THE COMPETITIVENESS OF EUROPEAN SERVICES

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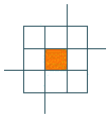

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THE COMPETITIVENESS OF EUROPEAN SERVICES

ABSTRACT:

The emergence of service offshoring places competitiveness at the centre of the discussion on international trade. The role of cost related factors driving trade performances is debated. However, although services trade becomes more dynamic, service competitiveness factors remain a field largely unexplored by applied economics. This paper addresses the role of cost-related factors explaining service competitiveness. It empirically test trade performance of 15 European countries in 8 service markets in order to observe the role of cost-factors, country effects and industry specific patterns. A model based on regression analysis and panel data is suggested to test the influence of cost-determinants and their elasticities. Results show great heterogeneity among service activities and suggest the importance of non-cost related factors within European Union countries.

KEY WORDS: Services, competitiveness, international trade, Europe, Kaldor

LA COMPETITIVIDAD DE LOS SERVICIOS EUROPEOS

RESUMEN

El reciente fenómeno de externalización de las actividades de servicios sitúa la competitividad en el centro del debate sobre comercio internacional. El presente artículo trata en torno al papel que juegan los factores relacionados con los costes (cost related factors) como conductores de la actividad comercial en servicios y en la explicación de la competitividad de tales actividades. A pesar de que el comercio en servicios es cada vez más dinámico, el ámbito de los factores relacionados con la competitividad de las actividades de servicios se mantiene en gran medida inexplorado por los economistas. En este sentido, se analizarán empíricamente los resultados comerciales de 15 países europeos en torno a 8 actividades de servicios distintas, de forma que se consiga observar los efectos que el factor coste, la componente país y las características industriales específicas a cada país provocan sobre el comercio internacional de servicios. Se probará la influencia de los costes y sus elasticidades a través de un modelo basado en análisis de regresión y de datos de panel. Los resultados muestran la gran heterogeneidad existente entre las diferentes actividades de servicios y sugieren la importancia de los factores no relacionados con los costes dentro de los países de la Unión Europea.

PALABRAS CLAVES: Servicios, competitividad, comercio internacional, Europa, Kaldor

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1. INTRODUCTION

Everyday thousands of queries of British clients are tackled by customer service representatives in India. At the same time Dominican operators telework for Spanish enterprises, a single company ships goods in Frankfurt and Hong Kong while an Italian architect draws up plans for Shandong urban development. In the last ten years several businesses became global in sectors previously dominated by domestic players and this phenomenon has experimented an increasing involvement of service activities. Indeed, the first stages of globalisation in the 1980s and 1990s interested mostly the industrial sector, with rapid increases of international trade operation and delocalisation of production sites. Nevertheless relatively recent trends towards global sourcing established new paths breaking traditional market segmentations and limits of service internationalisation, turning them into an active player of business internationalisation and economic worldwide scales.

This process of globalisation of the tertiary sector (often referred as service offshoring or global sourcing) is characterised by the particular features these activities present in the moment they are trade and moved. The distinctiveness and the complexity of service international provision is underlined by the fact that, in order to take them into account, international trade in services is defined under four different modes of supply. Service international trade had been classified in cross boarder supply, consumption abroad, commercial presence and presence of a natural person abroad (United Nations Statistical Division, 2002). This structure gives an idea of how their globalisation assumes different forms respect goods markets and deserves specific attention. Furthermore, the role services are playing in the internationalisation of economic activities largely determinates and define the rate of globalisation (Cuadrado et al., 2002; Rubalcaba, 2007).

The proliferation of the use of information and telecommunication technologies (ICT) such as phone communications, internet or network service provision platforms; the access to global financial markets and the product standardisation are all factors making these activities transferable without negative outcomes on both, the cost and the quality of the service. The other side of the coin is made by differences in regulations, requirements of specific legal forms, administrative formalities, differences in civil responsibility systems or financial guarantees. All these barriers affect negatively the formation of a service global market.

Among all the characteristics related to the internationalisation of services one concept is emerging as the benchmark upon which the discussion at economic and policy level stands: the competitiveness. This concept encloses all factors promoting and hampering the

internationalisation. Competitiveness is one of the few notion used by modern economists that do not find a root in early economic literature, this conduced to a situation where a large number of concepts has been proposed (Siggel, 2007). Competitiveness can be understood from a wider definition expressed in the Lisbon Agenda where it is seen as the capacity of a country to improve and raise the standard of living of its habitants by providing more and higher quality employment and greater social cohesion. Among the several social and economic factors contributing in the achievement of these objectives, a mayor contribute is given by the commercial competitiveness which is considered as the justification of countries' export (and imports) performances.

Despite the extended bibliography available on goods trade competitiveness, service competitiveness is an almost untouched field, since not much had been written nor about the foundations, nor about empirical analysis of the subject. Since services represent nowadays more than 80% of modern economies in terms of employment and value added, 40% of international trade and the majority of the foreign direct investments, service competitiveness turns into a very relevant issue.

There is a plentiful range of reasons why countries might want to influence and increase their commercial external position in services. Mainly because it affects the current balance and its stability avoids crisis with serious economic disruptions. Indeed employment growth is linked to the competitive position of the country (Cerra et al., 2003). It is also linked to sectoral shifts in production, since structural changes related with the economic internationalisation of a country are relevant in all modern countries. If the economy is flexible enough to adjust shifts towards tertiarisation at minimum costs and reallocate resources, it is able to improve living standards (Krugman, 1998). The capacity of a country to avoid wide fluctuations in its external position is therefore a key element to achieve stable patterns of growth.

