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In this paper, we analyze the differences in the sensibility of the distribution and transportation margin to exchange rate variations among different sectors in several European countries between 1995 and 2007. On the one hand, we provide new evidence that the margin reacts to exchange rate movements, a fact that may help to explain the still unresolved puzzle concerning the incomplete pass-through of the exchange rate to consumer prices. On the other hand, we look for indications of the characteristics of global value chains governance through the evolution of distributional margins. In addition, in order to draw more subtle conclusions, one original feature of this work is that we empirically allow for asymmetrical reactions of distributional margins to depreciations or appreciation, an effect that was previously ignored in the literature.

JEL Classification: L16, L1, F00, C23

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February 8, 2011

Abstract

In this paper, we analyze the differences in the sensibility of the distribution and transportation margin to exchange rate variations among different sectors in several European countries between 1995 and 2007. On the one hand, we provide new evidence that the margin reacts to exchange rate movements, a fact that may help to explain the still unresolved puzzle concerning the incomplete pass-through of the exchange rate to consumer prices. On the other hand, we look for indications of the characteristics of global value chains governance through the evolution of distributional margins. In addition, in order to draw more subtle conclusions, one original feature of this work is that we empirically allow for asymmetrical reactions of distributional margins to depreciations or appreciation, an effect that was previously ignored in the literature.

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1 Introduction

For many years, one of the major issues in international economics has been the link between exchange rates and prices. Indeed, understanding the form and the scale in which exchange rate changes are passed through to prices is an important issue for macroeconomic stability in general and for monetary policy, in particular.

Yet, despite the large body of literature and interest in the exchange rate pass-through, there are still important issues that bewilder economist and policymakers. In particular, the persistent gap between cost shocks and consumer prices and, in a less extend, to import prices, is a well established fact and a fundamental puzzle in international economics (Campa and Goldberg (2002), Frankel, Parsley, and Wei (2005), Campa and Goldberg (2006)).

In this sense, international trade theory argues that, if all goods and services were traded at a negligible cost and if their prices reflected only their production costs, then retail prices should be very responsive to exchange rate changes. In other words, under a perfect competition structure, the pass-through should be complete or almost complete. As such, the theoretical arguments to explain the important

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disconnection between exchange rates and final prices are mainly explained from an imperfect competition framework. For instance, Engel (2002) suggests three potential causes: (1) the existence of local costs (e.g., costs for non-traded services such as transportation, storage, marketing or insurance) even among goods that are typically considered to be "traded"; (2) pure nominal price rigidities (also known as "menu costs") that lead to "local-currency pricing" and (3) the adjustment of profit margins that foreign exporters and local distributors have as a result of imperfect competition (Goldberg and Hellerstein (2008))¹.

Concerning the first point, distribution costs for imported goods are shown to mitigate the overall foreign content of the consumption value of imports, and drive a wedge between border and retail prices (Burstein, Neves, and Rebelo, 2003).

With respect to the second point, the literature suggests that shocks resulting from monetary non-neutrality appear to account for a great part of business fluctuation (Nakamura and Steinsson, 2010) and, consistently, that sticky prices represent a key determinant of exchange rate pass-through (Devereux and Yetman, 2010). If prices denoted in domestic currency are sticky, as a consequence of firms facing costs of changing prices, the domestic currency (import) price will not be fully altered even if exchange rate changes affect marginal cost. This implies that import prices do not move immediately and in a one-to-one relation with the exchange rate. Nominal rigidities thus imply that exchange rate movements have a minor immediate effect on consumer price inflation (Adolfson, 2001).

In the third case, the argument is that retail prices do not fully reflect changes in costs mainly because exporters, producers or distributors are able to adjust their margins. Indeed, in practice, many goods and services are produced in imperfectly competitive markets. In terms of prices for these goods, firms are then able to make a profit margin over costs. If this is the case, in order to maintain stable prices or expand their market share at the retail level, the margin can be modified for exchange rate variations to be absorbed. In this sense, distributors' margins can provide partial insulation from internationally transmitted shocks because of strategic mark-up adjustments along the supply distribution chain (Goldberg and Campa, 2010).

