Economic sustainability and possibilities of action for the states, in the case of monetary integration: some notes for reflection

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Abstract: The economic crisis that began in 2008 highlighted the difficulties faced by those national economies members of a monetary area. Such is the case of the countries in the euro area. In this situation, the possibilities of increasing the international competitiveness of the domestic economy are severely reduced. This paper presents a theoretical analysis of the fundamentals of real exchange rate and the factors influencing pricing, focusing on the degree of competition in the markets and the cost structure. It is undertaken through the study of maximising corporate profits, formation of labour costs and determinants of market structure; contextualised in a currency area. The findings clearly show that there are efficient policies that can be applied in order to increase domestic competitiveness through internal devaluation; nevertheless, the results show that a loss of purchasing power of workers will probably be the result, while corporate profit margins grow.

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1   Introduction

Promoting movement of goods between countries and removing barriers to trade have proved to be an advance in terms of economic development and of wellbeing for societies in the countries involved.

Globalisation encompasses not only the markets, but also the customs and the culture of a society. When agreements are reached to create a monetary area, then, countries clearly enjoy benefits, which lead to achieving maximum economic efficiency through sharing the same currency, beside other benefits like the convergence between the states involved (Bearce, 2009). However, for any country, giving up some individual privileges arises some weaknesses; among these weaknesses are those resulting from losing the control of national monetary policies. Belke and Rees (2014) have investigated whether there is increasing uncertainty for monetary policy in the wake of globalisation and whether central banks have become less effective in influencing national liquidity conditions, and they conclude that the answer to both questions is clearly affirmative, and they assess that national monetary policy is faced with an increasing degree of uncertainty. Hobza and Zeugner (2014) analysed the national and supranational linkages, exploring the nature and strength of financial interlinkages within the euro area, with the rest of the EU and major global financial partners. Regarding the convergence among countries Gonda (2006), Bearce (2009) and Mendonca (2014), among others, have analysed, from different perspectives, the situation in the context of the euro zone.

Overall, the need to analyse this situation from the point of view of the academics of the economy is evident (Stiglitz, 2010; Acemoglu and Robinson, 2012; Piketty, 2014). This paper aims to shed some light on this situation, from both theoretical and applied points of view, with reference to what happened in Spain since 2008.

This work highlights how belonging to a monetary area influences the domestic economy and the main ways to manage the policy variables to balance a possible economic disequilibrium, particularly in crisis environments. The situation of the Spanish economy in the context of the economic crisis is used as an example.

To reach this goal, this paper offers in the next section a synthetic introduction of the state-of-the-art reviewing the theoretical framework related to the main economic variables influencing the value of the main macroeconomic indicators in the context of a

monetary area. Section 3 explains the method and research design. Sections 4 and 5 emphasise the key variables in this work, such as real exchange rate and the factors influencing pricing (the degree of market competition and cost structure), while Section 6 analyses the situation in the case of monetary integration and presents the results and conclusions.

2 The state-of-the-art: the theoretical framework

The construction of the euro currency area meant for Member States a loss of autonomy in the implementation of economic policies (Carlin, 2013), which probably was more important than estimated at its time. For some economies, entry into the euro area was as an opportunity (Hamilton and Olson, 2014) to boost growth based on the sectors of construction and real estate (Crowley, 2001). In an environment of sustained economic growth, with real interest rates, which sometimes were becoming negative, huge funding opportunities were generated, and the families saw in homeownership the optimal inversion formula. In the Spanish case, for example, the strong growth in the real-estate sector was a driving force for other economic sectors, resulting in intense pressure on labour demand. This translated into widespread increases in wages, well above productivity increases. Thus, a significant elevation in unit labour costs was generated, and in addition, the magnitude of the increase in costs was clearly superior to that seen in most of the countries in the monetary area. In this situation, a loss of competitiveness of the economy is produced with increasing deficits in the trade balance (Belke and Dreger, 2013; Schmitz and von Hagen, 2011), which is reflected in the progressive deterioration of the current account balance (Estrada et al., 2013). Consequently, an increasing dependence on external financing occurs (Toporowski, 2013; Isa, 2000). This fragile economy has manifested itself in the crisis of the risk premium, reached alarming levels, in some cases (Diniz and Jayme, 2013).