At this point, the need for statistical measures oriented towards competitiveness and factors exercising influence on it emerges among stakeholders and policy makers. Applied economists proposed several indexes aimed to this end, but since there is not an ideal measure for such a wide notion, the debate on these indicators is vigorous and widespread among academics and stakeholders. So far, while analysing the manufacturing sector, most economists focused their attention on factors determining competitiveness based on consume price levels and costs, from now on cost related factors. Competitiveness is here merely intended as the capacity of a country to produce goods and services at competitive prices in international markets. Following this, the attention concentrates on price indexes, export unit values and on labour costs. The latter are particularly keen to describe labour intensive activities such services.

Studies in this direction try to relate cost related factors with external trade performances. The range of indicators that better fits the concept of cost related competitiveness is the real exchange rate (RER). In a

paper of 1993 Turner and Van't dack explore different cost related measures of competitiveness for the manufacturing sector. The conclusion achieved shows how no single measure can be regarded as the sole indicator, and that all of them present shortcomings. The real exchange rate based on unit labour costs (RER_{UCL}) seems to be the most useful proxy for competitiveness since it assesses developments in profitably of producing goods, as labour is the main input required.

Similarly, in a paper of 1994, Marsh and Tokarick provide a theoretical framework and empirical tests for five cost related competitiveness indicators. They consider five different RERs in order to individuate the most reliable one. After considering real exchange rates based on consume price indices, export unit values of manufactured goods, relative prices between traded and non-traded goods, labour costs, deflated labour costs, the authors are unable to unequivocally recommend one indicator above the others, nor by the theoretical and empirical point of view. However, they suggest that the indicator better capturing competitiveness aspects should be the real exchange rate using unit labour costs. Actually RERs based on consumer prices do not take into consideration intermediate goods and services, which are a fundamental component of the balance of payments, while RERs utilising export unit costs are distorted because they do not take into account the whole economy. This shortcoming concerns the traded and non-traded goods indicator as well.

Foe every country, the unit labour costs (ULC) are defined as the ratio of the compensation of workers to their productivity. The ratio of the ULC of country *A* to the UCL of country *B* is defines as the relative unit labour cost ($RULC_{AB}$). This index and the real exchange rate based on it are the most popular benchmark when analysing competitiveness. Fagerberg (1988) provides a theoretical framework linking economic growth, the balance of payments positions and the growth in RULC. Most of the studies published on manufacturing international competitiveness funded their empirical approach on these indexes (Lipschitz and McDonald, 1991; Carlin et al., 2001; Cerra et al, 2003; Neary, 2006), as all the other indicators RER_{UCL} present limitations. Since it is based on ULC it basically captures labour costs, without assessing their proportionate share of total production costs.

In 1978, while studying the effects of monetary devaluations on international trade in manufacturing sectors, Kaldor observed what apparently is an inconsistency: the countries with the fastest improvement in exports were those with the fastest increases in costs. Since then the increase of export associated to a rise in costs is referred as the 'Kaldor paradox'. This fact, which evidence has been proved successively (Kellman, 1983; Fagerberg, 1988; Amendola et al., 1992, Meliciani, 2001; Rubalcaba and Gago, 2001), is the evidence that the traditional view on cost-related factors is, at least, short in explaining trade fluctuation and needs a different framework.

Costs and prices dimensions cannot be the only factors influencing trade competitiveness. There is an increasingly awareness of the importance of other kind of factors considering economic, structural and institutional features. Following Schumpeter (1943) theoretical arguments in favour of non-cost related factors sustain that international competitiveness is strongly related with technological competition. Moreover the importance of the economic environment has to be taken into consideration. Innovation, flexibility, high quality standards are determinants that need statistical support. From now on these sources of competitiveness will be referred as non-cost related factors.

Thus recent studies consider cost related competitiveness as a single source within a range including several aspects. This is translated into applied economics by introducing variables representing the non-cost related sources. Carlin et al. (2001) set up three different measures representing technology at industry level (R&D expenditure, patenting activity and investment in fixed capital) and three variables describing institutional factors (human capital formation, disembodied technical progress and the structure of corporate ownerships). Cheptea et al. (2005) disaggregate trade competitiveness breaking it down into a geographic structure effect, a sectoral effect and a performance effect. Competitiveness drove by cost and non-cost related factors is included within the last term, while the geographic effect represent the physical facilities encountered by countries in international trade and the sectoral effect reflects the growth of the foreign demand. It is interesting to note how the analysis conduce them to affirm that the competitiveness term alone explains almost 90% of trade growth rate variance. Following neo-Schumpeterian logics, in 2004 Fagerberg et al. create a model where the growth of the market share of a country is dependent on four variables: cost-related factors, potentials in exploiting knowledge developed elsewhere, innovation, growth in the capacity to exploit knowledge.

The other side of the analysis takes into account the effects of the competitiveness changes. It has been stated that trade competitiveness of a country in a determined marked is invariably associated with its commercial performance. From this, the market share of an economy in its partner countries is considered the most significant indicator for this kind of analysis (see Cheptea et al., 2005; Rubalcaba and Maroto, 2007; among others).