The incomplete exchange rate pass-through to prices because of margins adjustment can be linked to issues related to the process of globalization. Indeed, the extensive literature on Global Commodity Chains (GCC from now on) insists that, because of global sourcing, fragmentation of productive processes and tougher international competition, the balance of power along GCC has significantly evolved². For instance, Milberg and Winkler (2008) and Milberg and Winkler (2010) point out that the development of off-shoring has contributed to the improvement of US firms' mark-up thanks to reduced input prices. Gust, Leduc, and Vigfusson (2010a) and Gust, Leduc, and Vigfusson (2010b) propose that, when a firm's demand curve has a variable elasticity, a declining pass-through to import prices should be linked to trade integration because of foreign producers' mark-up adjustments along the

¹Another argument to explain the disconnection is related to the distances and costs involved in shipping goods. However, the empirical evidence suggests that geographical distance is not the main determinant for the lack of consumer price sensitivity to exchange rate movements (see, for instance, Engel and Rogers (1996))

²See, in particular, Gereffi and Korzeniewicz (1994) and Bair (2009).

intensive margin.

From an empirical point of view, the literature that explores the role of the exchange rate in distribution margins is not especially abundant, in part because margins are not directly observable, especially not in aggregate data. A notable exception is the contribution of Goldberg and Campa (2010), who report that home currency depreciations are associated with statistically significantly lower distribution margins in a single panel regression containing the United States and 9 European countries over the period 1995-2001. Unfortunately, the previous study overlooks the heterogeneity of the industrial structure³. On the contrary, by relying on disaggregated data from the Bureau of Labor Statistics' CPI and IPP databases Berger and Steverson (2009) find that that distribution wedges do not vary systematically with exchange rates in the United States. Finally, Hellerstein (2008) presents evidence that markup adjustments by manufacturers and retailers explain roughly half of the incomplete transmission in the imported beer market in the U.S.

Even less attention has been paid to the possibility of asymmetric reactions of distribution margins to exchange rate variations. Indeed, even though the theoretical literature has identified at least two possible reasons why the elasticity of prices to exchange rate changes may be asymmetric between appreciations and depreciations, not such awareness has been devoted to the possible asymmetric reactions of distribution margins. Indeed, from the exporters' point of view, if firms are attempting to increase market shares in foreign markets subject to the possibility of trade restrictions, then more pricing-to-market (PTM) may occur during appreciations of the exporters' currency. On the contrary, if firms face capacity constraints in their distribution networks, then PTM may be exaggerated during periods of depreciation of the exporters' currency (Knetter, 1992).

Following the previous claims, in this paper we argue that a similar argument can be applied to the local distributors' margins in a non competitive framework. In addition, we push the argument one step further while showing that the evolution of distribution margins and the asymmetric adjustment to exchange rate variations throughout various industries should be seen as an indicator of the evolution of the balance of power between producers and distributors.

In sum, we address the following issues: (1) Is there a positive relation between the evolution of distribution margins and globalization? (2) How much do local distribution margins respond to exchange rate fluctuations? (3) Do margins respond differently when the local currency appreciates than when it depreciates?. Addressing the aforementioned issues, the originality of our contribution will be, first to focus on the margins-exchange rate relationship instead of the pass-through to consumer or import prices. Second, we point out the diversity of margins' levels among industries and the variety of their sensibility to exchange rate dynamics. We argue that, to some extent, this variation should be explained by the diversity of the GCC governance structure and their evolution.

This paper is organized as follows. The following section explains our conceptual framework and our research assumptions. In section 3 we explain our methodology.

³Indeed, as noticed by Bottazzi, Dosi, Jacoby, Secchi, and Tamagniz (2010), the empirical evidence reveals an impressive heterogeneity concerning, among other characteristics, profitability. In addition, heterogeneity among industries and sectors is very persistent over time in the levels of whatever micro variable one looks at.

Section 4 present the data and measurement issues. The results are provided and discussed in section 5. Finally, in the conclusion we summarize our arguments, stress their originality and raise some policy issues.

2 Conceptual framework

In a perfect competition framework, exchange rate variations impact the general price index in the proportion of the share of imported prices in the domestic consumption. However, even though the degree of exchange rate pass-through to import prices is an important determinant of the magnitude of the pass-through to consumer prices, incomplete pass-through also relates to market structures that deviate from perfect competition.

Indeed, the literature suggests two main phenomena that are implied in this process of mitigating the effects of exchange rate variations over consumer prices (Burststein, Neves, and Rebelo (2003); Campa and Goldberg (2005); Hellerstein (2008)). First, the distribution margins (i.e. transportation, storage, finance, insurance, wholesaling, and retailing activities) contribute local-value-added components to the final consumption value of imports and reduce the weight on border prices for imports in the CPI. Second, another marginalization occurs when distributors choose to vary their margins to absorb some of the exchange rate changes in order to maintain stable prices or expand market share at the retail level (Hellerstein, 2008).