With the outbreak of the crisis, the automatic stabilisers produced a large deficit in the accounts of public administrations (Belke and Dreger, 2013; Holinski et al., 2012). As happened with the private debt, foreign residents funded a substantial portion of the public debt, especially the European ones. The combination of economic crisis, high debt and lack of competitiveness, leads these countries to resort to an internal devaluation (Feldmann, 2013; Plecita and Strelec, 2012). This happens because they do not have the possibility to use monetary policy, as they pertain to a currency area. Increasing competitiveness can only be done by lowering production costs and, therefore, by reducing the market price of the goods or services produced. Lacking the tools of monetary policy, non-monetary indicators are used intending to generate similar effects to devaluation (Whelan, 2013; Ledesma-Rodrigues et al., 2005). These parameters are essentially increasing productivity (very difficult in the short term), or reducing labour costs (either wages or benefits) (Coudert et al., 2013; Guerrieri and Esposito, 2012; Holinski et al., 2012). So, countries can either reform labour law (Sanchez, 2012) to reduce the cost of labour or to contain corporate profit margins. However, this second option is less attractive to employers. If the choice is to reduce labour costs, then a declining share of income of workers in national income is provoked. Labour income loses weight in relation to capital income. The purchasing power of the workers declines and this affects domestic demand. Consequently, the Gross Domestic Product may decline. This pro-cyclical movement likely stresses the initial problem drawn by the

economic crisis. This allows one conclude that the most likely result in this situation is a loss of workers' purchasing power, which probably increases the levels of poverty and inequality. Thus, the achieved situation is of a highly questionable economic and social sustainability (Bayar, 2014).

3   Method and research design

This paper deals with the problem of internal devaluation in a currency area. A theoretical approach based on traditional economic theory, on the assumptions of macroeconomics, microeconomics and economic policy is undertaken. Then, the framework is applied to the restrictive situation of a monetary area. In this situation, some instruments of economy policy are not available for policy makers. In the case that the economic situation requires public intervention, the national government faces a framework with restricted instruments to apply and it should solve the economic problems searching for alternative mechanisms. The design of this research relays on economic analysis theory and on the inter-reaction of some relevant economic variables and their interdependence. The effects of the changes on a particular variable have some economic consequences and produces effects on the others. In the framework of a monetary area and crisis, the first step consists in defining and presenting the main variables underlying price formation, then, the possible public policies to use in order to modify one or more of those variables are analysed. Nevertheless, in the context of economic crisis and monetary area, not all public policies are available, so the paper focuses on that which is possible to implement. Moreover, the microeconomic and macroeconomic interrelations are shown, which allow explaining some paradoxical situations arising from the existing economic environment. Then, it is possible to appreciate the possible magnitude and direction of the influence of the possible changes obtained with each policy. To clarify some particular situations, the Spanish economic crisis is discussed, with the Euro Area as a reference point.

4   Real exchange rate

The real exchange rate e_R is defined as

$$e_R = \frac{EP^*}{P},\tag{1}$$

where E is the nominal exchange rate (in terms of direct quotation[1]); P^* is the prizes outside (aboard); P is the prices inside (home).

e_R may be understood as the relative price of goods and services produced by overseas companies compared with the price of the companies that produce in the country, both of them measured using the same currency. Therefore, an increase in e_R can be likened to an increased competitive advantage of firms producing in the country and a declining e_R to a decrease of the competitive advantage of these firms (García Cebro, 2012).

As shown in equation (1), changes in the real exchange rate depend on three factors:

- factors linked to the evolution of the nominal exchange rate: ceteris paribus, a depreciation (appreciation) of the domestic currency increases (decreases) e_R and influence the country, increasing (reducing) the potential of companies that produce at home

- the factors behind the pricing of companies abroad: productivity, labour costs, etc.

- factors underlying the pricing of firms in country: domestic productivity, domestic labour costs, etc. (Figure 1).

Consequently, if the exchange rate was fixed in a geographical area (the value 1 in the extreme case of a currency area), then, the only factors that modify e_R would be the differences in those factors explaining pricing (productivity, labour costs and margins). However, in environments with flexible nominal exchange rate, nominal depreciations would act as a counterweight to other differentiating factors unfavourable for the purpose of influencing the potential demand of domestic companies in globalised market environments.

Finally, in addition to the real exchange rate, there are other external factors which influence the potential demand for domestic firms. Specifically, we refer to the growth of other economies. A higher (lower) growth, higher (lower) demand potential. This fact highlights the interdependence of economies in globalised markets.

Figure 1 Factors determining the real exchange rate (e_R) (see online version for colours)
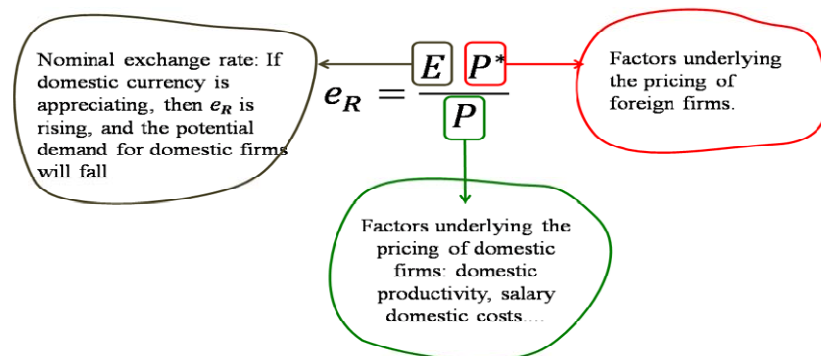
Source: Author's own

5 Factors influencing pricing: the degree of market competition and cost structure

It is assumed that markets are not perfectly competitive, so companies have capacity to decide on the prices of goods or services sold or on the amount of the total production to put on the market (Blanchard, 2011; García Cebro, 2012). Therefore, firms are working with two decision variables. If they choose the quantity that they put on the market as decision variable, then, they have to accept the market price; however, if they choose as decision variable the price of goods and services launched on the market, then this would be the one that would determine the amount of production that it would absorb.