So far, few studies paid attention to the debate on service competitiveness at macro level (Rubalcaba et al., 2005; Molero and Valdez, 2005 among others). In order to make a first step in this direction, this article applies the concepts laying behind successful methodologies for the manufacturing sector to tertiary activities. In particular, the paper intends to assess, through an industry level study of the European Market in several service activities, the influence that cost related factors have on trade performance. The empirical approach tries to evaluate the existence of non-cost related factors behind service competitiveness in Europe. Due to the labour-intensive nature of service

activities, ULCs and RER_{UCL} are chosen to be observed and statistically analysed in relation with countries' market share within the European Union for a period covering the last 15 years. In this way the importance of the cost related and non-cost related factors in the tertiary sector will be addressed.

The rest of the article is structured as follows. Section II describes the database chosen. The indicators of competitiveness and the methodology used in their construction are presented in the same section. The description of the model used to empirically assess the relation between cost related factors and trade competitiveness concludes the section. The third part of the study begins with an overview of the relations between the indicators. Then the described methodology is applied and results are presented and commented. Section IV offers concluding remarks.

2. THE MODEL

2.1 Data Description

Prior to explaining the econometric model, a description of the sectors included in the study, its temporal scope, the countries under analysis, as well as the key variables constructed, and their sources will be presented.

In this paper the analysis focuses into role of cost competitiveness in trade performance across services industries in the EU15 countries for the period 1992-2004. International trade statistics in services and nominal exchange rates data comes from Eurostat. In the first case, EU15 information is available from 1992 onwards. This represents a serious limitation of the empirical analysis since the rest of the time series have to be confined to this temporal scope. The data set used for measuring cost competitiveness comes from EU KLEMS Database March 2007 Release[1] financially supported by the European Commission. This extensive Database computes statistics on economic growth, productivity, employment, intermediate inputs and technological change at the industry level across EU member states from 1970 to 2004. The construction of the relative unit labour costs (RULC) by services sectors is possible due to the availability of consistent labour compensation, employment, hours worked and value added data[2]. Labour

[1] www.euklems.net

[2] For the Euro zone countries the values of labour compensation and value added are expressed in (millions of) euros since 1999 onwards. Before 1999, the EU KLEMS Database converted national currencies to Euros using the 1999 official fixed Euro conversion rate for each country. In this paper, these figures were converted in order to reflect the changes present in nominal exchange rates prior to 1999 in the variables under analysis.

compensation (L) includes total labour costs (wages, salaries and other costs) associated to employees and self-employed. Since labour compensation of self-employed is not registered in National Accounts of member states, the EU KLEMS Database makes an imputation by assuming equality between compensation per hour of self-employed and compensation per hour of employees. This assumption may not be totally appropriated in the services industries, since the characteristics of self-employed and employees differ extensively within categories. According to EU KLEMS Methodology (Timmer, et al 2007) self-employed in business services appear to earn even more than employees, so in this sector a higher ratio would be more suitable. Further research based on survey estimates of earnings for self-employed in the different European countries is needed.

Since trade and cost competitiveness data come from different databases, the different services categories are harmonized. In this way, the analysis in this paper is mainly restricted to the following sectors:

- Goods (agriculture and manufacturing)
- Services
- Transport
- Hotels and restaurants
- Communications
- Financial Services
- Computer an related activities
- Other business services (research & development plus other business activities)
- Social and personal services

2.2 Indicators Used

The adopted approach for analysing services competitiveness in Europe has been based on the study of export market share indicators and unit labour costs indexes. Mainly, real exchange rates had been constructed on the latter. The variable chosen to measure the effective trade performance of each country in every selected service sector within the European market is the market share. Indeed, market shares present the advantage of evaluating competitiveness through its effects, so that economies and industries are qualified as competitive if they widen their participation in the international supply, integrating, through their results, all the factors which have intervened in the promotion of the supply capacity. The market share in every year is here defined as the ratio of the exports of each country to EU15, in the determined sector, to the total EU15 imports coming from European countries, in the sector.

As seen, *ULC* is the variable commonly observed in competitiveness analysis. It represents the relation between the cost of the labour factor and its productivity. Since labour is the main factor contributing to the value added in the observed activities, it can be considered as the best cost factor competitiveness indicator. Its main limitation consists in the fact that its growth rate gives also indications on how the importance of the factor varies within the value added. For each country and sector, ULC are defined as follows:

$$ULC = \frac{LPH}{\left(\frac{VA}{Emp * H}\right)}$$

where *LPH* represents the labour compensation per hour of the labour force; *VA* is the value added; *Emp* stays for the employment and *H* is the number of hour worked per person by the labour force. The above term is a measure of cost while the below term assesses productivity.

The real exchange rate used in the analysis is based on relative *UCL* (*RULC*). The latter are calculated as the ratio of the *ULC* in a sector in the home country to the EU15 value in the same sector. Therefore, in each year considered, the *RER* of country *c* in sector s will be:

$$RER_{ULC}^{c,s} = e^{c} * \frac{ULC_{s}^{c}}{ULC_{s}^{EU15}}$$

being *e* the nominal exchange rate of the home currency to the Euro[3]in the considered year. As seen in section 1, despite limitations, RER based on UCL are the dominant approach on economic literature.

2.3 Modelling strategy

The empirical analysis carried on is twofold. First, the estimation technique is based on pooled Ordinary Last Squares (OLS). In this sense two models are presented and tested. Second, a panel data regression with fixed effects is run in order to take into account the industry specific characteristics.

Within the OLS analysis, our modelling strategy looks at the relation occurring between the levels and the growth rates in market shares and in RER_{UCL}. The most related work to our empirical analysis in the economic literature is the first part of the article by Carlin et al. (2001) on export performance of OECD countries in manufacturing industries. Our analysis takes into consideration competitive behaviours in a range of several sectors of goods and services jointly, allowing the panel data analysis to observe services sector specific characteristics.