Effectively, under imperfect competition, suppliers have a degree of market power, and set their price taking into account the demand of consumers. In addition, as it is the case for exporting firms in a PTM strategy, asymmetries and non-linearities can be generated at the local distribution level as well, with the pricing decision depending not only on the marginal cost but also on the structure of the market. For instance, if a distributor keeps the price of a certain product unchanged (because of the complementarity in price setting, a firm does not want its price to deviate too far from its competitors), it is optimal for producers to increase his margin in response to a dollar appreciation. An opposite situation may arise if, when faced to an exchange rate depreciation, it is not possible for the distributor to adjust the price upwards and, therefore, his margin is compressed. Accordingly, pass-through of exchange-rate changes to prices is incomplete because the distribution margin absorbs some of the variations in the exchange rate.

It is important to notice that, in the decision to adjust the price and/or the margin, the distributors' objective is to maximize his profit without losing market share. This would imply that price-setters have a bigger incentive to pass depreciations than appreciations to the final price if their market power allows them to do so. The previous mechanism has opposite implications on the margin level⁴. Therefore, given that distributors have more incentives to increase their margins than to reduce them, we should expect a higher impact of the exchange rate due to appreciations than due to depreciations. In other words, the margin may react asymmetrically to movements in the exchange rate.

⁴Notice that the more the distribution's margin responds to changes in the nominal exchange rate the lower the pass-through (Berger and Steverson, 2009). Contrary, if the pass-through is complete, their margin will not respond to fluctuations of the exchange rates, thus leading to a pure currency translation.

The margin's (symmetric or asymmetric) responsiveness to exchange rate movements may depend on several factors, among them the form of competition that takes place in the market for the industry and the extent of price discrimination. As such, we could expect the following heterogeneous reactions among different industries or sectors depending on the complexity of demand and supply channels in a non-competitive framework in each one of them:

1. A positive shock to the exchange rate of the domestic currency (i.e. a depreciation of the domestic currency) will make imports more expensive. In order not to pass completely the increase in the cost to final prices, the local distributor reduces his margin;
2. A positive shock to the exchange rate is not passed to the margin since the local distributor decides to pass this increase in costs to the final price. Very inelastic industries could be characterized by this effect;
3. A negative shock to the exchange rate (an appreciation of the domestic currency) will make imports less expensive. Instead of reducing the final price of the product, the local distributor increases his margin;
4. A negative shock to the exchange rate is passed to prices (the final price is reduced) and the margin is not affected;
5. There are no effects of exchange rate mainly because prices are internationally given, as it might be the case for the commodities.

However, it is not satisfactory to only assess the diversity of the margin's sensibility to exchange rate variations in a static framework. In effect, globalization, has fueled a dramatic change in industrial organization and competition regimes that should be present when looking at the evolution of distribution margins. Indeed, the margins' adjustment to exchange rate variations participate in the process of vertical competition along commodity chains.

In this sense, several contributions account for less stickiness of exchange rate pass-through to prices in case of intra-firm trade in comparison to arms length (i.e. market relations between different entities)⁵. The existing literature shows that intra-firm prices are chosen to maximize the sum of the manufacturer's and distributor's profits (Neiman, 2010). Contrastingly, arm's length prices are fixed according to the balance of power between the conflicting objectives of profit maximization of the manufacturer and the distributor. Looking at the relationship between exchange rate and margins and the asymmetries previously mentioned is thus relevant to analyze how globalization has impacted the balance of power between retailers and producers among industries.

In the early nineties, Gereffi and Korzeniewicz (1994), the initiators of the so-called Global Commodity Chains framework, proposed conceptual tools in order to analyze globalization as a phenomena characterized by a pattern of geographical dispersion of functionally integrated economic activities (Dicken (1992); Feenstra (1998)). The distinction they make between Buyer-Driven Commodity Chains and

⁵See, for instance, Neiman (2010).

Producer-Driven Commodity Chains is very useful for our discussion on the exchange rate and the distribution margin.