Let the decision variable of companies be the price and they set it according to the criterion of maximising the benefit (B) that they can obtain with their business. The profit is determined by the benefit function, which is the difference between income (I) and costs (C):

$$B = I - C. \tag{2}$$

At the same time, revenues are determined multiplying the price (P) and the level of output (Y):

$$I = PY. \tag{3}$$

Costs (C) are formed by the sum of the variable costs (CV, which are those that depend directly on the level of production of each moment and are composed of raw materials, labour costs, etc.) and fixed costs (F, that are independent of the production level of each moment, i.e., installed capacity assumed external financing costs, etc.). From a temporal perspective, fixed costs are medium and long term decisions, while variable costs would fall more in short-term decisions. For simplicity, we assume that the costs associated with labour input are representative of all variable costs (it would not be difficult to differentiate between specific labour costs and those for raw materials). Under these assumptions, the cost function is

$$C = CV + F = wN + F. \tag{4}$$

Using w for the nominal wage per hour of labour, N for the number of contracted hours and F for fixed costs, the benefit function is

$$B = PY - (wN + F). \tag{5}$$

Moreover, companies generate their output using a given technology, which is reflected in the production function. To simplify, we consider the labour as the only one relevant factor as well as its efficient use in the production process of firms (productivity). Thus, we have a production function (expressed in linear form, which simplifies the algebraic expression without altering the economic results of the analysis), such as

$$Y = F(N) = aN, \tag{6}$$

where N is the number of contracted hours of labour by companies (this analysis could also incorporate other variables such as raw materials, for example) and a is the average productivity of N.

Labour productivity (a) is determined endogenously by firms (product of specific business decisions relating, for example, the management of human resources, internal training, incentive systems, etc.), but also exogenously (productivity from the environment such as infrastructure, educational systems, etc.).

5.1   Maximisation of profits

Using equations (5) and (6), the benefit function becomes

$$B = PF(N) - wN - F. \tag{7}$$

Entrepreneurs set prices by the criterion of profit maximising. But they must also decide what amount of hours they will hire (or number of employees) which is compatible with the right price to achieve the company target of maximising benefit. To do this, we obtain the necessary condition of optimum:

$$\frac{\delta B}{\delta N} = \frac{\delta P}{\delta N} F(N) + P \frac{\delta F(N)}{\delta N} - w = 0. \tag{8}$$

Given that $P = G[Y(N)]$, then

$$\frac{\delta P}{\delta N} = \frac{\delta P}{\delta Y} \frac{\delta Y}{\delta N} \tag{9}$$

$$\frac{\delta B}{\delta N} = P \frac{\delta F(N)}{\delta N} + \frac{\delta P}{\delta Y} \frac{\delta Y}{\delta N} F(N) - w = 0 \rightarrow P \frac{\delta F(N)}{\delta N} + \frac{\delta P}{\delta Y} \frac{\delta Y}{\delta N} F(N) = w. \tag{10}$$

On the other hand, it is known that

$$\frac{\delta Y}{\delta N} = \frac{\delta F(N)}{\delta N} = a. \tag{11}$$

And, from equations (10) and (11):

$$Pa + \frac{\delta P}{\delta Y} aY = w. \tag{12}$$

Multiplying and dividing by P the second term

$$Pa + \frac{\delta P}{\delta Y} \frac{P}{P} a\ Y = w \rightarrow Pa \left(1 + \frac{\delta P}{\delta Y} \frac{Y}{P} \right) = w \tag{13}$$

$$Pa \left(1 - \frac{1}{-\frac{\delta Y}{\delta P} \frac{P}{Y}} \right) = Pa \left(1 - \frac{1}{\varepsilon} \right) = w, \tag{14}$$

where ε is the elasticity of the demand

$$\varepsilon = -\frac{\delta Y}{\delta P} \frac{P}{Y}. \tag{15}$$

By developing the term (14):

$$P \left(1 - \frac{1}{\varepsilon} \right) = \frac{w}{a} \rightarrow P \left(\frac{\varepsilon - 1}{\varepsilon} \right) = \frac{w}{a} \rightarrow P = \left(1 + \frac{\varepsilon}{\varepsilon - 1} - 1 \right) \frac{w}{a}, \tag{16}$$

where

$$P = \left(1 + \frac{1}{\varepsilon - 1} \right) \frac{w}{a} \rightarrow P = (1 + b) \frac{w}{a}. \tag{17}$$

Being

$$b = \frac{1}{\varepsilon - 1}. \tag{18}$$

And equation (19) is obtained

$$P = (1+b)\frac{w}{a}. \tag{19}$$

This equation explains the factors which influence the pricing of goods and services that the company launched. This indicates that the price fixed by companies (the profit-maximising one) is fixed with a margin b on the ratio between wages and labour productivity $\left(\frac{w}{a}\right)$.