[3] Since 1999 *e* is fixed in the 12 countries of the Euro area.

The first attempt investigates the linkages occurring between changes in labour costs and in market shares. Since an increase in marginal cost is directly related with increases in prices, rises in domestic costs in a sector within the considered country should have negative effects on its European market shares. The effects due to changes in cost and prices are supposed to last for more than a period as result of the delay by witch consumers react to changes in prices. Therefore a model that captures present and past changes in relative unit labour cost was created. It has to be taken into consideration that the elasticity of European market shares to RER_{UCL} will depend on the part of cost changes absorbed by the adjusts in profit margins. The evaluation of this effect goes beyond the aims of this work. The intention here is to understand if variation in labour costs in service activities influenced the market performance of the country in the service activity considered. This will lead to conclusion on the importance of cost related and non-cost related factors of competitiveness.

There are many elements determining cost-related competitiveness others than labour cost. Currency movements are important determinants. Since they influence prices in the external markets and they have often been provoked with the intention of push national exports, competitive currency devaluations can be considered among the cost related factors. The nominal exchange rate included in the RER_{UCL} as defined in the previous section, introduces monetary changes into the model. Due to services low level of standardisation, the same service can be produced differently in each country and this would be reflected in the country export market shares. Country specific trends are captured by the model by including a full set of dummies variable corresponding to the country considered. Therefore, the models used for the level and first difference regressions are expressed as follows:

$$\ln(EXMS_{ct}) = \alpha + \sum_{k=0}^{1} \beta_k \ln(RER_{ULC})_{c,t-k} + \sum \beta_c COUNTRY_c + \varepsilon_{ct} \quad (1)$$

$$\Delta \ln(EXMS_{ct}) = \alpha + \sum_{k=0}^{1} \beta_k \Delta \ln(RER_{ULC})_{c,t-k} + \sum \beta_c COUNTRY_c + \varepsilon_{ct} \quad (2)$$

being *EXMS* the European market share in a determined year and Δ the first difference in terms of time.

The panel data analysis, based upon a similar model, aims at identifying aggregate relationships at industry level. A panel of data is built up for each of the nine sectors considered. Given the available information, the use of this estimation method leads to more accurate and reliable results and allows for sector specific conclusions.

The presence of these variables is driven by the fact that the tertiary sector is composed by several kinds of activities with different technologies and different cost formation processes. Furthermore, the market share elasticity to changes in prices can differ from sector to

sector. The panel data regression identifies sector specific developments in the changes in European market shares even after considering the changes in RER_{UCL}. The analysis is here split into two as well, from one side the levels of the indicators are pooled, from the other the regression is run applying the first difference operator.

$$\ln(EMS)_{ct} = \alpha + \beta_s \ln RER_{ct} + \mu_t + \varepsilon_{ct} \qquad (3)$$

$$\Delta \ln(EMS)_{ct} = \alpha + \Delta\beta_s \ln RER_{ct} + \mu_t + \varepsilon_{ct} \qquad (4)$$

For every sector *s*, particularly behaviours are identified by the sign and the values of the coefficient β, while country specific forms are observed within the values assumed by μ.

3. RESULTS

3.1 Descriptive Results

This sections aims at introducing some descriptive results arising from data examination before the regression analysis. As Figure 1 shows, in general, in the service sector, an inverse relationship between services export market share and cost competitiveness based in RER_{UCL} can be observed in most of the EU countries. This means that gains in competitiveness though decreases in RER_{UCL} are associated with larger exports market shares – and vice versa –. However, two countries show an opposite behaviour: Italy and the United Kingdom. In the first one, the strong decline in services RER_{UCL} was related to a loss in services market share. On the other hand, in the UK, the substantial improvement in trade performance was associated with a deterioration in services cost competitiveness. This "Kaldor paradox" like behaviour is also present in other services sectors of the rest of the countries analysed. In hotels and restaurants and communications, 3 pairs of countries show this direct relationship between export market share and RER_{UCL} (United Kingdom, Netherlands, Italy, France, Germany and Austria in the first case and United Kingdom, Portugal, Netherlands, Greece, France, Germany in the second). In financial services and computer and related activities, this correlation can be observed in 5 countries (Portugal, Netherlands, Italy, Greece, Germany and Italy, Greece, France, Finland, Germany, respectively) whereas in transport, other business services and social and personal services only 3 countries performed this way. However, strong limitations in trade data are present in this analysis.

TABLE 1.
Correlations between RER annual growth rates (1992-2004) and XMS annual growth rates (1992-2005)

Sector	r	p
Services	-0,2993	0,4008
Transport	-0,2491	0,4877
Hotels & Restaurants	-0,4499	0,192
Communications	0,0947	0,8234
Financial services	0,1769	0,6752
Computer and related activities	0,8907	0,013
Other business services	-0,5929	0,1214
Social and personal services	0,3926	0,5133