More in detail, buyer driven commodity chains concerns the whole set of activities which contribute to the elaboration of light and labor intensive consumption goods, such as textile, apparel or agro-food. For the distribution of such products, a few number of leading retailers have a very favourable market power position because of, first, their control over access to a very high number of final consumers and, second, their global sourcing capacities, which increase competitive pressure in upstream segments⁶. This phenomenon has accelerated during the past two decades with, on the one hand, the segmentation of productive processes (Feenstra, 1998) and, on the other hand, the internationalization of leading retailers (Durand and Wrigley (2009); Coe and Hess (2005); Coe and Wrigley (2007)). It is thus expected that the share of imported goods for this kind of products has increased and that the market power of retailers has improved. As a result, we could expect that retailers are able to pass through to consumers - or to prevent their suppliers to pass through - the cost of the rise of prices resulting from currency depreciation. On the contrary, they can improve their margins in case of a negative shock to the exchange rate by keeping their prices unchanged. Overtime, this asymmetrical reaction to exchange rate shock is supposed to lead to an increase in the distribution margins for this kind of goods. Such a result should be consistent with previous research showing a link between off shoring and profitability (Milberg and Winkler (2008) and Milberg and Winkler (2010)) as far as it concerns retailing (Baud and Durand, forthcoming).

In the case of producer-driven chains, which concern particularly capital intensive industries such as the automotive and machine building industries, the dynamics is supposed to be different. On the one hand, the final use of the goods is less dispersed, as it occurs with a smaller recurrence and, to a greater extent, within firms and administration. As a result, distribution costs are less important and the position between the final consumer and the final seller is less asymmetrical. Moreover, as producers occupy a leading position in the chain and organize supply and distribution networks, they are supposed to be able to pass to others the cost of adjustment to exchange rate. Thus, the asymmetric adjustment to exchange rate is supposed to be made at the expense of the distribution margin. The trend should then be a stabilization or a a reduction of distribution margins overtime which could reflect the reduction of logistic costs during the past decades.

The issue of the dynamics of margins concerning commodities and, more generally, resource-based industries, should be considered as very distinctive from the previous cases. Indeed, whereas wholesale and retail components dominate distribution costs for most of the industries, this is not the case for mining and resource intensive industries where transportation, storage, finance and insurance cost dominate the distribution margins (Goldberg and Campa, 2010). Moreover, the high volatility of international prices of these products deprives margins analysis to most of its meaning. Indeed, the evolution of the margin should not provide information to account for the evolution of the balance of power within the industry. Consequently, looking at market power and chain governance issues through the evolution

⁶ For instance, since the 1960s, rich markets from developed countries have been linked to low cost manufacturers from South-East Asia because of the rise of global buyers (Hamilton and Gereffi (2009)).

of margins is not relevant for this kind of industries.

3 Methodology

As previously mentioned, exchange rate movements can have a direct effect in the distribution margins. Therefore, changes in the margin of a given industry/sector are assumed to consist of two components specific to the type of good and to the time period, independent of the exchange rate, and a reaction to exchange rate movements. On a panel data model, this can be expressed in the following way:

$$\Delta dm_{it} = \mu_{it} + \tau_t + \beta \Delta s_{it} + \gamma \Delta y_{it} + \varepsilon_{it} \quad (1)$$

where dm_{it} is the distribution margin of a certain sector in country i at time t , defined as the log difference of the margin over price, s is the real effective exchange rate defined such that an increase represents a depreciation, Δ is the first difference operator, such that the equation links the rate of growth of the margin to the rate of depreciation (appreciation) and ε_{it} is a vector of error terms, which are assumed to be white noise. We should expect β_1 to be positive: that is, an appreciation (depreciation) which reduces (increases) the prices of imported goods, should allow increases (decreases) in the distribution margin. Following Goldberg and Campa (2010), Equation (1) also controls for the country's business cycle conditions by including the GDP growth (Δy_{it}). In addition, μ_{it} and τ_t denote country and year specific effects, respectively.

The previous equation assumes that both depreciations and appreciations are passed to the margin in the same magnitude (but with different sign). However, as it was previously suggested, a priori, there is no reason to believe that the margin reacts in such a simplistic way. The reason is simple: the final distributor has more incentive to increase the margin than to reduce. If this is the case, Equation (1) is very restrictive to capture such an asymmetric behavior.

In order to account for the possibility of asymmetric reactions of the margin, we define two dummy variables, D_1 and D_2 , that take the value of 1 when the RER depreciates or appreciates, respectively, and 0 otherwise. Then, we define our variables of depreciation and appreciation of the exchange rate as:

$$\begin{aligned} s_{it}^+ &= \Delta s_{it} \times D_1 \\ s_{it}^- &= \Delta s_{it} \times D_2 \end{aligned}$$

Such that s_t^+ captures real depreciation and s_t^- real appreciation. Replacing Δs_{it} in Equation (1) by its decomposition into positive and negative variations, we modified our baseline equation as follows:

$$\Delta dm_{it} = \mu_{it} + \tau_t + \beta_1 s_{it}^+ + \beta_2 s_{it}^- + \gamma \Delta y_{it} + \delta r_{it} + \varepsilon_{it} \quad (2)$$

where all the variables were previously defined. Note that s_{it}^+ (s_{it}^-) takes positive (negative) values when the RER depreciates (appreciates), and 0 otherwise. Hence, the coefficient β_1 in Equation (2) will be negative and significant if we expect the margin to be hindered by RER depreciations. Equally, the coefficient β_2 will be also

negative if RER appreciations (i.e. a decrease in the exchange rate) increase the margin.

