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05

The role of internal devaluation on the correction of the Spanish external deficit

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Abstract

The Spanish economy has been one of the EU's most affected by the Great Recession of 2008, recording a rate of unemployment of 26.2% in 2013. However, since 2014 Spain is growing faster than most Euro Area countries, reaching an annual growth rate over 3% during the period 2015-2017. Moreover, it has turned its historical current account deficit, which peaked in 2007, into a surplus of 2 % of GDP in 2017.

International and Spanish institutions, as well as some scholars, have rooted this readjustment of the current account in the "internal devaluation strategy". Consisting in the reduction of wages, this strategy is supposed to have boosted exports and therefore Spanish economic activity, through the reversion of the accumulated loss of price-competitiveness since the creation of the European Monetary Union. Nevertheless, empirical evidence shows that changes in demand (and some exceptional factors as the recent evolution of oil prices) are much more important to explain the evolution of Spanish net exports than changes in price competitiveness.

Based on an extended version of the Bhaduri-Marglin model, which enables the disentangling of the price effect from the demand effect, this paper sheds light on the true influence of internal devaluation on the deficit correction occurred in the Spanish external sector. It reveals that wage restraint has meant only limited gains in price-competitiveness, having affected external balance mainly through a "demand effect" on imports, although to a limited extent. The estimations carried out show that the internal devaluation strategy readjusted the Spanish external sector by 1.74 p.p. during the period of 2010-2017. Of all this correction, 98% is induced by a change in the demand of the economy, and only 2% is due to the effect on prices. It makes also clear that although exports performance has been remarkable during last years in Spain, it does not differ much from the previous decade, and it cannot be explained by internal devaluation.

JEL classification: E12, E25, E64, F32

Keywords: Spanish current account, wage share, price-cost competitiveness, internal devaluation, Bhaduri-Marglin

Resumen

La economía española ha sido una de las más afectadas de la UE por la Gran Recesión de 2008, alcanzando la tasa de paro un 26,2% en 2013. Sin embargo, desde 2014 España está creciendo a un ritmo superior al de los países de la zona del Euro, concretamente por encima del 3% en el período 2015-2017, y lleva desde entonces registrando superávits por cuenta corriente (2% del PIB en 2017).

Tanto instituciones internacionales como españolas, además de numerosos economistas, sostienen que dicho ajuste exterior es fruto de la devaluación interna. Así, la reducción de los salarios habría contribuido al crecimiento de las exportaciones, y por tanto de la producción, gracias a la recuperación de la competitividad precio, la cual se había deteriorado desde la creación de la Unión Monetaria Europea. No obstante, la evidencia empírica sugiere que la evolución de la demanda interna (y de otros factores como los precios del petróleo) se encuentran detrás de la corrección del histórico déficit por cuenta corriente.

Basándonos en una versión extendida del modelo de Bhaduri-Marglin, que distingue el efecto precio del efecto demanda, este trabajo aclara el papel de dicha estrategia en el reajuste exterior. De tal forma, para el período 2010-2017 los efectos de esta estrategia han sido muy limitados; siendo el efecto demanda (1,71 pp) claramente predominante sobre el efecto precios (0,03 pp). Estos resultados apuntan a que el éxito exportador no ha sido consecuencia de la devaluación salarial.

Clasificación JEL: E12, E25, E64, F32

Palabras clave: Balanza por cuenta corriente, rentas del trabajo, competitividad precio, devaluación interna, Bhaduri-Marglin

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Index

Introduction

Since the onset of the Great Recession, most governments in peripheral countries have adopted the so-called internal devaluation strategy. This policy, which has been applied in Spain from 2010 onwards, is grounded on two main arguments.

On the one hand, it is expected that a gain in price-competitiveness may lead to a correction in the current account deficit. As nominal devaluation is no longer available in a monetary union, EU Institutions forced country members to implement internal devaluation strategies, based on reductions in unit labour costs, as the only means to recover from the accumulated price-competitiveness loss and to readjust their balance of payments.

On the other hand, international institutions have also posited that in a scenario with fiscal austerity and a domestic demand shortfall, a cut in unit labour costs would induce a change to an export-led growth model, with a net positive impact on economic activity. This transition requires that the positive effect on exports due to a reduction in unit labour costs offsets the negative effect of austerity measures and wage devaluation on domestic demand, and that substitution of imports takes place.

A too rash look over the macroeconomic figures for Spain could mislead to a corroboration of the above-mentioned arguments. Most of the cost-competitiveness loss that took place before the Great Recession (around 18 pp between 1999 and 2008, measured in terms of relative unit labour costs) had been recovered by the end of 2017. Simultaneously, while trade deficit in goods and services reached its peak in 2007 (-6% of GDP), this deficit has experienced a sustained reduction since that year and turned into a trade surplus in 2012 (1.5% of GDP). From then on, the Spanish economy has managed to maintain a trade surplus of around 2-3% GDP and a real GDP annual growth rate among the highest of the European Union (3.2% on average in 2015-2017, outrunning other peripheral countries as well) with a positive contribution of net exports.

Actually, institutions such as the Banco de España or the European Commission claim that gains in cost-competitiveness derived from the internal devaluation process played a key role in the recovery of GDP growth and in the correction of external imbalances.

For example, Banco de España (2016) asserts that "the recovery observed in the Spanish economy since mid-2013 is the result of a combination of various factors (…). One of the most significant is the increase in recent years in the competitiveness of the Spanish economy, understood in a broad sense, encompassing both lower costs (labour and financing costs) and lower prices, compared with the euro area as a whole. The adjustment in prices and costs, which has triggered the depreciation in the real exchange rate of the Spanish economy, gave rise in the early years of the crisis to a highly dynamic export performance and a significant correction in the external imbalance." One year after, Banco de España (2017) explicitly analyzes the current account adjustment and underlines the gains in competitiveness as one of the permanent factors contributing to the correction of the external balance. Finally, Banco de España (2018) insists that "the positive external balance is largely due to the gains in competitiveness recorded since the crisis".

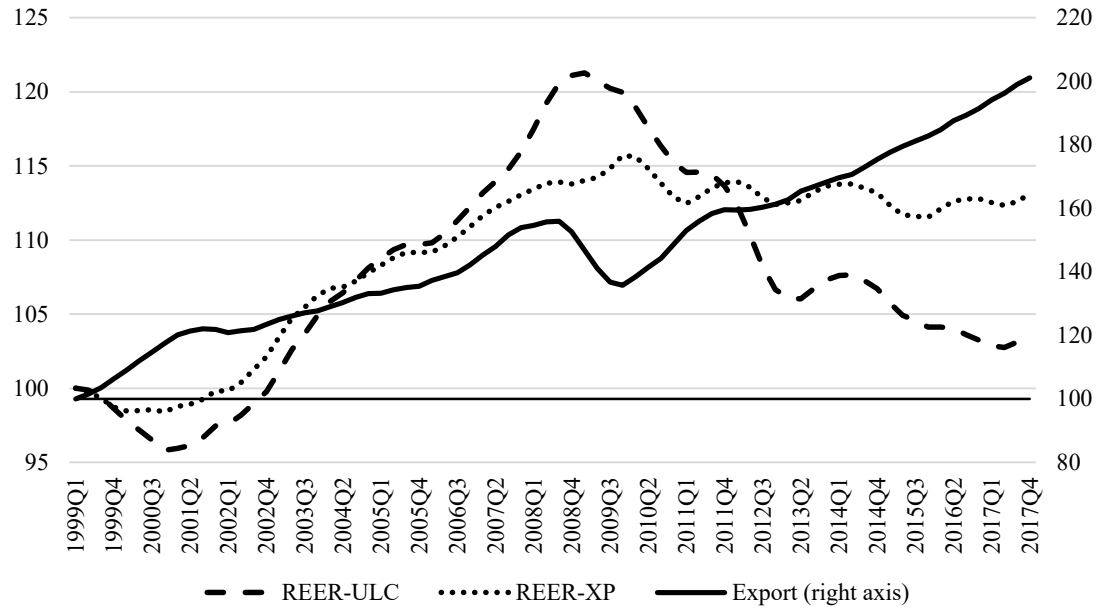
Nevertheless, some data provided by this same institution and some scholars cast doubts about the real importance that can be attributed to wage restraint to explain the behaviour of net exports.