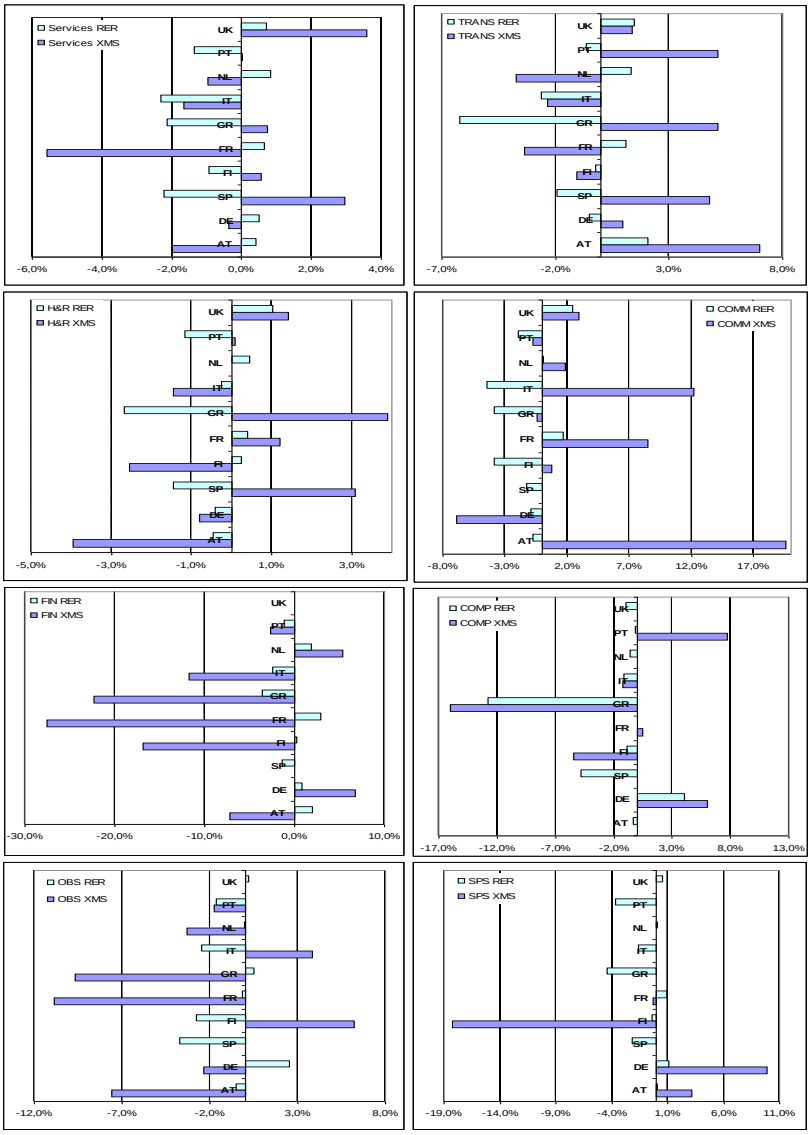
Source: Based on EUKLEMS Database, March 2007 and Eurostat.

The correlation analysis between RER_{UCL} annual growth rates and XMS annual growth rates confirms the heterogeneity of the relationship among services sectors (Table1). The correlations are negative in services, transport, hotels and restaurants and other business services and positive in communications, financial services, social and personal services and computer and related activities. This is the only case for which values are statistically robust even this is restricted by data availability. This result differs from other similar studies carried out in other sectors like manufacturing, where the importance of relative costs on export market shares was verified (Carlin, et al 2001).

Table 2 illustrates the evolution of the components of RER_{UCL}: the nominal exchange rate (NER) and the relative unit labour cost (RULC). As expected, countries that have depreciated the NER and decreased RULC show an enhancement in cost competitiveness (i.e. a decline in RER_{UCL}). On occasion, these two forces went in opposite directions and the final effect on RER_{UCL} depended on the strength of both. In Spain, Italy, Greece and Portugal the depreciation of the national currency could counterbalance the growth of RLUC in several sectors, except when this has been significant (i.e. in Greece, other business services). The improvement in cost competitiveness was also achieved by some countries in sectors where the RULC has declined more than the appreciation of national currency (i.e. several service sectors in Austria, financial services in United Kingdom).

FIGURE 1.

Export market shares (XMS) and real exchange rates (RER) annual growth rates in the services sector



Note: XMS annual growth rates for the period 1992-2005, and RER annual growth rates for the period 1992-2004. TRANS: Transport, H&R: Hotels and restaurants, COMM: Communications, FIN: Financial services, COMP: Computer and related activities, OBS: Other business services, SPS: Social and personal services.

Source: Based on EUKLEMS Database, March 2007 and Eurostat.

TABLE 2.
The RER components: nominal exchange rate (NER) and relative unit labour costs (RULC) annual growth rates