4 Data description and measurement issues

The key variable of our analysis, the distribution margin, is not directly observable, especially not in aggregate data. Following Goldberg and Campa (2010), we derive annual distributions margins from the supply and use tables of input-output tables for the following countries: Austria, Belgium, Germany, Finland, France, Denmark, Netherlands, Ireland, Italy, Luxembourg, Spain, Sweden, Portugal and the United Kingdom, for the 1995-2007 period.

In the supply table, flows of goods and services are valued at basic prices. In the use table, the flows are valued at purchasers' prices. In order to attain identities between supply and use, trade and transport margins and taxes less subsidies on products have to be added to the supply table. The total of trade margins by product is equal to the total of trade margins by the trade industries, plus the secondary trade margins by other industries. An analogous equation holds for the transport margins. The transport margins include transportation costs paid separately by the purchaser and included in the use of products at purchasers' prices but not in the basic prices of a manufacturers' output or in the trade margins of wholesale or retail traders.

From this information, we derive our dependent variable, which is the first difference of the distribution margin, defined as:

$$dm = \frac{\text{trade and transport margin}}{\text{total supply at purchaser's price-taxes less subsidies}} \quad (3)$$

All the data comes from the Input-Output tables provided by Eurostat. We considered the following 25 sectors for which data is available for our period of time: Agriculture, forestry, fishing, coal and lignite, metal ores, food and beverages, tobacco products, textiles, wearing apparel and furs, leather products, products of wood, paper products, coke, chemical products, rubber and plastic, basic metals, metal products, fabricated machinery, computers, electrical machinery, radio and television, medical instruments, vehicles, other transport equipment and furniture.

Regarding the exchange rate, we use real effective exchanges extracted from the Bank of International Settlements (BIS) database. Finally, the control variables, the rate of growth of the GDP and the real interest rate were collected from the OECD's main economic statistics.

5 Results

In this Section, we provide our main results. In a first moment, we present stylized facts and preliminary descriptive results to build intuition for the results from the econometric model. We then present our main econometric results.

5.1 Margins, imports and final uses: Main features of cross industry evolution patterns (1995-2007)

Table 1 summarize some stylized facts concerning the level of margins and imports both as a proportion of the total price in 2007, as well as their respective evolution

between 1995 and 2007. Note that the data do not account for the distinction between transportation, wholesale and retail sale, as the wholesale and retail components dominate distribution costs in almost all industries reporting data, accounting for about 90% of the total distribution costs added to the basic prices of goods (Goldberg and Campa, 2010). Indeed, the transport margins are typically less than 5% of the basic prices, with the exception of some of the mining and extractive resource industries. It is usually only in the mining and resource intensive industries that we observe transportation margins dominating the distribution costs.

Table 1: **Distribution margins, imports (as a proportion of the price and annual average growth rate) and uses (as a proportion of total use). 1995-2007**