Changes in costs are not typically passed through in full to prices. This is the main reason why Wood (2014) considers that relative export prices are a much better indicator of external competitiveness than relative unit labour costs. Looking at the recent experience of the Spanish economy, according to the data provided by the European Commission, the real effective exchange rate of Spain vis-à-vis its 37 main partners decreased by 14.4% between 2008 and 2017 when calculated using unit labour costs, but only by 0.6% if export prices are used. Therefore, the actual improvement in price-competitiveness is much lower than the change in labour cost could indicate.

Figure 1 clearly depicts this fact and anticipates some of our results regarding the relation between unit labour costs (ULC), export prices and the volume of exports of goods and services. During the first ten years after the onset of the monetary union, Spanish ULC grew faster than those of its main competitors, and they were translated into export prices to a great extent. Thus, both cost and price competitiveness deteriorated, but exports

grew at a remarkable growth rate. After the Great Recession, however, we can see a sharp recovery in cost-competitiveness, that is not translated into a fall in export prices (the evolution of the real effective exchange calculated using export prices is rather flat), while exports go on growing at a very similar rate than before. Hence, we cannot expect a statistically significant relation between ULC and exports, a result that we will confirm in a next section when we estimate an exports function.

Figure 1: Real effective exchange vs 37 partners and exports (1999Q1=100)



Source: Eurostat, author's own elaboration

Indeed, other factors, such as domestic and external demand growth differences or a higher export orientation of Spanish firms due to the shortfall in domestic demand, seem to have a higher impact on exports and imports than price competitiveness.

Banco de España (2017) recognizes that the decrease in Spain's unit labour costs relative to the rest of the euro area, together with the decrease in long-term interest rates, explain less than 10% of the cumulative adjustment in the current account between 2008 and 2015. Previously, Banco de España (2016) had said that "as it is usual in estimates of this kind, external demand is the main determinant of exports", since "the literature generally finds that the ability of cost or price-competitiveness indicators to explain export performance is quite modest". Most recently, European Commission (2018) has confirmed that "export growth is mostly explained by growth in Spain's export markets", and also that "Spanish exports have become less reliant on price competitiveness". Regarding imports, Banco de España (2017) confirms that "given the traditionally low price-elasticity of imports, the process of internal devaluation played a more limited role in the aggregate behaviour of goods and services imports over the last few years".

By the same token, Xifré (2017) analyzes the impact of changes in cost-competitiveness on export performance in Spain and other euro area economies (Germany, France, Italy and Netherlands). He concludes that the link between relative unit labour costs and the behaviour of Spanish exports appears to be rather weak, while other non-price factors, such as an adequate exports structure and firm-level characteristics, are the main cause behind export developments. In short, and regarding the evolution of the export share of Euro Area countries, "non-price factors have largely dominated price-cost factors in the crisis and post-crisis periods" (Xifré, 2017).

These findings are in line with the literature. According to Storm and Naastepad (2014), "Europe's trade imbalances are determined by domestic and world demand—whilst RULC divergences play only a negligible role". As they say, "the statistical evidence on the inverse relationship between export growth and the growth of RULCs is overwhelmingly weak". On the contrary, "exports growth depends more

on the commodity composition of its exports as well as its destination markets."

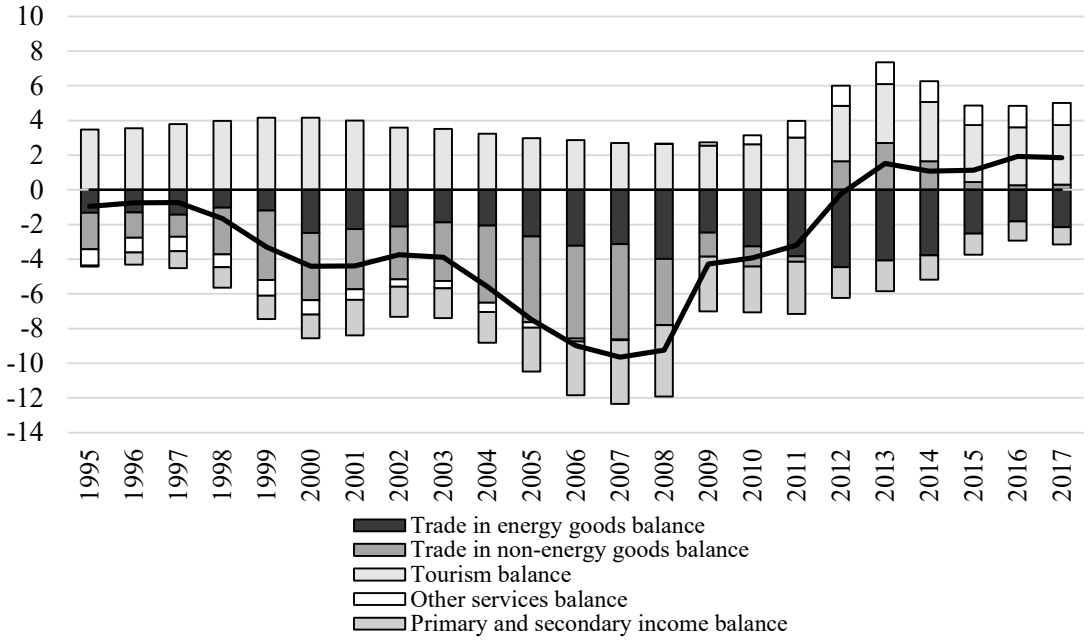
Taking all this into account, the aim of this paper is to evaluate specifically to what extent and through which mechanisms the internal devaluation strategy has been responsible for the readjustment of the Spanish external sector. Our contribution to the debate is the adoption of the theoretical framework provided by the Bhaduri-Marglin model to evaluate this strategy. This methodology enables us to distinguish between a demand-channel and a price-channel through which internal devaluation could affect both exports and imports. To our knowledge, the Bhaduri-Marglin model has not been yet put to work in this way, that is, to systematically explain the effects of the internal devaluation strategy on the external sector. Our main conclusions are that "demand dominates prices" in the readjustment process of the Spanish external imbalance, and that the effect of cuts in ULC on domestic demand, and hence on imports, outweigh their impact on price-competitiveness and on exports.

The paper is organized as follows. Section 2 will present a brief description of the evolution of the main components of the Spanish balance of payments. Attention will be paid to its components, its contribution to GDP growth and the changes on the geographical breakdown of exports. Section 3 will introduce our theoretical approach and present our use of the Bhaduri-Marglin model to evaluate the effect of internal devaluation policies on the external sector adjustment. Section 4 presents the data and the estimation techniques employed to account for the elasticities of the main GDP aggregates, including net exports, to unit labour costs changes. Section 5 reports the results from the estimation of the model and explains the final effect of the internal devaluation strategy on the correction of the external sector imbalance. Finally, the last section will draw the conclusions.

1. The recent evolution of the Spanish current account

The current account balance has gone through a readjustment of 11.6 pp of GDP since the beginning of the crisis, turning a deficit of a -9.6% of GDP to a current account surplus of 2.1% of GDP in 2017 (Figure 2). Although all of the current account components have contributed positively to this correction, 9 pp of the variation has been due to the evolution of the balance of goods and services, where the behaviour of the non-energy goods balance stands out. This component alone is responsible for a correction of 5.7 pp. The remaining components contributed to a reduction the deficit to a lesser extent; energy goods and "other services" balances were both

Figure 2: Decomposition of Spanish current account, as % of GDP



Source: Bank of Spain and Custom Data. Author's own calculation

cut in 1.3 pp of GDP. Lastly, tourism increased its surplus in 0.6 pp of GDP.

In nominal terms, the Spanish current and capital account has improved by 124,813 million euro, and the balance of goods and services explains 78% of this amount (near to 97,000 million euro, of which 62,149 correspond to the non-energy goods balance, almost 50% of the total adjustment).