	NER (*)	Services		TRANS		H&R		COMM		FIN		COMP		OBS		SPS	
		RULC	RER	RULC	RER	RULC	RER	RULC	RER	RULC	RER	RLUC	RER	RULC	RER	RULC	RER
AT	0,272	0,1	0,4	1,8	2,1	**-0,7**	**-0,4**	**-1,1**	**-0,8**	1,7	2,0	**-0,6**	**-0,3**	**-0,8**	**-0,5**	**-0,2**	**0,04**
DE	0,270	0,2	0,5	**-0,8**	**-0,5**	**-0,7**	**-0,4**	**-1,2**	**-1,0**	0,6	0,8	3,8	4,0	2,2	2,5	0,8	1,1
SP	-1,89	-0,3	-2,2	-0,03	-1,9	**0,4**	**-1,4**	**0,6**	**-1,3**	**0,5**	**-1,4**	-2,9	-4,8	-1,8	-3,7	-0,2	-2,1
FI	-0,19	-0,7	-0,9	-0,1	-0,3	**0,4**	**0,2**	-3,7	-3,9	**0,4**	**0,2**	-0,7	-0,9	-2,6	-2,8	-0,2	-0,4
FR	0,359	0,3	0,7	0,7	1,1	0,1	0,4	1,3	1,7	2,6	2,9	**-0,35**	**0,01**	-0,5	-0,1	0,5	0,9
GR	**-2,68**	**0,6**	**-2,1**	-3,6	-6,2	-0,01	-2,7	-1,2	-3,8	-0,9	-3,6	-10,1	-12,8	3,2	0,5	-1,8	-4,5
IT	-1,61	-0,7	-2,3	-1,0	-2,6	**1,4**	**-0,3**	-2,9	-4,5	-0,9	-2,5	**0,5**	**-1,1**	-0,8	-2,5	-0,02	-1,6
NL	0,264	0,6	0,8	1,1	1,3	0,2	0,5	**-0,2**	**0,1**	1,6	1,9	-0,9	-0,6	**-0,3**	**-0,04**	**-0,2**	**0,1**
PT	-1,14	-0,2	-1,4	**0,5**	**-0,7**	-0,01	-1,2	-0,8	-1,9	**0,02**	**-1,1**	**1,0**	**-0,2**	-0,5	-1,6	-2,5	-3,7
UK	0,631	0,1	0,7	0,8	1,5	0,4	1,0	1,8	2,4	**-0,7**	**-0,1**	-1,6	-1,0	**-0,4**	**0,2**	**-0,1**	**0,6**

Note: * (-) means depreciation of national currency. NER annual growth rates for the period 1992-2004. RULC annual growth rates for the period 1992-2004, and RER annual growth rates for the period 1992-2004. TRANS: Transport, H&R: Hotels and restaurants, COMM: Communications, FIN: Financial services, COMP: Computer and related activities, OBS: Other business services, SPS: Social and personal services.

Source: Based on EUKLEMS Database, March 2007 and Eurostat.

3.2 Regression Analysis

a) Relative costs as determinant of export market shares.

Table 3 shows the results of implementing models (1) and (2) for the pooled sample, both for levels and annual growth rates. Columns 1 and 3 contains only the RER_{UCL} variables (levels and first differences), and columns 2 and 4 both set of RER_{UCL} and country dummies.

TABLE 3.
The base-line equation: Pooled regression results

Dependent variable: MS	Levles (in logarithms)		Growth rates (ΔLn)	
	(1)	(2)	(3)	(4)
Intercept	-2.7596*** (0.05)	-3.1445*** (0.10)	0.0053 (0.01)	0.1301 (0.08)
RER (t)	1.1663** (0.45)	-0.2489 (0.32)	0.3360** (0.16)	0.3321** (0.16)
RER (t-1)	-1.0461** (0.46)	-0.2418 (0.31)	-0.1027 (0.14)	-0.1127 (0.15)
Long-run elasticity of RER	0.5333	-1.0405	0.4911	0.1537
p-value of joint significance	*0.000*	*0.000*	*0.085*	*0.145*
Austria	-	-1.4511*** (0.33)	-	-0.1258 (0.09)
Belgium	-	-1.2811*** (0.48)	-	-0.1175 (0.12)
Germany	-	0.6956*** (0.15)	-	-0.1108 (0.09)
Denmark	-	-1.1650*** (0.29)	-	-0.1419 (0.11)
Spain	-	-1.6310*** (0.63)	-	-0.0972 (0.10)
Finland	-	-2.1658*** (0.25)	-	-0.1716* (0.09)
France	-	-0.0755 (0.25)	-	-0.1733* (0.09)
Greece	-	-4.0621*** (0.71)	-	-0.1611* (0.09)
Ireland	-	a	-	0.0110 (0.10)
Italy	-	-3.2066*** (0.89)	-	-0.1289 (0.09)
Luxembourg	-	-1.9461*** (0.48)	-	a
Netherlands	-	0.2239 (0.16)	-	-0.1325 (0.09)
Portugal	-	-3.7697*** (0.65)	-	-0.1056 (0.09)
Sweden	-	-1.3543*** (0.29)	-	-0.1130 (0.09)
United Kingdom	-	1.2745*** (0.14)	-	-0.0885 (0.09)
Observations	1067	1067	942	942

Note: The sample consists of 9 industries across 15 countries between 1992 and 2004. Estimation by Ordinary Least Squares (OLS). Between brackets standard errors. *,**,*** represent statistically significance at 10, 5 and 1% respectively.

[a] Country dropped to avoid autocorrelation matters in dummies.

The coefficients of RER_{UCL} allow us to address the question of the average impact of real exchange rate on export market shares. In most cases, the RER_{UCL} terms are jointly highly significant and yield a considerable long-run elasticity (around 0.5). The elasticity of EMS with

respect to RER_{UCL} is not dependent on the exact degree of disaggregation used in the sample, the choice of weights in the regression or the choice of maximum lag length. It can observed a significative positive relationship between RER_{UCL} and market shares in the initial period (with the exception of column 2, statistically no significant). An increase of cost factors does not induce a competitive lost, but an increase in export market shares. This fact is in contrast to conventional theories, allocating closer to Kaldor assessments. The exogeneity of the exchange rate is more plausible in studies using disaggregated data, such as the present. This may help to explain why papers that use aggregate data can only find very small elasticities (e.g. Fagerberg, 1988, and Amendola et al., 1993).