The variables costs for each unit produced, or average variable costs (AVC), are given by the ratio between the total variable cost (VC) and the number of units produced (*Y*).

$$\text{AVC} = \frac{wN}{Y}. \tag{20}$$

As $Y = aN$, it is possible to state that $\text{AVC} = \frac{wN}{Y} = \frac{w}{a}$.

At the same time, the increase in total cost for each additional unit or goods and services produced is the marginal cost (MC), which is the derivative of total cost (*C*) related to the number of produced units (*Y*):

$$MC = \frac{dC}{dY}. \tag{21}$$

As $C = wN + F = w\frac{Y}{a} + F,$ then

$$\frac{dC}{dY} = \frac{w}{a} \rightarrow MC = \frac{w}{a}. \tag{22}$$

Then, the MC = *w/a* = AVC is determined by the structure of labour costs of enterprises. Consequently, the price equation shows that firms set their prices with a margin b over its structure of unit labour costs.

Two factors determine the formation of unit labour costs: the operation of the labour market, which influences the formation of labour costs *w*, and labour productivity *a*. So that to lower (higher) wage costs, lower (higher) unit labour costs and lower (higher) optimal prices set by firms. Moreover, a higher (lower) productivity, lower (higher) unit labour costs and, consequently, lower (higher) optimal prices set by firms.

This shows that may be consistent increases labour costs with lower unit labour costs, if such increases are accompanied by increases proportionally higher labour productivity. Therefore, the behaviour of productivity (explained exogenously and/or endogenously) is crucial to explain the evolution of unit labour costs (García Cebro, 2012).

5.2 Formation of labour costs

From a bargaining process between unions and employers, the variables that influence the negotiation process for setting nominal wages, are set out in the following wage equation:

$$w = a^e P^e F(u, Z). \tag{23}$$

The salary w is formed through negotiation between unions and employers, and depends on the following factors:

$$w = f(a^e, P^e, u, Z), \tag{24}$$

where w is the negotiated wage; a^e is the expected productivity. The higher (lower) is the expected productivity, higher (lower) is the negotiated wage. P^e is the expected price level. A higher (lower) expected price level, higher (lower) wage negotiated. u is the unemployment rate. With increasing unemployment rate (u), the negotiated wage is lower (or at least less increases), conversely, decreases in the unemployment rate leads to higher nominal wages negotiated (Figure 2). The explanation of this relationship is based on a reduction (an increase) in the rate of unemployment unions gives higher (lower) pressure capability in the negotiation process (and vice versa).

   Z is the variable reflecting the institutional regulation of the labour market and where variables such as minimum wage legislation, unemployment, dismissal, collective bargaining, sectorial and geographical mobility are included. A higher value of Z (a more rigid labour market regulation, less mobility, etc.), induces a higher negotiated wage. The variable Z is another factor by which governments may influence in the economy, through regulating the labour market: rules for layoffs, minimum wages, etc. In an analysis more focused on labour, we should consider the labour heterogeneity (Poilly and Sahuc, 2013).

Figure 2 Factors underlying profit maximisation (see online version for colours)
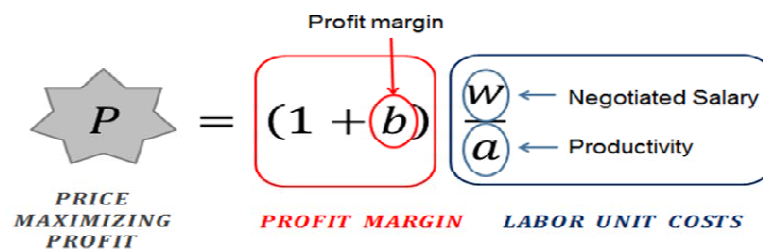
Source: Author's own

5.3 Relationship between prices and profit margins

The ability to raise prices above costs and thus corporate profits, is related to the market power of firms, and the higher the greater this power, so that in monopolistic markets this capability would be the maximum, and it would decrease when competition will increase, becoming zero in the case of perfectly competitive markets, characterised by price (p)

equal to marginal cost (MC). A widely used measure of market power is the Lerner index, which is given by the expression:

$$L = \frac{p - c}{p},$$
(25)

where c is the marginal cost and p the price.

This index, as well as being a good indicator of market power, is a good measure of the ability to increase the differences between prices and costs and therefore the possibility of increase corporate earnings unit terms. In perfectly competitive markets the index would be zero, in view of the equality $p = c$, according to the statements of economic theory, that in such markets entrepreneurial profit is zero, which would correspond with the so called 'standard benefits' because it is assumed that the opportunity costs are included in the cost function used for calculation of this indicator.