The positive evolution of the primary and secondary balances can be mostly attributed to the lower interest rates following the QE strategy of the European Central Bank, but also to the change in migration flows, making the payments of remittances to fall.

We can distinguish three different periods, in order to provide a better picture of the external sector: the expansionary period (2001-2007), the Great Recession (2008-2010) and the internal devaluation period (2011-2017).

As our interest is in the recent behaviour of the different components of the Balance of Payments, we will first compare the evolution of both exports and imports in nominal terms (millions of euros), to later on, continue with the analysis in real terms to calculate their contributions to GDP growth.

was that Spanish exports outgrew that of its main trading partners. On the imports hand, the Spanish high income-elasticity of imports caused them to grow at an annual average rate of 7.7%, even higher than that of exports (Table 1).

In the second period –throughout the first recession of 2008-2010– the Spanish economy underwent a strong current account balance adjustment, with a deficit cut on its balance of goods and services of 4.7 pp of GDP. Most of the adjustment in this period was driven by the collapse of imports, whose annual average growth rate dropped from 7.7% to -4%. Exports, on the other hand, also reduced their growth rate, yet they stayed slightly positive, except in 2009.

Since this paper focuses on the role of the internal devaluation strategy on the correction of the external deficit, the period of special interest is the third one, starting in 2011 when measures to reduce unit labour cost were adopted. Table 1 proves that the difference between the three periods relies on the growth rates of imports. Indeed, whereas the annual growth rate of imports was reduced to its half in the period 2011-2017 (along with a much lower nominal GDP growth), exports followed the same trend as previously. When

Table 1: Average annual growth rates, nominal terms

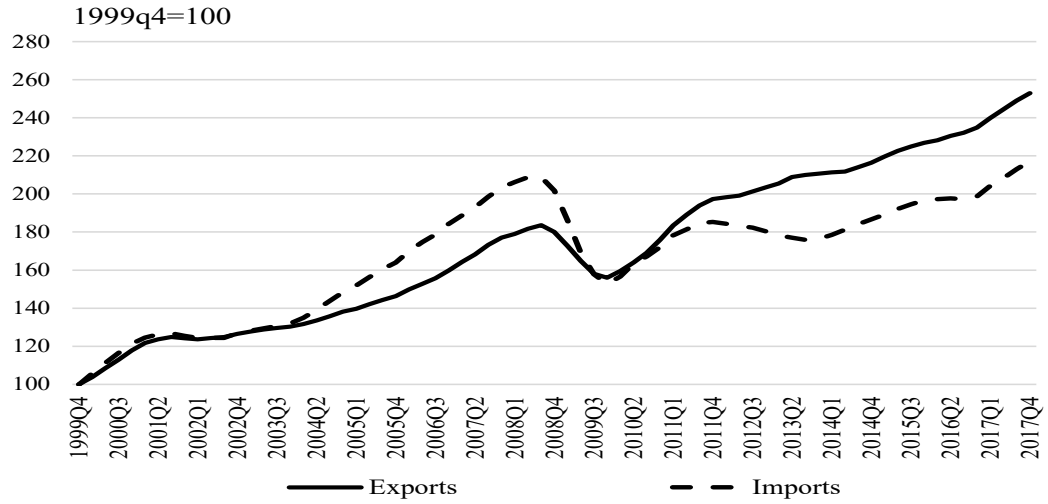
	2001-2007	2008-2010	2011-2017	2011-2013	2014-2017
Exports of goods and services	6.0	0.4	5.5	6.3	4.9
____Energy good	11.1	11.4	11.0	22.5	2.4
____Non-energy goods	5.8	0.6	5.5	6.6	4.7
____Tourism	3.9	-1.8	5.6	4.6	6.3
____Other services	9.0	0.8	5.2	3.0	6.8
Imports of goods and services	7.7	-4.0	3.5	0.9	5.5
____Energy good	11.8	8.5	1.2	9.7	-5.3
____Non-energy goods	7.3	-5.9	4.4	-0.2	7.9
____Tourism	12.3	-3.8	6.5	-1.1	12.2
____Other services	6.0	-3.9	3.2	-3.2	7.9
Exports growth-imports growth of goods and services	-1.7	4.5	2.0	5.4	-0.6
____Energy goods	-0.7	2.9	9.9	12.8	7.7
____Non-energy goods	-1.5	6.4	1.1	6.8	-3.2
____Tourism	-8.4	2.0	-0.9	5.7	-5.9
____Other services	3.0	4.7	2.0	6.2	-1.1

Source: Bank of Spain and Customs Data

During the expansionary period (2001-2007), the deterioration of the goods and services balance could not be attributed to a bad behaviour of exports; which grew (in nominal terms) at an annual average rate of 6%, allowing Spain to maintain its global export share at around 2%. What did occur instead, considering the behaviour of the imports sub-components, the slowdown is general, yet that of energy goods and tourism dominates.

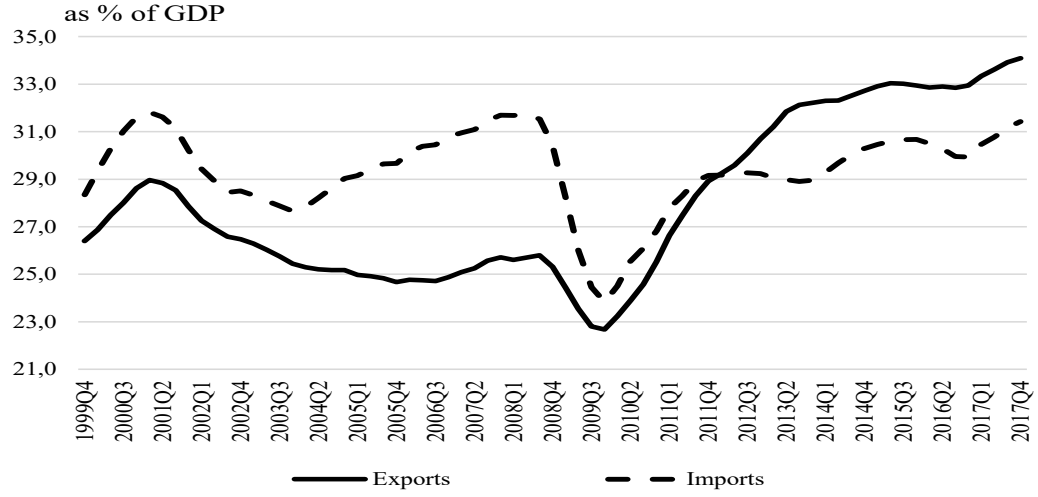
The period 2011-2017 has been subdivided into two other periods: 2011-2013, when the second recession took place and 2014-2017, the current expansionary period. The most

Figure 3a: Evolution of exports and imports of goods and services, in nominal terms



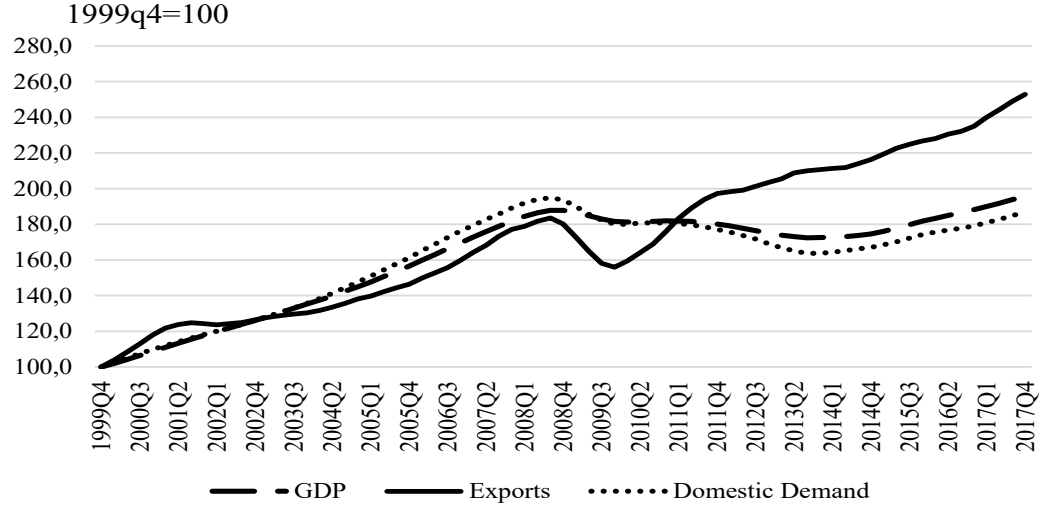
Source: Eurostat

Figure 3b: Evolution of exports and imports of goods and services, in nominal terms