This initial perverse effect is compensated at long run, when indicators increases have negative effects on market shares. The immediate effect of RER_{UCL} is perverse, in that a decline in competitiveness brings immediate improvement in market shares. This is most plausibly interpreted as the well known *J*-curve effect often ascribed to long-run contracts being fulfilled after exchange rate movements at predetermined domestic prices (Carlin et al., 2001). The protracted nature of the response is notable. If the perverse effect were left out by omitting the contemporaneous change in RER_{UCL}, the estimate of long-run elasticity would be clearly negative, in that there are still significant effects of RER_{UCL} coming in after four or five years.

Another striking result from columns 2 and 4 is that most country dummies are significant once the change in cost competitiveness is included. If the cost factors really explained all the systematic variation in the change in market shares, then these dummies would shrink to irrelevance. Most country dummies show a negative significant coefficient in both columns. Nevertheless, for some countries export performance looks distinctly more impressive, and others less so.

b) The heterogeneity of the elasticity of competitiveness to cost factors in service industries.

In this section we address a second question of what lies behind the variation in the cost-sensitivity of export market shares. It is also possible to test the hypothesis coming from most models that relative costs may be less important to competitiveness performance in some service industries than in others. Internal nature characteristics might play a role. In order to contrast this, a data panel model – with fixed effects – has been run separately for aggregate service sector and each of the seven service branches introduced into the pooled sample in the previous section.

Table 4 shows the results of implementing models (3) and (4) for the goods producing industries and services as a whole, both for levels (in logarithms) and annual growth rates (first differences). First note is, due

to availability of data, goods model (columns 1 and 3) is not representative, although results don't place far from those for services model (columns 2 and 4). In the service sector, highly joint significant, they can be observed similar results than those shown in the previous section for pooled sample. Losing competitive position, through an increase of cost factors, is immediately accompanied with increasing market shares, although this perverse effect is being deleted in successive years. This fact stands out both in levels and growth rates models. At the short run, cost factors don't seem playing a role in competitiveness performance, although these pressures light out at the medium and long run. Kaldor paradox seems to stand out in immediate years, but not in the following ones.

TABLE 4.
Data panel results: Services *versus* goods

Dependent variable: MS	Levles (in logarithms)		Growth rates (∆Ln)	
	Goods	Services	Goods	Services
Intercept	-2.8102*** (0.59)	-0.5945 (0.90)	0.0037 (0.01)	0.0065 (0.01)
RER (t)	0.1577 (0.18)	1.3889*** (0.41)	0.0384 (0.19)	0.7486** (0.29)
RER (t-1)	-0.0617 (0.13)	-0.6552** (0.28)	-0.1100 (0.13)	-0.2519 (0.21)
Long-run elasticity of RER	-0.6384	-1.5640	3.7856	4.3984
p-value of joint significance	*0.678*	*0.005*	*0.689*	*0.026*
Observations	52	141	47	125

Note: The panel data consists of 15 countries between 1992 and 2004. Estimation by fixed effects. Between brackets standard errors.
*,**,*** represent statistically significance at 10, 5 and 1% respectively.

The relationship, obtained in table 4, between service sector RER_{UCL} and export market shares, leads us to analyse the causes which can explain it and which discard the behaviour hypothesis considered at the beginning. To this effect, it is necessary to very briefly look at the patterns within those different industries which belong to the service sector. In particular, we analyze the relationship between cost factors and competitive position across eight branches: transport, hotels and restaurants, communications, financial services, computer services, other business services, and social and personal services. The relationship between the RER_{UCL} and market share is far from similar, when analysing the relationship existing between the various activities which make up the service sector, but actually shows a series of strongly differentiated patterns. Main results are shown in table 5.

Results show statistically non significative relationships in most branches. Generally, hotels and restaurants and business services (both computer and other business services) follow the aggregate service trend outlined previously. A positive effect on market shares is observed during inmediate period, although this perverse pressure turns out negative during consecutive years. Social and personal services behave contrary to aggregate patterns. In those activities, an increase of RER_{UCL} is inmediately followed by an decrease of export market shares, although this intuitively logic effect dissapears in consecutive periods.

On the other, services such as financial ones present a positive significative relationship between cost factors and competitiveness position (Kaldor-type pattern); while transports and communications experience negative relationship between RER_{UCL} and market shares. Increases (decreases) in the national prices/costs are parallel to decreases (increases) in the market share of this economy (non Kaldor-type behaviour).

TABLE 5.
Data Panel Results: Service industries

Dependent variable: Ln MS			
	RER (t)	**RER (t-1)**	**Pattern**
Transport	0.0135	-0.3413	Similar to aggregate service sector
Hotels and restaurants	0.0481	-0.5718**	Similar to aggregate service sector
Communications	-0.6107	-0.0150	Non Kaldor in both periods
Financial	2.2003***	0.3083	Kaldor in both periods
Computer	1.2021***	-0.0657	Similar to aggregate service sector
Other business services	-0.8252	-0.2142	Non Kaldor in both periods
Social and personal	-1.7671	1.1854	Opposite to aggregate service sector
Dependent variable: Δ Ln MS			
	RER (t)	**RER (t-1)**	**Pattern**
Transport	-0.1782	-0.5148***	Non Kaldor in both periods
Hotels and restaurants	0.2751	-0.1074	Similar to aggregate service sector
Communications	0.3174	-0.4666	Similar to aggregate service sector
Financial	0.4589	0.2953	Kaldor in both periods
Computer	0.3368	0.0287	Kaldor in both periods
Other business services	1.4196**	-0.4118	Similar to aggregate service sector
Social and personal	0.4093	0.9364	Kaldor in both periods

Note: The panel data consists of 15 countries between 1992 and 2004. Estimation by fixed effects. Between brackets standard errors.
*,**,*** represent statistically significance at 10, 5 and 1% respectively.