On the other hand, it should be considered how consumers respond to price changes depending on the characteristics of demand. In this sense, microeconomics indicates that the greater the elasticity of demand is, greater the response in terms of reduction (increase) in demanded quantity to increases (decreases) in prices, so that the decision of rising corporate profits through increasing prices, should take a look to the value of this variable.

5.4   The elasticity of demand

Demand elasticity is

$$\varepsilon = -\frac{\mathrm{d}q / q}{\mathrm{d}p / p} = -\frac{\mathrm{d}q}{\mathrm{d}p}\frac{p}{q},$$
(26)

where p and q are prices and quantities, respectively.

Thus, the elasticity of demand has two essential components: one that depends on the slope of the demand which is inversely proportional to this slope $\frac{\mathrm{d}q}{\mathrm{d}p}$, and other which depends on the values of prices and quantities $\left(\frac{p}{q}\right)$, and it is represented, in graphic terms, by the coordinates of the specific point in the demand for which is being calculated the elasticity. Taking this into account, ceteris paribus, on the one hand, demands more inclined would have smaller elasticity, and on the other hand, the greater elasticity of the demands should correspond to high prices and low quantities, that is, in their upper area. The negative sign is a simple reference to the movements in contrary direction of prices and quantities. Figure 3 shows an intuitive view of the values of the elasticity of demand on the basis of the values of the tangent of the angles α and β.
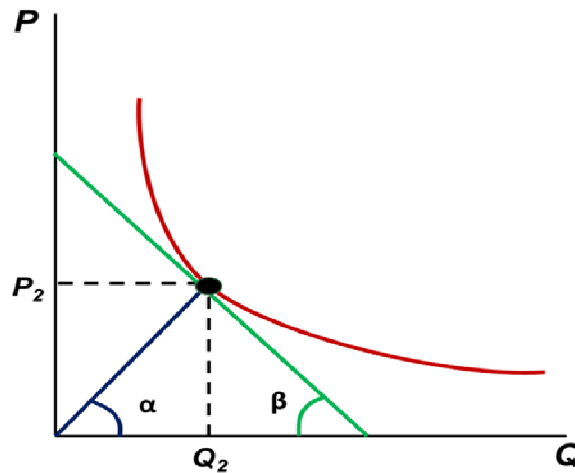
Where $tg\alpha = \frac{p}{q}$ and $tg\beta = \frac{pq}{dp}$, therefore, the demand elasticity would be

$$\varepsilon = -\frac{\mathrm{d}q}{\mathrm{d}p}\frac{p}{q} = -\frac{1}{tg\beta}tg\alpha = -\frac{tg\alpha}{tg\beta}.$$
(27)

$$\varepsilon = -\frac{tg\alpha}{tg\beta} \rightarrow \varepsilon = \left|\frac{tg\alpha}{tg\beta}\right|$$
(28)

$$\varepsilon = \left| \frac{tg\,\alpha}{tg\,\beta} \right|. \tag{29}$$

Figure 3 Price elasticity of the demand (see online version for colours)

Source: Author's own

Thereby, it is easy to see that for in a straight demand higher prices areas will match with elasticity >1 (and, therefore, in the areas where the ability to increase profit margins on the costs are more complicated, the Lerner index is <1), while for the lower price, the elasticity of demand is lower than 1, and the ability to obtain higher profit margins rises (the Lerner index is >1) (Figure 4).

Figure 4 Demand elasticity and Lerner index (see online version for colours)
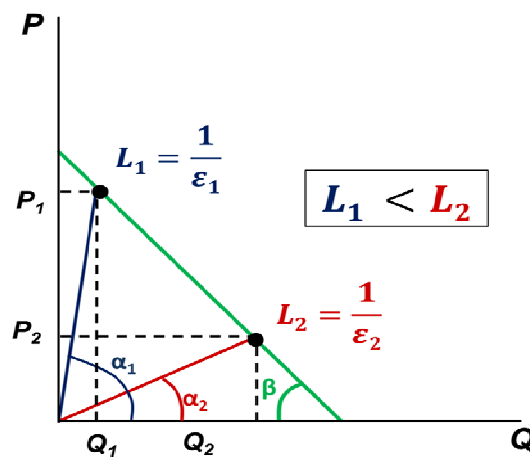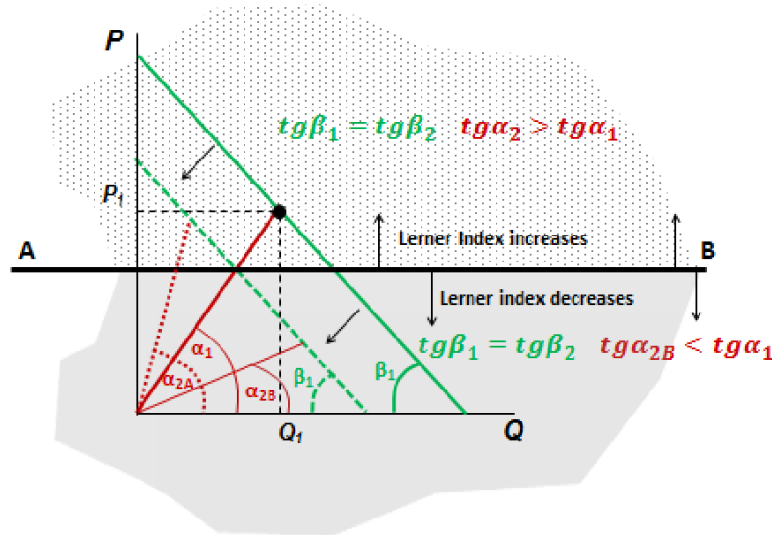