Products	Margins		Imports		Uses, 2007		
	% of net price 2007	Growth 1995-2007	% of net price 2007	Growth 1995-2007	Households % of total use	Inputs % of total use	Investment % of total use
Light consumption							
Tobacco products	40.6	1.5	43.3	6.7	91.8	0.8	2.2
Wearing apparel	40.1	1.0	64.4	3.3	74.5	9.6	2.1
Fishing	30.8	0.5	50.1	3.3	57.6	30.2	0.9
Leather products	35.9	1.2	64.9	3.0	55.0	21.3	1.8
Furniture	29.9	0.4	42.5	2.9	54.1	16.7	12.8
Food and beverages	24.7	1.1	22.9	3.0	54.0	31.4	1.2
Textiles	24.9	2.0	42.5	1.9	37.6	36.8	1.8
Manufacturing							
Computers	23.4	-0.9	79.4	1.3	9.1	24.6	24.1
Machinery	12.9	0.2	39.2	0.9	7.8	29.1	23.5
Medical instruments	17.5	-0.7	45.7	0.4	12.7	28.4	16.6
Other transport eq.	5.3	-9.3	41.8	1.9	9.4	30.6	16.3
Vehicles	13.2	-1.3	49.4	1.0	26.1	25.1	13.8
Radio, television	15.6	-0.4	58.7	2.4	16.6	32.7	11.8
Electrical machinery	11.7	-0.6	42.2	1.1	4.9	51.3	10.9
Resource based							
Metal ores	13.5	1.2	80.0	-0.1	0.0	90.9	0.0
Coal and lignite	8.7	-4.6	82.4	3.5	6.4	85.3	0.5
Products of wood	14.4	0.6	25.8	1.2	7.5	72.7	4.1
Metal products	10.5	0.2	20.4	1.2	5.2	67.1	10.3
Forestry	14.1	-0.4	29.5	1.7	13.0	66.9	4.4
Basic metals	7.4	-2.7	45.9	1.6	0.1	65.2	0.2
Paper products	14.1	0.9	30.1	1.2	12.5	61.5	0.2
Rubber and plastic	13.1	0.4	34.9	1.6	11.1	61.0	1.0
Agriculture	19.3	1.8	26.7	2.1	31.2	54.3	2.4
Coke and fef. pet.	13.7	-4.1	37.8	2.3	35.4	48.5	1.1
Chemical products	17.7	0.5	46.3	1.1	14.3	40.7	0.3

Source: author's own calculation based on Eurostat input-output information.

Moreover, we observe that for all the products, particularly in sectors such as tobacco, wearing apparel or leather products, the share of imports in the total net purchaser price increased during the period, probably due to the rising regional and global economic integration. However, we categorized three main groups of goods in order to point out more heterogeneous trends on the basis of the characteristics of the products and the dominant form of their use in the economy⁷.

⁷ Note that we do not consider exports or government consumption, as they do not provide

First, we named "Light consumption goods" those goods for which the final use by households is the most important kind of use. For all these labour intensive manufacturing and agro-food products the final use by households represent more than 50% of total use, except in the case of textile (37%). Moreover, among these goods, the proportion of the margin in the final price are very important (above 25%) except for wearing, apparel and furs and leather products, which are typically more expensive items. The most striking figure is that not only margins in all these industries represent an important share of the price, but they also increased during the period, most of them at an annual rate of more than 1%, particularly in the case of textiles. The other important feature is that the share of imports, while not being particularly high, increased considerably, at about 3% each year for all the industries.

The second category, "Manufacturing Goods", regroups mainly mechanic, electric and electronic industries, which are more capital intensive industries than the light consumption goods. Their uses are variously distributed between final use by households, input of industries, and gross capital formation. Typically, the margins in this group are between 10 and 12%, with the exception of other transport equipment, which include items such as railway equipment, ships aircraft and spacecraft. Contrary to the first category, margins are a less significant part of the price and we observe in all the cases, with the exception of machinery a reduction over the period. However, there is no clear trend as far as the evolution of imports is concerned: imports represent a very important share, but their evolution was rather limited in most of the cases.

Finally, the products of the third groups are at more than 50% used as "Input for Industries" except chemicals (40.6%) and coke and refined petroleum (48.5%). The proportion of the margins in the total price is relatively low. Most of them, with the exception of metal products and chemicals, are commodities or resource-based manufacturing products. In this category there is no trend concerning the evolution of margins, which represent about 10% of the price. Similarly, there is no homogeneity regarding the share of imports and their evolution: while imports represent more than 80% of the price for metal ores and coal, they are not particularly important in metal products.

5.2 Econometric Results

Table 2 below reports the results from the panel estimation of Equations (1) and (2), for each of the sectors considered. Columns 2 and 3 report results from the symmetric specifications while columns 4 through 7 show the relevant estimated parameters of the equation that allows for asymmetric responses due to real exchange rate depreciations (s_{it}^+) and appreciations (s_{it}^-).

Before turning to the results of the asymmetric equation (i.e. when the real exchange rate variation is decomposed into its positive and negative components), let us first notice that the elasticity of the margin to the exchange rate is negative and significant in most cases. Indeed, as expected, when the real exchange rate depreciates, the margin decreases in almost all the sectors. The elasticity is substantially higher in office machinery and computers, radio and television and agriculture. On

information on the form of use of the products.