4. CONCLUSIONS

Cost-related factor are acting as a major explanatory factor for service offshoring and the increasing international trade in many services. However, this fact registered for explaining long-distance trade may have a minor influence when trade is refereed to a relatively integrated area such the European Union 15, where countries are relatively close each other and other factors such as quality, service differentiation or trade barriers across markets may play a more important role. This hypothesis is confirmed in this paper. The model use for testing the role of costs factors on competitiveness performance follows the approaches already tested for analysing explanatory factors behind manufacturing industries. In most of the manufacturing studies, cost-related factor explain a part, but limited, of the trade performance. This is also confirmed now for the case of European services. However, when comparing to the international trade of European goods, influence of costs is higher in services, since it is not significant in the sample used in this paper. Anyway, the influence of cost-related factors is very limited for the EU15 service trade. Influence of costs is restricted to some countries (e.g., Finland or Greece), some sectors (e.g., financial and computer services) and depends on the type of indicator and approach is used (e.g., results based on levels or costs and market shares are more significant than results based on growth rates). The overall lack of correspondence suggests a major role of quality, differentiation and economic and socio-cultural barriers behind the competitiveness of services in intra-EU15 trade.

5. REFERENCES

AMENDOLA, G., GUERRIERI, P. AND PADOAN, P.C. (1992): 'International patterns of technological accumulation and trade', Journal of International and Comparative Economics, Vol.1, pp.173-197

CARLIN, W., GLYN, A. AND VAN REENEN, J. (2001): 'Export market performance of OECD countries: an empirical examination of the role of cost competitiveness', The Economic Journal, Vol. 111, No. 468, pp. 128-162

CERRA, VALERIE, JARKKO SOIKKELI AND SWETA C. SAXENA (2003) 'How competitive is Irish Manufacturing?', The Economic and Social Review, Vol.34, No.2, pp.173-192

CHEPTEA A., GAULIER, G AND ZIGNAGO S. (2005) 'World Trade Competitiveness: a Disaggregated View by Shift-Share Analysis', CEPII Working Papers, No. 2005-23, Centre d'Estudes Prospectives et d'Informations Internationales

CUADRADO, J.R., RUBALCABA, L. AND BRYSON, J. (EDS.) (2002) Trading services in the global economy, Cheltenham, UK: Edward Elgar.

FAGEBERG, J (1988) 'International Competitiveness', The Economic Journal, Vol. 98, No. 391, pp. 355-374

FAGERBERG, J., KNELL, M. AND SRHOLEC, M. (2004) 'The Competitiveness of Nations: Economic Growth in the ECE Region', Economic Survey of Europe, No. 2/2004, Geneva, UNECE

KELLMANN, M. (1983) 'Relative prices and international competitiveness: anempirical investigation', Empirical Economics, Vol. 8, pp.125-138

KRUGMAN, PAUL (1998) Pop internationalisation, MIT Press, Cambridge, MA, USA

LIPSCHITZ, L. AND MCDONALD, D. (1991) 'Real Exchange Rates and Competitiveness - A Clarification of Concepts, and Some Measurements for Europe', IMF Working Papers 91/25, International Monetary Fund

MARSH I. W. AND TOKARICK S. P. (1994) 'Competitiveness Indicators: A Theoretical and Empirical Assessment', IMF Working papers, WP/94/29

MELICIANI, V. (2001) Technology, trade andeconomic growthin OECD countries. Does spacialisation matter?, Routledge, London.

MOLERO, J. AND VALDEZ, P. (2005) 'Determining Factors in Service Competitiveness: The Importance of Innovation', Información Comercial Española Revista de Economía, July-August, N.0(824), pp. 71-91

NEARY, J.P. (2006) 'Measuring Competitiveness', IMF Working papers, WP/06/209

RUBALCABA, L. AND GAGO, D. (2001) 'Relationships between services and competitiveness: the case of Spanish trade', The Service Industry Journal, Vol. 21, pp.35-62

RUBALCABA, L., GAGO, D. AND MAROTO, A. (2005) 'Relationship between Globalization and Services: Competitive Advantages of European and Spanish Services in International Trade', Información Comercial Española Revista de Economía, July-August, N.0(824), pp.93-115

RUBALCABA, LUIS (2007), The new service economy,challenges and policy implications for Europe, Cheltenham, UK: Edward Elgar.

SCHUMPETER, J. (1946) Capitalism, Socialism and Democracy, London; Unwin

SIGGEL, E. (2007) 'International Competitiveness and Comparative Advantage: A Survey and a Proposal for Measurement', The Many Dimensions of Competitiveness, CESifo Venice <summer Institute

TIMMER, M., VAN MOERGASTEL, T., STUIVENWOLD, E., YPMA, G., O'MAHONY, M. AND KANGASNIEMI, M. (2007), EU KLEMS Growth and Productivity Accounts, Version 1.0, Part 1 Methodology, Groningen Growth and Development Centre and National Institute of Economic and Social Research.

TURNER, P. AND VAN'T DACK, J (1993) 'Measuring international price and cost competitiveness', BIS Economic Papers, No.39, Banc for International Settlements

UNITED NATION STATISTICAL DIVISION (2002): *Manual on Statistics of International Trade in Services*, ST/ESA/STAT/SER.M/86, Geneva, Luxembourg, New York, Paris, Washington, D.C.

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