Source: Author's own

Therefore, when prices fall, the ability to increase profit margins is higher. This analysis can be considered price in relative terms (for example regarding the European environment), to suit the particular case.

5.5 *Decrease in demand and internal devaluation*

In Figure 5, the border of increase or decrease of the Lerner index compared to a given initial situation is presented.

Figure 5   Areas where market power increases, when demand and prices fall (see online version for colours)

$$tg\beta_1 = tg\beta_2 \quad tg\alpha_2 > tg\alpha_1$$

$$tg\beta_1 = tg\beta_2 \quad tg\alpha_{2B} < tg\alpha_1$$

Source: Author's own

In the present case, the reduction in the purchasing power of a country, due to the crisis, is causing a fall in domestic demand. Graphically, it is represented by a demand shift to the left. In this situation, it may be that the Lerner index increase or decrease. The outcome will depend on the magnitude of the shift in demand (fall in demand) and the decrease in the quantity demanded (falling prices due to the internal devaluation).

In Figure 5, the line AB marks the division between the areas where the Lerner index can increase or decrease. For a straight demand (*tgβ* constant), the Lerner index depends only on *tgα* value, and the higher it be, the higher the demand elasticity will be and, therefore, the lower the Lerner index.

Consequently, when a fall in demand (shift to the left in Figure 5) and an internal devaluation (price decrease or downward movements in Figure 5) are combined, they could draw two scenarios:

The final equilibrium could be in the area between line AB and initial position. The Lerner index will decrease (demand elasticity increases).[2]

The final equilibrium could be under the AB line. It will be the opposite situation: demand elasticity decreases, and Lerner index increases.

The last situation (b) explains how with prices and demand are falling, an internal devaluation is produced, while the margin of benefits could increase.

5.6 Evolution of corporate profits and unitary benefits

The above allows you to check that the benefit rates and the internal devaluation may increase in crisis environment.

However, this increase in profit rates does not necessarily imply an increase in profits. According to estimates by Montero and Urtasun (2013) for Spain, margins above marginal cost in the Spanish companies have generally followed a pattern quite similar to various industry and company size. In fact, average spreads over the Marginal Costs of the Spanish companies have shown an increasing trend in recent years, despite an economic environment of sharp contraction in activity. The crisis has led to a decline in sales and business profits. Thus, the final situation is increased benefit ratios and diminishing returns at the same time.

This example can be illustrated simply by looking at the ATC and MC (Figure 6), which shows how, for a constant given price, when sales decrease (lowering 'Q') can increase profit margins (measured as the difference between P and MC), and, at the same time, with lower profits per unit (measured as the difference between price and ATC). Thus, the coexistence of increased profit margins by reducing corporate profits is explained.

Figure 6 Determining spreads on average and marginal costs (see online version for colours)
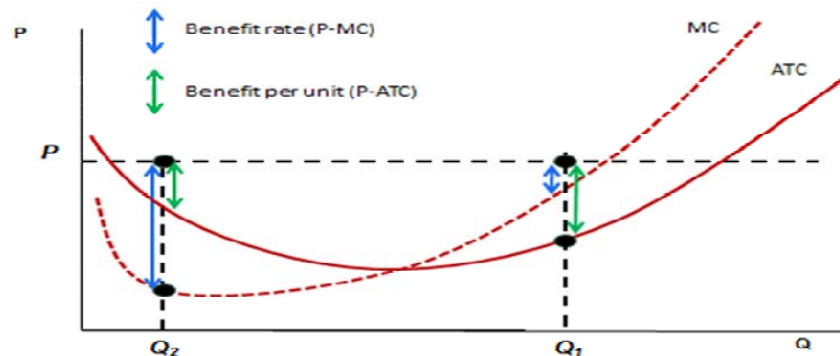
Source: Author's own from Montero and Urtasun (2013)

Figure 6 shows an example where there is a reduction in sales (Q1 to Q2). It produces an increase in the rate of profit (P-MC), and provides reduction of profit per unit produced (P-ATC). Since the total benefit is the result of multiplying (P - ATC) Q, then, when sales are Q2, profit is clearly inferior to the case where sales are Q1, which is consistent with rates greater benefit in the first case than in the second.