Source: Eurostat

Figure 3c: Evolution of exports of goods and services, GDP and domestic demand, in nominal terms



Source: Eurostat

striking difference between both periods lies again on the evolution of imports, which grew at an annual growth rate of 0.9% during the first subperiod and at 5.4% during the latter (despite the lower growth rate of energy goods, obviously motivated by the fall in oil prices). This is clearly shown in Figure 3a: imports grow in the 2011-2017 period at a slower pace than in the pre-crisis period, while exports of goods and services are following a much more similar trend during the whole period. We can also see (Figure 3b) that the imports weight on GDP decreased during the double-dip recession[1], but it has returned to a similar value during the recent expansive period (around 31% of GDP). On the contrary, exports currently represent 34% of GDP, considerably higher than in 2007 (25% of GDP). This change is due to the fact that Spanish exports have managed to maintain a more or less steady growth rate during the whole period, while domestic demand collapsed and did not cease decreasing from 2009 until mid-2014. Therefore, the increase in the ratio of exports over GDP is not mainly the consequence of a faster growth of the numerator, but the result of stagnation in GDP, whose level in 2017 was approximately the same as in 2007 (Figure 3c). Actually, this also shows that external demand helped to avoid a deeper recession in Spain.

5%), although we do not find any significant differences if we compare these changes in imports growth to the evolution of the real annual average GDP growth rate. If import volumes grew by 1.9 percentage points for each point of GDP growth between 2001 and 2007, this ratio was 1.8 between 2014 and 2017. Thus, there is no evidence of a reduction in the imports elasticity to GDP.

Another concern when analysing the external sector readjustment process, is how Spanish exports have been geographically diversified, managing to maintain its world goods export share (1.8% in 2016). Indeed, goods export share to the European Union has fallen by 7.7 pp from 2000 until 2017, as a consequence of the domestic demand shortfall of the main trading partners (EU 28 received 65.74% of the Spanish exports in 2017). Figure 4 depicts how the Spanish goods export shares have changed in the analysed periods.

During the depression period and the internal devaluation period, exports turned to other markets in Asia (2.4 pp) and Latin America (1.6 pp).[2] Despite the price-competitiveness gain of Spanish exports, their geographical reorientation to markets outside the European Union, appears to be a relevant cause explaining their strength.

Table 2: Annual average contributions to real GDP growth

	2001-2007	*2008-2010*	*2011-2017*	*2011-2013*	*2014-2017*
Contributions to GDP growth					
Domestic Demand	*4.4%*	*-2.4%*	*0.0%*	*-3.7%*	*2.7%*
External Demand	*-0.9%*	*1.6%*	*0.8%*	*1.8%*	*0.1%*
__Exports	*1.0%*	*-0.3%*	*1.3%*	*1.1%*	*1.4%*
__Imports	*-1.9%*	*1.8%*	*-0.5%*	*0.7%*	*-1.4%*
GDP growth	*3.6%*	*-0.8%*	*0.8%*	*-1.9%*	*2.8%*
Growth rate, volumes					
__Exports	*4.0%*	*-0.8%*	*4.4%*	*4.3%*	*4.6%*
__Imports	*6.7%*	*-5.7%*	*1.7%*	*-2.6%*	*5.0%*

Source: Eurostat

Table 2 illustrates the annual growth rate of exports and imports in real terms, together with their contribution to GDP growth. We can observe a certain acceleration on the volume of exports when comparing the recent expansionary period to the expansionary period spanning from 2001-2007 (4.6% vs 4.0%). All the same, we can also appreciate a higher fall in imports growth rate (6.7% vs

To sum up, the Spanish external sector has been particularly affected by the crisis, mainly by the fall in imports, as a consequence of the domestic demand shortfall, whereas exports have managed, particularly during the depression, to keep their growth pace and to some extent, soften the fall of GDP. Both tendencies have translated in an outstanding improvement in the current account. Some

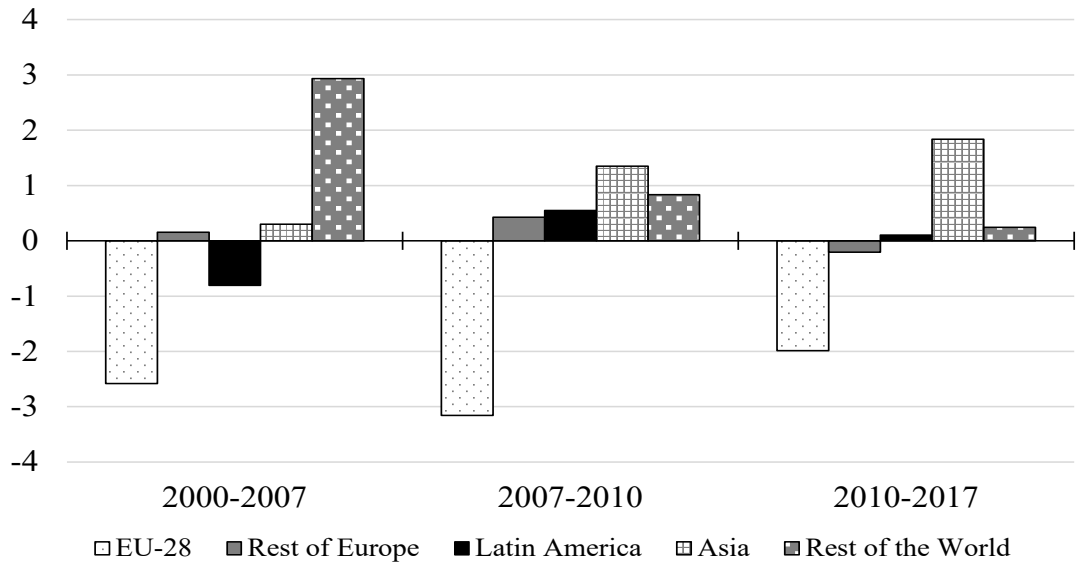
1 See Banco de España (2017, pp. 92-94) for an explanation.

2 Data from ICEX only take into account trade of goods and not of services.

scholars and institutions have rooted this adjustment, and especially the performance of exports during the last years, in the implementation of the internal devaluation strategy. For us, this is much less clear, as we will show in the next sections of the paper.

Nevertheless, its net effect on aggregate demand is ambiguous once the influence on investment and net exports is taken into account. Depending on how investment reacts to changes in the rate of profit and on how net exports react to price variations and the

Figure 4: Geographical breakdown of exports of goods, change as a % of total exports



Source: ICEX

2. Theoretical approach: using the Bhaduri-Marglin model to measure the impact of internal devaluation on net exports

As already said, the aim of this paper is to evaluate specifically to what extent and through which mechanisms the internal devaluation strategy has been responsible for the readjustment of the Spanish current account. For that purpose, we use the Bhaduri-Marglin model as our theoretical framework.

This post-kaleckian model is frequently used to determine an economy's structural nature, which could be wage-led or profit-led. Capturing the dual characteristic of wages -which constitute costs for firms and the main source of private consumption simultaneously- these authors study how the changes in functional income distribution affect the different components of aggregate demand (Bhaduri and Marglin, 1990). Accordingly, a wage share increase drives up consumption since the propensity to consume out of wages is higher than that out of profits. demand effect, these effects will offset or not the consumption expansionary effect.