Table 2: Margin's adjustments to real effective exchange rate variations

	Symmetric		Asymmetric			
	Δs	t -stat	s_{it}^+	t -stat	s_{it}^-	t -stat
Tobacco products	-0.307	-1.13	-0.023	-0.06	-0.557	-1.5
Wearing apparel; furs	-0.31	-2.66	-0.204	-1.24	-0.412	-2.54
Fishing	-0.448	-2.6	-0.307	-1.44	-0.512	-2.19
Leather products	-0.458	-3.72	-0.217	-1.24	-0.691	-4.04
Furniture	-0.245	-1.95	-0.422	-1.87	-0.286	-2.07
Food and beverages	-0.16	-1.72	0.017	0.13	-0.331	-2.56
Textiles	-0.369	-2.17	0.119	0.5	-0.839	-3.62
Computers	-0.648	-2.67	-0.737	-2.10	-0.565	-1.68
Machinery	-0.231	-1.86	-0.381	-2.35	-0.294	-1.83
Medical instruments	-0.484	-2.85	0.397	-1.99	-0.423	-2.01
Other transport equip.	-0.695	-1.69	-1.576	-2.06	-0.172	-0.25
Vehicles	-0.381	-2.25	-0.244	-0.63	-0.329	-1.25
Radio, television	-1.055	-3.75	-1.38	-3.27	-0.797	-2.11
Electrical machinery	-0.183	-0.96	0.590	-1.44	-0.508	-2.12
Metal ores	-0.403	0.2	-0.874	-0.3	1.539	0.56
Coal and lignite	0.651	0.86	0.798	0.51	0.585	0.45
Products of wood	0.471	-2.37	0.02	0.05	-0.88	-2.44
Metal products	-0.021	-0.07	0.12	0.42	-0.251	-0.89
Forestry	-0.332	-1.05	-0.292	-0.40	-0.348	-0.86
Basic metals	-0.525	-0.96	-0.839	-0.9	-0.155	-0.15
Paper products	-0.413	-2.40	0.446	-1.15	-0.746	-3.45
Rubber and plastic	-0.048	-0.22	0.184	0.6	-0.272	-0.91
Agriculture	-0.803	-3.7	-0.887	-1.61	-0.769	-2.60
Coke and Refined Petroleum	-0.451	-1.73	-0.339	-0.61	-0.52	-1.18
Chemical products	-0.609	-4.25	-0.992	-3.03	-0.407	-1.97

Note: (1) Individual and/or temporal fixed (or random) effects are included when necessary according to the Fisher and Hausman tests; (2) The symmetric and asymmetric estimations corresponds to Equation (1) and (2), respectively; (3) Δs , s_{it}^+ and s_{it}^- correspond to real exchange rate variations, depreciation and appreciation, respectively.

the contrary, the estimates of the elasticity is not significant for most of the resource based products such as metal ores, coal and lignite, metal products, basic metals and rubber and plastic and some other sectors such as tobacco. In the rest of the cases, the elasticity is significant and around 40-50%.

Regarding the asymmetric equations, we can distinguish, broadly speaking, three main situations regarding the elasticity of the distribution margin due to positive and negative variations of the exchange rate. Indeed, first, even when allowing for asymmetric effects of the exchange rate, the margin in many resource based products is rather insensible to movements in the exchange rate, even when asymmetries are allowed for in the specification.

Second, several sectors, basically light consumption goods such as food and beverage, textiles, wearing apparel and leather products, are characterized by significant effects of exchange rate appreciations. On the contrary, the low significance of the

positive component of the exchange rate implies that the margin is not affected by exchange rate depreciations. That is, in this group, with the exception of furniture, the margin increases due to appreciations but does not decrease due to depreciations. While not being classified as "light consumption goods", other sectors, such as wood and paper products and agriculture also present this characteristic⁸.

The third important situation arises when both appreciations and depreciations have significant effects, although not of the same magnitude. This is the case in many manufacturing goods such as computers, machinery, radio and television, other vehicles and some other sectors not classified as pure manufacturing goods, like chemical products. Note that, in all these cases, the effects of depreciations (i.e. reductions in the margin) are relatively higher. The non significance of the asymmetric coefficients in the case of vehicles may imply that the symmetric specification is more appropriate, with both appreciations and depreciations affecting the margin more or less in the same magnitude. Among the manufacturing goods, only electrical machinery reacts as a buyer driven good, with increases in the margins due to exchange rate appreciations.

More specifically, our results allow us to distinguish three regime of margins variation and of margins relations with the exchange rate among industries. In particular, two of them reflect dynamics which can be interpreted within the Global Commodity Chains perspective (light consumption goods and manufacturing goods), which is not the case for the third one (resource-based products).

