economy, 15(1), 33-52.

Cosculluela, C., & Flores, R. (2013). Housing investment in Spain has it been the main engine of growth?. Applied Economics, 45(14), 1835-1843.

Cruces, J., Álvarez, I., Trillo, F., & Leonardi, S. (2015). Impact of the euro crisis on wages and collective bargaining in southern Europe–a comparison of Italy, Portugal and Spain. *In Van Gyes & Schulten (eds.) Wage bargaining under the new European Economic Governance: Alternative strategies for inclusive growth.* ETUI, pp. 93- 137.

Dejuán, Ó. (2014). The supermultiplier as a vertically hyper-integrated sector. Centro Sraffa Working Papers, 4, 1-23.

European Commission (2017). COUNCIL RECOMMENDATION of 11 July 2017 on the 2017 National Reform Programme of Spain and delivering a Council opinion on the 2017 Stability Programme of Spain (2017/C 261/08). Brussels

Freitas, F. N. P., & Dweck, E. (2013). The Pattern of Economic Growth of the Brazilian Economy 1970–2005: A Demand-Led Growth Perspective. In Levrero, Palumbo & Stirati (Eds.), Sraffa and the Reconstruction of Economic Theory: Volume Two (pp. 158-191). London: Macmillan.

Girardi, D., & Pariboni, R. (2016). Long-run Effective Demand in the US Economy: An Empirical Test of the Sraffian Supermultiplier Model. Review of Political Economy, 28(4), 523-544.

Government of Spain (2017). Stability Programme Update. Kingdom of Spain. 2017-2020. Madrid. https://ec.europa.eu/info/sites/info/files/2017-european-semester-stability-programme-spain-en.pdf

Gómez-Loscos, A., Montañés, A., & Gadea, M. D. (2011). The impact of oil shocks on the Spanish economy. Energy Economics, 33(6), 1070-1081.

IMF (2015). Spain. Staff Report for the 2015 article IV Consultation. IMF Country Report No. 15/232. Washington, DC.

IMF (2017). Spain. Staff Report for the 2017 article IV Consultation. IMF Country Report No. 17/319. Washington, D. C.

INE (2017). Annual Spanish National Accounts: http://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736165950&menu=ultiDatos&idp=1254735576581

INE (2017). Quarterly Spanish National Accounts: http://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736164439&menu=ultiDatos&idp=1254735576581

Martinez, M., & Urtasun, A. (2017). The recovery of private consumption in Spain by product type and household. Economic Bulletin, june. Bank of Spain.

Ministry of Economy, Industry and Competitiveness (2017). Spanish database of business cycle series (BDSICE). http://serviciosede.mineco.gob.es/Indeco/BDSICE/HomeBDSICE.aspx

Mitchell, W. C. (1913). Business cycles (Vol. 3). Berkeley, University of California Press.

Médici, F. (2011). Un análisis de cointegración del principio de la demanda efectiva en Argentina (1980-2007). Ensayos Económicos, 61, 103-137

Montero, J. M., & Urtasun, A. (2014). Price-cost mark-ups in the Spanish economy: a microeconomic perspective. Working Paper No. 1407. Banco de España.

OECD (2017). Economic Survey of Spain. www.oecd.org/eco/surveys/economic-survey-spain.htm

Pinkusfeld, C. & da Silva Porto, G. M. (2016). Decomposing the Growth of Portugal: A Case for Increasing Demand, not austerity, in a Small European Economy. Discussion Paper, 34. Instituto de Economia, UFRJ: http://www.ie.ufrj.br/images/pesquisa/publicacoes/discussao/2016/TD_IE_034_2016_BASTOS_PORTO.pdf

Posada, D., A. Urtasun and J. M. González Mínguez (2014). Un análisis del comportamiento reciente de la inversión en equipo y de sus determinantes", Boletín Económico, June, Banco de España, pp. 41-50.

Serrano, F. (1995). Long Period Effective Demand and the Sraffian Supermultiplier. Contributions to Political Economy, 14, 67-90.

Sherman, H. J. (1991). The Business cycle: growth and crisis under capitalism. Princeton, Princeton University Press.

Storm, S., & Naastepad, C. W. M. (2017). Bhaduri–Marglin meet Kaldor–Marx wages, productivity and investment. Review of Keynesian Economics, 5(1), 4-24.

Uxó, J., Febrero, E., & Bermejo, F. (2016). Crisis, unemployment and internal devaluation in Spain. In Myant, Theodoropoulou, & Piasna (Eds.). Unemployment, internal devaluation and labour market deregulation in Europe. European Trade Union Institute (ETUI).

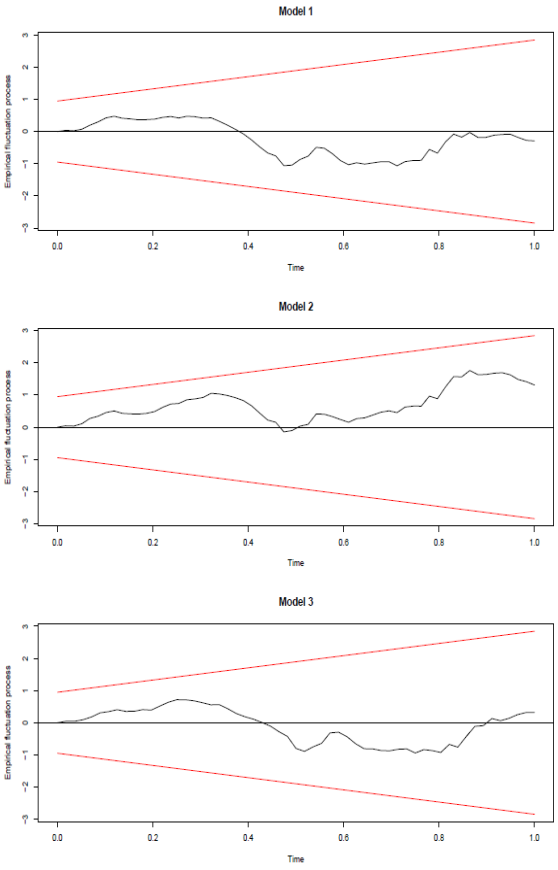
Zeileis, A. (2010). dynlm: Dynamic Linear Regression. R package version0.3-0. http://CRAN.R-project.org/package=dynlm

Appendix 1. Data

Table 5. Definitions and sources	Units	Source
Gross domestic product	Millions of €. Base 2010	QSNA (INE)
Gross capital formation	Millions of €. Base 2010	QSNA (INE)
Residential Gross capital formation	Millions of €. Base 2010	QSNA (INE)
Net Exports of goods and services	Millions of €. Base 2010	QSNA (INE)
Gross profits	Millions of €. Base 2010	QSNA (INE)
Profit and labor share	Percentage rate	QSNA (INE)
Capacity utilization	Percentage rate	BDSICE
Employment	Millions of persons	QSNA (INE)
Household Financial burden	Percentage rate	QSNA (INE)
Corporate Financial burden	Percentage rate	QSNA (INE)
Corporate debt stock	Millions of €.	QSNA (INE)
Unit labor cost. Total	Millions of €.	QSNA (INE)
Unit labor cost. Industry	Millions of €.	QSNA (INE)
Crude oil import prices	€/ton	BDSICE
Nominal Exchange rate	dollar/€	BDSICE
Real Effective Exchange Rate	Index 2005=100	BDSICE [668981]
OECD Real GDP	Index 2005=100	BDSICE [695082]

Appendix 2. Regression results

CUSUM test for structural change. Table 3. Investment functions



CUSUM test for structural change. Table 4. Net exports