There is abundant empirical literature aimed at determining the macroeconomic consequences of changes in functional distribution of income in specific countries or, more often, groups of countries. Nevertheless, most of this work has been confined almost exclusively to major OECD economies or to certain emerging countries, while Eurozone peripheral countries have rarely been included in the analyses. As exceptions, we can mention three papers in which the Spanish economy is included: Naastepad and Storm (2007), Onaran and Obst (2016) and Álvarez, Uxó and Febrero (2018). All of them find that aggregate demand in Spain is mainly wage-led.

Although we estimate a Bhaduri-Marglin model, our main interest here is not to determine the wage-led or profit–led structural nature of the Spanish economy, but to use the results to measure the effect of wage cuts on exports and imports and, then, on the external deficit correction registered in the last years. The Bhaduri-Marglin model allow us to systematically explain and decompose the effects of the internal devaluation strategy on the external sector. To our knowledge,

this model has not been yet used in this way, although Hein and Truger (2017) and Onaran and Obst (2016) follow a similar methodology to estimate the effect of a redistribution of income on external balance.

It is true that internal devaluation is focused on a reduction in unit labour costs, while the independent variable in the Bhaduri-Marglin model is the wage share (Ω). Nevertheless, changes in ULC would probably affect the wage share in the same direction because cost reductions are not fully passed-through to prices, as we have shown before. Then, a reduction in ULC will probably mean a lower wage share, and vice versa. Indeed, in Spain it has been like this during the last decade: the crisis and the policy of internal devaluation have led to a fall in the wage share of 3 percentage points of GDP.

Therefore, in order to analyse the impact of internal devaluation on the external adjustment of the Spanish economy, we investigate the marginal the effect of a 1% change in the wage share on net exports (as a percentage of GDP, Y). This, in turn, is the difference between the effect on exports of goods and services (X/Y) and the effect on imports (M/Y):

$$\frac{\Delta XN/Y}{\Delta\Omega}=\frac{\Delta X/Y}{\Delta\Omega}-\frac{\Delta M/Y}{\Delta\Omega} \qquad (1)$$

The potential ways through which this wage cut can affect the current account are threefold, being the first two the effect on net exports via prices and the third one the effect due to changes in final demand (see diagram 1)[3]:

1) "Price-competitiveness of exports": The exports of a country depend positively on the income level of the rest of the world –which is an exogenous variable- and negatively on the relative export price vis-à-vis its competitors. If the unit labour cost reduction derived from the internal devaluation strategy is at least partially translated into a decrease in the price of exports (PX), this will boost exports thanks to a gain in their price-competitiveness. Then, being the elasticity of variable A with respect to variable B, we can write:

$$\left[\frac{\Delta X/Y}{\Delta\Omega}\right]_{Xcomp}=\varepsilon_{\Omega}^{X}*\frac{X}{Y}*\frac{1}{\Omega}= \qquad (2)$$
$$=(\varepsilon_{\Omega}^{ULC}*\varepsilon_{ULC}^{PX}*\varepsilon_{PX}^{X})*\frac{X}{Y}*\frac{1}{\Omega}$$

2) "Import substitution": If the fall in unit labour costs is transferred to domestic prices (P), this could foster a process of substitution of imports by domestic production, depending on the price elasticity of imports:

$$\left[\frac{\Delta M/Y}{\Delta\Omega}\right]_{Msust}=\varepsilon_{\Omega}^{M}*\frac{M}{Y}*\frac{1}{\Omega}= \qquad (3)$$
$$=(\varepsilon_{\Omega}^{ULC}*\varepsilon_{ULC}^{P}*\varepsilon_{P}^{M})*\frac{M}{Y}*\frac{1}{\Omega}$$

3) "Demand effect on imports": Besides relative prices, imports depend on the evolution of different components of final demand (C, I, G, X). Consequently, a third effect of internal devaluation on imports can come through a change in aggregate expenditure: if the fall in ULC provokes a reduction in the wage share and the economy is wage-led –as the empirical literature seems to conclude for the case of Spain- final demand will decrease, and then the demand for imports will be lower. Once we have considered the multiplier effect, the marginal effect of a 1 p.p. change in the wage share on imports due exclusively to changes in final demand is:

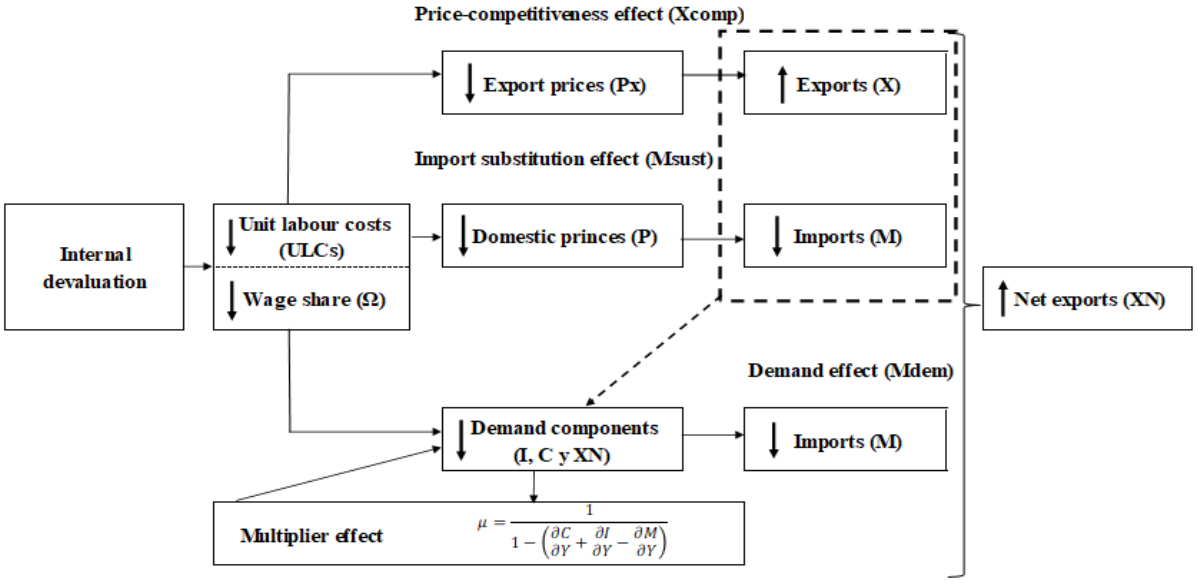
$$\left[\frac{\Delta M/Y}{\Delta\Omega}\right]_{Mdem}=\left[\frac{\Delta\frac{Y}{Y}}{\Delta\Omega}\right]_{\mu}*\varepsilon_{Y}^{M}*\frac{M}{Y} \qquad (4)$$

Where $\left[\frac{\Delta Y/Y}{\Delta\Omega}\right]_{\mu}$ is the change in aggregate demand induced by the impact of the wage share on consumption, investment and net exports (via prices), taking into account the multiplier effect, and ε_{Y}^{M} is the income elasticity of imports.

Concluding, the global impact of internal devaluation can be split up in three different channels, whose magnitude depend on all the elasticities that appear in expressions (2), (3) and (4). We estimate them in the next section. These effects, in turn, will affect consumption, investment, and net exports through the multiplier mechanism as well.

3 The dotted square represents the effect on net exports via prices.

Diagram 1: Internal devaluation pass-through mechanisms



Source: author's own elaboration

3. Methodology, data and estimation results

The Bhaduri-Marglin model includes a set of equations in which changes in the wage share affect different components of the aggregate demand (private consumption, investment and net exports)[4]. This impact takes place directly in some cases (for example, because the propensity to consume out of wages is usually higher than the same propensity out of profits, or because private investment can be sensible to the profit rate) and through changes in domestic or export prices in other (the channel of competitiveness, in the case of net exports). In this section, we use the estimation of these equations to obtain the value of all the elasticities that determine the magnitude of the three channels that we have just defined.

Regarding the estimation techniques, there are two alternative approaches. Authors such as Nishi (2012), Onaran and Stockhammer (2005), Barbosa-Filho and Taylor (2006) and Carvalho and Rezai (2016) aim at estimating a full economic model and therefore employ structural vector autoregression models (SVAR). In this paper, however, we follow the strand of literature that estimates single equations for each aggregate demand component (consumption, investment, imports and exports) and for export and domestic prices. These studies assume the functional income distribution to be exogeneous (in our case, led by internal devaluation policies), but lend themselves to a better reflection of its changes on economic growth (in our case, on net exports).