6 The case of monetary integration

The postulates of economic theory suggest that when a country's productivity increases less than that of other countries, it loses internal and external competitiveness; the same happens if prices or wages grow faster than for the rest of the countries with which it does business. If this country could devalue its currency to restore competitiveness, two favourable effects on the balance of payments occur: first, an increase in exports, and

secondly, a decrease of imports. Furthermore, the measure of this economic policy has nearly immediate effect.

However, if this country is in an area where there are no monetary or tariff barriers, as with countries in crisis within the euro area, the recovery of competitiveness is complex. This is because productivity losses cannot be recovered through currency devaluation. So as to ensure that domestic prices become relatively cheaper, the only possibility is internal devaluation: it is necessary to achieve a reduction in unit labour costs (increases in productivity, which should be higher than salaries) or reduced rates of corporate profits (increasing competition in markets for goods and services). But internal devaluation has no quick effect. It is a long and complex process, during which agents have less options, feeling, moreover, that 'who pays the cost' of return to competitiveness can swing between wages and profits (Figure 7). In this line, the work of di Mauro and Pappadà (2014) data show that, 'with respect to the surplus country (Germany), countries running a trade deficit (Spain, Italy) are characterised by a productivity distribution with a lower mean and a less fat right tail (lower skewness)'. For these countries, the adjustment of trade balances requires a larger relative price movement because of the limited role played by the extensive margin. Importantly, also among deficit countries, there are rather important differences in the firm productivity distribution, which implies, ceteris paribus, lesser need of relative price adjustment for given combinations of higher mean and/or higher skewness of the productivity distribution.

Figure 7   The case of monetary integration (see online version for colours)
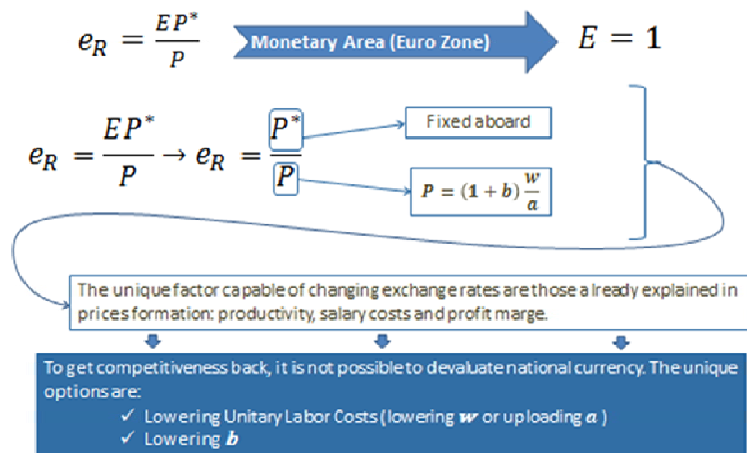
Source: Author's own

In a currency area, for example in the euro area, the exchange rate E would be equal to 1, and, then, the real exchange rate would be $e_R = EP^*/P = P^*/P$. And the unique factors that could change 'e_R' would be those explained in fixing prices (productivity, salary costs and profit margins). When a country is in a currency area, the way for recovering productivity is quite complex, because this country cannot recourse to currency devaluation. To get cheaper domestic prices, and consequently achieve increased competitiveness, the only possibility is internal devaluation, that is to say:

- *Lowering unit labour costs*. This can be achieved in two ways: either by lowering nominal wages, increasing productivity.

- *Lowering the margin of profit*. But internal devaluation has no immediate effect, and instead it is a long and difficult process during which agents have less chance.

This problem has been suffered by the economies of southern Europe, immersed in the common monetary zone, the so call, euro-zone. However, this is a problem that can happen to any of the economies of the euro-zone. Countries do not have access to monetary policy and therefore those countries lack some powerful tools to correct the imbalances in their economies. The questions this paper asks are: Is this situation sustainable? What are the measures to be taken by countries? What are the measures to be taken by the European Union?

7 Results and conclusions

Countries immersed in the euro-zone have accepted a loss of autonomy in the conduct of their economic policies that are likely to be more important than it was considered at the time of joining it. For some economies of southern Europe, such as the Portuguese or the Spanish ones, the membership in the euro area was understood as an opportunity to boost growth. In an environment of sustained economic growth, with real interest rates that sometimes became negative with huge funding opportunities, families saw in homeownership the optimal inversion formula. The strong growth in this sector was a driving force for other economic sectors, resulting in intense pressure on the demand for labour, which resulted in widespread increases in wages well above productivity gains. This caused a significant rise in unit labour costs in these countries, which was obviously higher than that experienced in most of the countries of the European monetary area. The result was a loss of competitiveness of the economies that were in this situation, of which Spain is a genuine representative. This made evident by the progressive deterioration of the current account balance, driven mainly by rising deficits in the trade balance. Consequently, Spain's dependence on external financing increased to values that were close to ten percent of GDP at the end of the expansion stage. This weakness of the Spanish economy had its most expressive manifestation in the crisis of the risk premium, which reached its alarming levels in the spring and summer of 2012.