Indeed, in general terms, the evolution of the margin for light consumption goods and manufacturing goods is consistent with our hypothesis. First, we observed a significant increase in the margin for light consumption brought to final users through buyer-driven chains where, at the same time, the share of imported goods became more important. This evolution proceeds from asymmetrical reactions to exchange rate variations which favours preservation or increase of distribution margins. It confirms the hypothesis that, for this kind of goods, globalization has benefited firms which control access to market at the expense of producers.

We observe the opposite trend in several manufactured goods elaborated in producer-driven chains. As in the case of the previous group, there has been an increase in the share of imported goods. However, the trend is generally less clear, with the exception of computers and, to a lesser extent, machinery and vehicles. The most striking fact is that distribution margins have evolved negatively for all the products considered, except in the case of machinery. This can be explained by the fact that, while both appreciations and depreciations impact the margin, the magnitude of such effect is relatively higher in the second case (such is the case in computers, machinery, other transport equipment and radio and television). In other words, the relative weight trade margin has been eroded because of unfavorable adjustment to exchange rate movements.

Finally, as far as resource based products are concerned, the results suggest that margins are not relevant for such products since they represent a relatively small proportion of the price.

⁸Even though it is not the objective of this paper, we could expect that the distributor passes the depreciation, but not the appreciation, to the final price. In other words, the price would increase in case of depreciation of the local currency, but it would hardly decrease. In case of appreciation, is the distributor the one who "profits" by increasing his margin.

6 Conclusions

In this paper, we provide new empirical evidence that exchange rate devaluations and appreciations impact asymmetrically distribution margins. This phenomenon, previously ignored in the literature, signals effects of globalization on the industrial structure of European economies.

Pointing out an imperfect competition structure within Global Commodity Chains, we set out to build a framework that can be used to explain and identify the different responses of the distribution margin towards exchange rate variation. In particular, we developed a simple empirical model that introduces the possibility of asymmetric responses of the distributions margin to depreciations and appreciation at the industry level for several European countries between 1995 and 2007. By doing so, our analysis yields several interesting findings.

First, at the descriptive level, we document an important and increasing margin for light consumption goods, such as wearing apparel, textiles and food products which are mainly used by households. Typically this evolution occurs in a context of rapid growing of the share of imports. Contrary, margins for goods that are more capital intensive industries and which use is more equally distributed between households, inputs for industries and investment, have typically smaller and decreasing distribution margins. For these mechanic and electronic products, the increase of the share of imports is important but it increased at a smaller rate. We suggest that the two distinctive dynamics are linked to distinctive commodity chains organizational forms: a) the light consumption goods, being mainly buyer driven chains dominated by retailers and b) manufacturing goods, being mostly elaborated within producer driven chains.

Second, we are able to distinguish three opposite reactions of the margin towards exchange rate variations. First, for buyer driven chains (i.e. light consumption goods), distributors can use their favourable market power position to increase their margin in case of exchange rate appreciation, whereas depreciations do not reduce margins in the same magnitude. For this type of goods, producers and consumers may also share the costs of depreciations. Second, asymmetries in producer driven goods are less evident, since producers occupy a leading position in the chain and are organizing supply and distribution networks, being able then to pass to distributors some of the cost of exchange rate variations. Under this scenario, the distributor's margin may also be reduced in case of depreciation. Finally, given that transportation, storage, finance and insurance cost dominate the distribution margins, we provide evidence that exchange rate variations do not affect the margin for most of the resource based products.

We can draw from these empirical results some important conclusions. On the policy side, our results suggest that final prices will not react one-for-one after an exchange rate movement, but that margin compression will affect market structures. Second, globalization has affected variously firms depending on their position within the commodity chains and the products elaborated along them. It appears thus relevant to incorporate the insights of the global commodity chain literature when examining the issue of exchange rate pass-through to price.

Third, the rise of distribution margins for light consumption goods shows the growing economic power of retailers, which provide outlets for overcrowded industries

in a context of more tense international competition. It suggests that a sectoral shift for the industries concerned is occurring towards the downstream segments of the chains. This evolution is consistent with the literature analyzing offshoring and its consequences on labor in rich countries (mainly a weakening of the position of blue collar workers and the tertiarization of employment, Glyn (2006)). In all, a variation in the exchange rates can have redistributive effects across sectors and firms.

Finally, it should be interesting to analyse the relationships between the evolution of prices and the evolution of margins. Indeed, an increase in the distribution margins in a context of stable or diminishing prices may suggest a kind of Baumol effect (Baumol and Bowen (1993)) at the industry level, with a growing weight of distribution services because of their weaker productivity dynamism than manufacturing activities. Such a mechanism being confirmed, it would imply that the prospects for further contribution to economic growth of the chains concerned are limited.

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