We use quarterly data from Eurostat, the OECD and the Ministerio de Economía, Industria y Competitividad from 1995q1 until 2017q4. The variables we use are the following: GDP (Y), household consumption (C), adjusted employee compensation (W)[5], adjusted operating surplus (R), private gross fixed capital formation (I), profit share (π), nominal unit labour costs (ULC), nominal long-term interest rates (r), exports (X), imports (M), import prices (pm), export prices (px), GDP deflator (p), total GDP of OECD countries (Y*), household debt (Dh), corporate debt (Dc), household debt-to-GDP ratio (DhY), private debt-to-GDP ratio (DpY) and relative effective exchange rate vis-à-vis 37 industrialized economies calculated using export prices (REER37).[6] All of them are expressed in

4 Public expenditure is an exogenous variable in this model.

5 Wages have been adjusted by multiplying real compensation of employees by employment and dividing it by the number of employees. This transformation is used to account for the remuneration of the self-employed. The operating surplus has also been adjusted accordingly.

6 This aggregate of industrialized economies includes: EU 28, Australia, Canada, Japan, Mexico, New Zealand, Norway, Switzerland, Turkey and USA.

logarithms, except for the nominal long-term interest rates.

All variables are also expressed in real terms, except for prices, long-term interest rates and nominal unit labour cost. As the ADF tests suggest that most variables are not stationary and we use quarterly data, we take the fourth difference of the variables in order to avoid spurious relations. Hence, the estimated coefficients are elasticities. Since long term interest rates and the profit share are stationary, we use these variables in levels. We have included as explanatory variables both the contemporaneous value and the first lag of the variables, keeping finally those that were statistically significant. The presence of autocorrelation has been corrected through the Cochrane-Orcutt transformation, except for the price equation (9) where an ARDL model is used.

Specifically, we have estimated the following six equations:

$$X = x_o + x_{y^*} Y^* + x_{reer37} REER37 \quad (5)$$

$$M = m_o + m_y Y + m_{ppm} PPM \quad (6)$$

$$C = c_o + c_w W + c_r R + c_{dh} Dh + c_{dhy} DhY \quad (7)$$

$$I = i_o + i_y Y + i_\pi \pi + i_r r + i_{dh} Dh + i_{dc} Dc + i_{dpy} DpY \quad (8)$$

$$P = p_o + p_{ucl} UCL + p_{pm} PM \quad (9)$$

$$PX = px_o + px_{ucl} UCL + px_{pm} PM \quad (10)$$

Equations (5) and (6) estimate the effects of demand and price variables on exports and imports. Afterwards, equation (7) and (8) measure to what extent consumption and investment are affected by changes in distribution, as in the traditional Bhaduri-Marglin model. Finally, the last two equations show if internal devaluation –represented by changes in ULC- influences on domestic and export prices. Table 3 summarizes all the results we have obtained, and the following sections will be devoted to the explanation of each separate equation.

3.1. Exports and imports determinants.

According to equation (5), exports depend on the income level of the rest of the world –proxied by the total GDP of the OECD- and the real effective exchange rate vis-à-vis the 37 industrialized economies indicator. The term x_o is a constant and we have found that the two coefficients to be estimated (xy* and xreer37) have a significant relationship with exports: an increase in the OECD GDP increases the export volume, while higher relative exports prices affect negatively to the export volume.

Equation (6) defines imports as a function of GDP (Y) and the ratio of domestic prices over import prices (PPM). Even though the ratio of domestic prices over import prices has a positive and significant impact on imports, this is rather weak, meaning that aggregate demand is the main driver of imports.

Using the results of this estimation and the evolution of the independent variables included in equations (5) and (6), and prior to the calculation of the internal devaluation effect on net exports, Figure 5 depicts the influence of demand and price variables to the annual average growth of exports and imports during the last years in Spain. As expected, we can confirm that the influence of demand as a driver of exports and imports has been much more remarkable than the impact of changes in price-competitiveness on exports or the mechanism of import substitution.

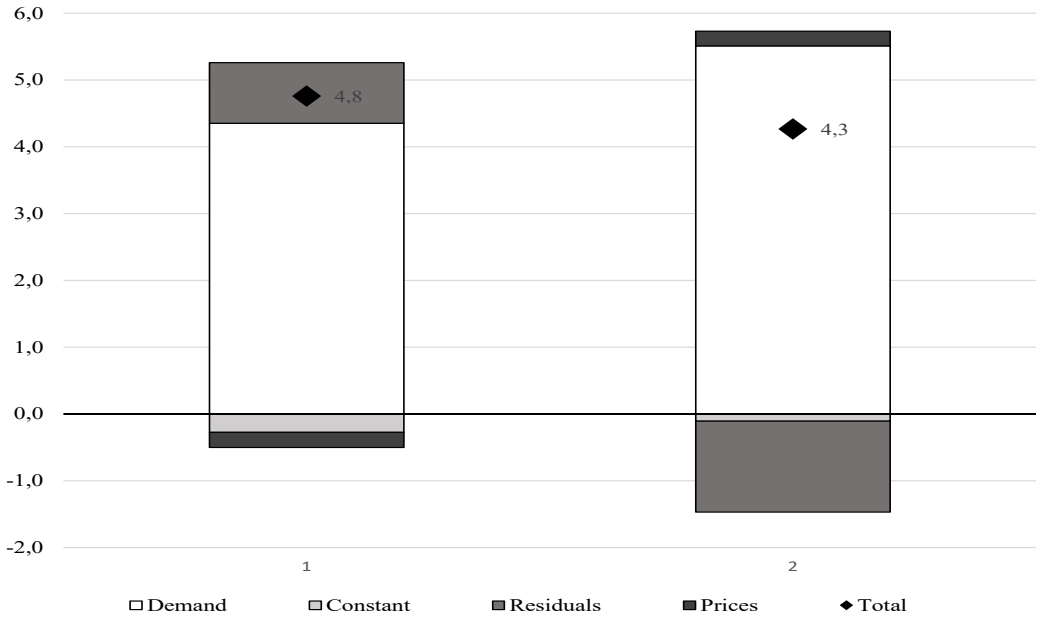
Table 3: Estimation results

	Equation (5)	Equation (6)	Equation (7)	Equation (8)	Equation (9)	Equation (10)
Explanatory variables	**Exports**	**Imports**	**Consumption**	**Investment**	**Domestic prices**	**Export prices**
ΔLY_t		2.538***		3.272***		
		(0.570)		(0.638)		
ΔLr_t				-0.00367		
				(0.00652)		
$L\pi_{t-1}$				0.418		
				(0.263)		
ΔLDh_t			0.133~	0.829*		
			(0.0720)	(0.413)		
ΔLDc_t				-0.316		
				(0.241)		
$LDpY_t$				0.106		
				(0.0964)		
dummyinv09q2				-0.0518*		
				(0.0205)		
ΔLW_t			0.389***			
			(0.0986)			
ΔLR_t			0.0862			
			(0.0626)			
$LDhY_t$			-0.0255			
			(0.0217)			
ΔLPM_t					0.00184	0.437***
					(0.00957)	(0.0338)
$\Delta LULC_t$					0.0731*	0.0745
					(0.0296)	(0.0866)
ΔLYW_t	2.783***					
	(0.187)					
$\Delta LREER37_{t-2}$	-0.324~					
	(0.176)					
ΔLC_t						
ΔLX_t						
$\Delta LPPM_{t-1}$		0.375*				
		(0.151)				
ΔLI_t						
dummym09		-0.108***				
		(0.0220)				
ΔLG_t						
ΔLP_{t-1}					1.074***	
					(0.0799)	
ΔLP_{t-2}					0.105	
					(0.124)	
ΔLP_{t-3}					-0.305***	
					(0.0757)	
dummyp97q1					-0.0198***	
					(0.00415)	
dummyp99q2					-0.0130**	
					(0.00393)	
Constant	-0.0137*	-0.0106	0.143	-2.307~	0.00166**	0.00645*
	(0.00593)	(0.0233)	(0.119)	(1.283)	(0.000616)	(0.00280)
Observations	85	86	73	71	85	87
R-squared	0.599	0.542	0.389	0.547	0.959	0.675
F	0.00889	0.00543	0.0108	0.00195	2.83e-08	0.0118
DW	1.856	1.773	1.472	2.114	2.021	1.999
Ho: Residuals WN	0.445	0.925	0.0226	0.456	0.437	0.241
ll	211.3	193.5	252.4	159.8	359	302.9
AIC	-416.5	-379	-494.9	-303.6	-702	-599.8
BIC	-409.2	-369.2	-483.4	-285.5	-682.4	-592.4
rho	0.609	0.839	0.857	0.849		0.649