With the outbreak of the crisis, the automatic stabilisers produced a large deficit in the accounts of public administrations. So far the public debt remained well controlled, slightly exceeding thirty percent of GDP. Thereafter, it unstoppably rose until it tripled, reaching a value close to that of GDP. As it happened with the private debt, a substantial portion of the public debt was financed by foreign residents, particularly Europeans.

The shocks of summer 2012 did not give many options: either drastic measures should be had taken, or leaving the single currency area. The 'recommendations' of international organisations and of the most influential leaders suggested immediate reforms, especially targeting labour and taxation.

An internal devaluation attempted to break the combination of economic crisis, high debt and lack of competitiveness of the economy. Non-monetary instruments are liable to generate similar effects to the devaluation of the currency should be capable of achieving the same goal: lower costs of production and, consequently, of the market price of the goods or services obtained. The proposed labour reforms were aimed at reducing the cost

of labour; unfortunately, not the same effort has been put into containing corporate profit margins. This has caused a decline of the share of income of workers in national income in favour of capital income. This is one of the legacies lingering after the current economic crisis. Moreover, the global financial crisis determined a sharp reduction of the capital flows to Spain and a persistent slump in Spanish real activity – falling house prices, and a tightening of collateral constraints for Spanish borrowers in 't Veld et al. (2014).

Summarising, this paper's main contributions are, on the one hand, on the theoretical matching between micro and macroeconomic variables, in the context of a monetary integration, when the economic environment is suffering a strong economic crisis, and on the other hand, the link to applied economics using the case of the Spanish situation in the euro zone. The results help clarify the possibilities of action of policy makers, when they do not have the option of resorting to monetary policy. Then, some questions can be answered, such as, the application of fiscal consolidation policies instead of monetary devaluation. The main conclusions are focused on the monetary area constrained possibility of action for national States, and can be systematised as follows; the feasible possibilities for States in a monetary area are less effective on short term than currency devaluation. The only possible action is diminishing entrepreneurial profits or diminishing real salaries. Diminishing profits is not a desirable measure for firms. One way to diminish salaries is increasing productivity (not possible in short term). Other way to diminish the costs with salaries is to decrease nominal salaries. Therefore, one likely option for solving the crisis could be adopting the best solution for firms, which is, diminishing nominal salaries; in this way, increasing international competitiveness requires lowering workers' purchasing power. Then, the social sustainability of the system becomes more and more insecure and doubtful, because there is a scenario of increasing the risk of poverty for workers (by lowering wages), fostering social inequalities (by increasing profits rates while real salaries are falling). That is why the European Union proposes the coordination in the euro-zone (European Union, 2010):

> "Our short-term priority is a successful exit from the crisis. It will be tough for some time yet but we will get there. Significant progress has been made on dealing with bad banks, correcting the financial markets and recognising the need for strong policy coordination in the Eurozone […]. These seven flagship initiatives will commit both the EU and the Member States. EU-level instruments, notably the single market, financial levers and external policy tools, will be fully mobilise to tackle bottlenecks and deliver the Europe 2020 goals. As an immediate priority, the Commission charts what needs to be done to define a credible exit strategy, to pursue the reform of the financial system, to ensure budgetary consolidation for long-term growth, and to strengthen coordination within the Economic and Monetary Union".

In short, we can argue that the effectiveness of economic policies available for National States, in the environment of a monetary area, like de Euro-Zone, is less effective in the short term. Moreover, policy makers should decide to apply different legal regulations, which can be more or less balanced, in terms of affecting workers (wages or working conditions) or firms (profits). In Spain, this situation brought an increase in inequality, due, among other reasons, to the dramatically decreasing wages linked to the new labour regulation boosted under the umbrella of the crisis economic environment and to the need of increasing Spanish competitiveness in the European Union market. Further research should be undertaken to analyse the evolution of income distribution in Spain, to examine

if the inequality will go down if the crisis turns to an improved economic environment. If so, the effect of public policies for increasing competitiveness will not be so tight for workers in the medium or long term.

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Notes

[1]Direct quotation: Exchange rate = Number of units of domestic currency are needed to buy one unit of foreign currency. For example, if € 2 correspond to a £, a rise in the exchange rate will mean a depreciation of the euro, i.e., the euro is worth less and therefore it should be given more euros for a pound. By contrast, the indirect quote assumes that the exchange rate is equal to the number of units of one currency that is purchased with a unit of domestic currency; in this case an increase in the exchange rate will be an appreciation of the euro.

[2]Equilibrium above the initial situation is discarded because it would result in price increases, incompatible with the state of internal devaluation analysed.