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~p<0.1

Figure 5: Contributions to exports and imports annual average real growth in the period 1995-2017



Source: Author's own calculations, based on Eurostat quarterly data

3.2. Influence of internal devaluation on the determinants of exports and imports.

As the components of final demand affect imports, and they can be affected in turn by distributional changes, we also need to estimate how ULC variations and distributional changes affect domestic demand –and then, imports- or domestic and export prices –and, then, imports and exports-.

Specifically, aggregate consumption (equation 7) is determined by wages (W) and the operating surplus (R), reflecting the effect of changes in functional distribution. We have obtained that the propensity to consume out of wages (c_w) is higher than the propensity to consume out of profits (c_r). Consequently, internal devaluation implies a decrease in consumption, and then less imports. According to our results, on the other hand, propensity to consume out of profits is not statistically significant. This goes in line with the results found in Álvarez et al (2018) but differs from those in Onaran and Obst (2016).

In order to account for the financialization of the economy, we have also included financial variables both in the consumption function and in the investment function, following Onaran et al. (2011), Stockhammer and Wildauer (2016), Onaran and Obst (2016) and Álvarez et al. (2018).

Specifically, we have added the variation in household debt (Dh) and the household debt-to-GDP ratio (DhY) to equation (7). Even though accumulated debt has been proven to have a contractionary impact on consumption (Hein, 2016; Stockhammer and Wildauer, 2016 and Vasudevan, 2016), credit can also be a source of disposable income and hence drive consumption up. This will happen as long as the effect on direct demand induced by credit exceeds the consumption lost provoked by the debt service payments. According to our estimations, Dh has the expected sign, whereas DhY has no statistically significant effect.

Regarding investment, the independent variables in equation (8) are national income -as a proxy for expected demand-, profit share -as a proxy for profitability and the existence of internal resources to fund investment- and long-term interest rates, household debt growth, corporate debt growth and private debt-to-GDP ratio, defined as the sum of household and corporate debt.

We find a strong positive relationship between income and private investment, showing the explanatory capacity of the theory of the accelerator. Therefore, gross fixed capital formation is mainly driven by aggregate demand, as in other OECD and Eurozone countries (Onaran and Galanis, 2012).

The effect of a pro-capital distribution policy has been tested with the lagged profit share

(π), but the estimated coefficient is found not to be statistically significant. The same happens when alternative lag structures and specifications are tested. In neither of the estimated specifications does the profit share statistically significantly explain investment. Hein and Truger (2017), in a case study for Germany, neglect the direct effects of functional income distribution on investment. Indeed, in the case of Germany, various estimations of investment functions based on Bhaduri-Marglin and Kurz models find the profit share not be statistically significant, with the exception of Onaran and Galanis (2012) and Naastepad and Storm (2007). The same applies to the Spanish case, where Álvarez et al. (2018) find no statistically significant relationship as well.

Turning to long term interest rates, these do not have a statistically significant relationship with investment. When it comes to the debt variables, we only find a significant relationship between household debt growth and investment. This could be a reflection of the high residential investment during the period 1995-2007.

Therefore, the estimated coefficients obtained from the consumption and investment functions confirm that the demand regime is wage-led in Spain. First, the estimates from the consumption function reveal that the marginal propensity to consume out of wages is greater than that out of profits, the latter being not statistically significant. Second, the profit share has no statistically significant impact on private investment, being aggregate demand its main determinant (accelerator principle). These results are consistent with the existent literature on the demand regime in Spain (Naastepad and Storm, 2007; Onaran and Obst, 2016 and Álvarez et al., 2018). Consequently, internal devaluation can affect imports, and then external balance, through this "demand channel".

Regarding the effect of internal devaluation on domestic and exports prices (the so-called competitiveness channel), equation (9) express that GDP deflator (P) is a function of unit labour costs and import prices (PM). The coefficient p_{ulc} represents to what extent changes in unit labour costs are transferred to domestic prices and we find that is rather weak: a 1% growth in ULC is only translated in a 0.08% growth in prices. Finally, the estimation of equation 10 shows, as foreseen by Figure 1, that unit labour costs are not systematically transferred into export prices: a reduction in unit labour costs, and hence in the wage share, does not imply a price-competitiveness gain. This outcome is akin to those found in the literature in countries that are similar to Spain. In these countries, the unit labour cost coefficient is significant, yet it is much smaller than that of the domestic prices.

4. The effects of the internal devaluation strategy on the external sector

The final part of our exercise is to apply these results to quantify the three channels through which internal devaluation affect the external balance and that we have defined above. As the internal devaluation strategy begins in 2010, the external sector readjustment to be explained amounts 6.50 pp of GDP, measured in real terms.

- Price-competitiveness effect on exports:

According to Equation (2), the relation between a change in the wage share and a variation in exports depends on the relation between Ω and ULC ($\varepsilon_{\Omega}^{ULC}$); the elasticity of export prices relative to labour costs (ε_{ULC}^{PX}); and the elasticity of exports with respect to export prices (ε_{PX}^{X}).

The export price elasticity of exports (ε_{PX}^{X}) is -0.364, because we can take x_{reer37} as the export price elasticity of exports. Therefore, if the growth rate of export prices is -1%, exports grow at a 0.364% growth rate.

Nevertheless, we have not found statistically significant the relation between ULC and export prices. That means that reductions in ULC are not systematically translated into lower export prices ($px_{ucl}=\varepsilon_{UCL}^{PX}=0$) and that internal devaluation is not the root cause of the good behaviour of Spanish exports in the last years.

- Import substitution due to lower domestic prices:

In this case, we need the values of $\varepsilon_{\Omega}^{ULC}$ (the relation between changes in ULC and the wage

share), ε_{ULC}^{P} (the extent to which a change in ULC is translated into domestic prices) and ε_{P}^{M} (the price elasticity of imports).

To obtain the first of these elasticities we can take into account that the wage share is equivalent to real unit labour cost. In logarithms:

$$\Omega = ULC - P \qquad (11)$$

On the other hand, equation (9) expresses domestic prices (P) as a function of unit labour costs. Substituting (9) in (11), rearranging and deriving, we have:

$$\Omega = (1 - pulc)ULC - p_o - p_{pm}PM$$

$$\varepsilon_{\Omega}^{ULC} = \frac{1}{1-pulc}$$

We have obtained an estimated value of p_{ulc} equal to 0.076, so that $\varepsilon_{\Omega}^{ULC}$ is equal to 1.082: a decrease by 1% in the wage share implies a decrease by 1.082% in ULC.

The unit labour costs elasticity of domestic prices (ε_{ULC}^{P}) is equivalent to the coefficient p_ulc of the equation (9) of domestic prices, that is statistically significant -albeit rather weak- and amounts 0.076.

Finally, we can also obtain ε_{P}^{M} directly from the coefficient m_{ppm} of equation (6) of imports, and it is equal to 0.25.

To translate these elasticities into the marginal effect of 1p.p. change in the wage share on imports through this channel during the internal devaluation period (2010q1-2017q4), we use the average values of M/Y (0.273) and 1/Ω (1.623):

$$\left[\frac{\Delta M/Y}{\Delta\Omega}\right]_{Msust} = (\varepsilon_{\Omega}^{ULC} * \varepsilon_{ULC}^{P} * \varepsilon_{P}^{M}) * \frac{M}{Y} * \frac{1}{\Omega} =$$

$$= 0.02 * 0.273 * 1.623 = 0.01 \qquad (3)$$

Therefore, changes in ULC do affect import prices and could trigger an import substitution effect, although its magnitude is very weak: a 1 percentage point reduction in the wage share provokes a 0.01 percentage point reduction in the ratio of imports over GDP through this relative price effect (Table 4). As the wage share has decreased by 3.02 p.p. during the internal devaluation period, the change in the ratio of net exports over GDP due to import substitution has been quite modest: 0.03 percentage points.

- Demand effect on imports:

The third channel through which internal devaluation can affect net exports captures the effect of a modification in functional distribution on aggregate expenditure and, then, on imports demand. Its magnitude depends on the product of the elasticity ε_{Y}^{M} and the variation in GDP caused by the change in the wage share, taking into account the multiplier effect (see Equation 4).

Prior to the multiplier effect, we calculate the impact of a change in the wage share on consumption using Equation (7):

$$C = c_o + c_w W + c_r R + c_{dh} Dh + c_{dhy} DhY \qquad (7)$$

We substitute W by ΩY, and R by $Y(1-\Omega)$:

$$C = c_o + c_w Y\Omega + c_r Y(1-\Omega) + c_{dh} Dh + c_{dhy} DhY$$

Finally, dividing by Y and deriving, we have the elasticity of consumption relative to the wage share, whose value can be obtained from Table 3:

$$\frac{C}{Y} = \frac{c_o}{Y} + (c_w - c_r)\Omega + c_r + \frac{c_{dh} Dh}{Y} + \frac{c_{dhy} DhY}{Y}$$

$$\frac{\Delta C/Y}{\Delta\Omega} = (c_w * \frac{c}{w} - c_r * \frac{c}{R}) = 0.39$$

Since we already calculated the effect on net exports driven by a change in the wage share via relative prices (0.01) we may now turn to the effect of a change in the wage share on investment. According to Equation (8), changes in investment are explained by the accelerator effect and profitability. However, as the latter is not statistically significant, we have that a change in investment due to changes in the wage share comes down to:

$$\frac{\Delta I/Y}{\Delta\Omega} = (\frac{\Delta C/Y}{\Delta\Omega} + \left[\frac{\Delta M/Y}{\Delta\Omega}\right]_{Msust} + \left[\frac{\Delta X/Y}{\Delta\Omega}\right]_{Xcomp}) * i_y * \frac{I}{Y} = 0.22$$

According to our estimations the value of the multiplier is 1.37. Therefore, the imports demand effect of a 1 pp increase in the wage

share is:

$$\left[\frac{\Delta M/Y}{\Delta\Omega}\right]_{Mdem} = \left[\frac{\Delta Y/Y}{\Delta\Omega}\right]_{\mu} * \varepsilon_Y^M * \frac{M}{Y} =$$

$$=(0.39-0.01+0.22) *1.37*2.54*0.27= 0.57$$

Since the fall in the wage share amounts 3.02 pp, the total demand effect during the internal devaluation period is an improvement of of net exports of 1.71 pp.

- Total effect on net exports:

The total impact goes up to 1.74 p.p. of the real net exports readjustment. Most of this decrease (98%) is induced by the change in the wage share occurred via the demand effect, and not through the improvement in competitiveness, confirming that the demand effect dominates the prices effects. This result is in line with the results found in other countries.[7] Being the net exports correction of 6.05 pp, the wage devaluation strategy has been responsible for 28,8% of the readjustment.

Spanish authorities.

Frequently, this change in the external position of the Spanish economy is presented as the consequence of the recovery of past competitiveness losses. However, a first conclusion we have obtained is that changes in demand (the differentiated behaviour of GDP in Spain and in the rest of the OECD) have been much more important to explain the evolution of net exports of goods and services than changes in cost and price competitiveness. Spanish exports have been growing at a similar yearly rate in the last 20 years (with the exemption of the collapse of world trade in 2009) in spite of a very different behaviour of ULC before and after the crisis. The continuity of this good behaviour of exports and the great fall in GDP during the double-dip recession –and consequently, in imports- explains mostly the external adjustment of the Spanish economy.

Indeed, this is one of the channels through which internal devaluation can contribute to the change in net exports. As the Spanish domestic demand is wage-led (mainly because

Table 4: Marginal prices effect of a 1 p.p. increase in the wage share (Ω) on net exports at mean values for the internal devaluation period (2010-2017)

	(A)	(B)	(C)	(D)=(A)*(B)*(C)	(E)	(F)	(G)=(A)*(E)*(F)	(H)	(I)	(J)	Price effects
	$\varepsilon^{ulc}_{\Omega}$	ε^{px}_{ulc}	ε^{X}_{px}	ε^{X}_{Ω}	ε^{p}_{ulc}	ε^{M}_{p}	ε^{M}_{Ω}	1/Ω	X/Y	M/Y	
Price-competitiveness effect	1.08	n.s	-0.36	**n.s**	-	-	-	1.62	0.30	-	(D)*(H)*(I) **n.s**
Import substitution effect	1.08	-	-	-	0.08	0.25	**0.02**	1.62	-	0.27	(G)*(H)*(J) **0.01**
Total Price effects on net exports											**-0.01**

Source: Author's own calculations, based on Eurostat quarterly data

5. Conclusions

After the first decade since the creation of the monetary union, Spain reached a record current account imbalance equivalent to almost 10% of GDP. Ten years after, it shows a surplus of 2% of GDP in spite of more than three years of strong economic growth. We have used the estimation of a Bhaduri-Marglin model to measure to what extent this change in the external balance can be explained by the internal devaluation strategy applied by the consumption demand is negatively affected by a reduction in the wage share, while we have not found a statistically significant relation between the profit share and investment demand) the effect of the reduction in ULC have been a less dynamic aggregate demand and a stagnation in imports. Although this effect has not been very large, it has added to the other causes that have provoked the collapse of Spanish domestic demand during the last years (in 2017 it was still 8% lower than in 2008).

Additionally, wage devaluation has also decreased domestic prices, thus rendering domestic products more price-competitive

7 For example, Schröder (2011) illustrates this for the United States and Germany.

than imports, which results in a certain degree of import substitution. Yet this effect is rather small, reflecting that changes in unit labour costs translate only very partially into prices and that imports demand is quite price-inelastic.

Therefore, the internal devaluation strategy has had a limited effect in the Spanish current account readjustment. According to our calculations, a reduction of 1 p.p. of the wage share leads to a correction of 0.58 points of the ratio of real net exports over GDP once the multiplier effect is taken into consideration. Given the evolution of the wage share since the beginning of the crisis, (with a fall of 3.02 p.p. between 2010q1 and 2017q4), this means that, in total, the internal devaluation strategy can explain an improvement in the Spanish external sector by only 1.74 p.p. during the period of 2010-2017, that is 28, 8% of the external sector readjustment has been driven by the wage devaluation.

This effect has taken place, on the other hand, through a different transmission mechanism that the expected by the proponents of the internal demand strategy because the fall in unit labour costs has affected imports mainly via its effect on demand, and it has not had a significant effect on exports via price-competitiveness changes. Of all the improvement in net exports that can be attributed to internal devaluation, 98% is induced by a change in the demand of the economy (1.71 pp), and only 2% is due to the effect on prices (0.03 pp).

To sum up, our results show that for a complete explanation of the recent evolution of the Spanish current account, other factors than the internal devaluation strategy need also to be considered, in opposition to the interpretation frequently made by some scholars, the European authorities and Spanish institutions as the Banco de España. These include all the factors contributing to the collapse in domestic demand (financial constraints, job losses or fiscal austerity); a much better behaviour of our external markets; the increase in the number of Spanish firms that have become regular exporters, probably due to the necessity of finding an alternative to our domestic demand shortfall; or other exceptional factors as the fall in interest rates and oil prices, or the big increase in the number of tourist coming to Spain.

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