

**Economic Convergence and Intra Regional Foreign Direct
Investment in the European Union**

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ABSTRACT

The aim of this paper is to examine the impact of European economic integration on outward intra EU FDI. In the model developed the dependent variable is the ratio of intra regional outward FDI to total FDI originated from the EU. That variable is related with various convergence-divergence indices for time period 1980-2000. The results suggest that the per capita income convergence-divergence index, the labor productivity convergence-divergence index, and the ratio of intra EU exports over total EU exports affect intra EU FDI. The divergence of the member states economies in development levels have generated additional motives for intra regional FDI.

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1. Introduction

The emergence of a single market as an outcome of the process of economic integration in Western Europe is expected to have contributed to the growth of trade and investment. Increasing liberalization and competition results to increasing cross border penetration of economic activity. Location choices for European Union (EU) firms are wider within an integrated regional market and investments of firms originated from non-member countries are attracted in order to serve a growing market and exploit economies of scale and scope.

Defensive foreign direct investment (FDI) aiming to overcome host market protection or to manipulate competition in final product markets through import substitution, local presence and economies of scale is a reasonable expectation in the case of inter-regional FDI. On the contrary, regional economic integration nullifies the import substitution motive of intra-regional FDI, that type investment is likely to be substituted by free trade in the emerging single market, and raises the scope of a regionally integrated network of affiliated firms that facilitates production rationalization and increases intra-firm trade. The location of each affiliated firm that undertakes a specific stage of production (vertical integration) or a specific variety of a product (horizontal integration) is made upon differences of local production conditions instead of local market needs. Economic convergence, though, which is

the expected result of economic integration and especially monetary integration smoothes differences between member states in factors affecting production conditions, for instance wages, interest rates, external economies, economic policies, etc., and so it influences the flows of intra-regional FDI. The same influence economic convergence is expected to exercise on the location choice between different member states of non European FDI that aims to servicing the unified European market.

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2. Regional Economic Integration and Intra Regional FDI: Some Theory

Regional economic integration theory suggests that the abolition of tariffs and other trade barriers produces an intra-region trade creation effect that will be most prominent in sectors characterized by plant economies of scale and low transportation cost due to the enlargement of effective markets. An intermediate outcome may be the substitution of intra-regional FDI induced by national barriers by intra regional trade. On the contrary, efficiency seeking intra-regional FDI¹ is also possible to expand. An emerging single market rises the scope for production rationalization and the building of a regionally integrated network of affiliated firms under common ownership, taking advantage of local supply conditions differentiation, free intra-firm trade and the lowering of cross border coordination cost through the inter-country convergence of institutions, policies, attitudes, codes of behavior and the deregulation of market transactions. Firms locate each value added activity in the most cost

efficient site according to productivity-adjusted cost of inputs. For instance, labor intensive and/or standardized technology intensive parts of the production process may be established in peripheral countries of relatively low labor cost while technology intensive parts in industrial core countries with strong presence of agglomeration economies. If each production phase (vertical integration) or variety of a product (horizontal integration) is located where it takes advantage of increasing returns to scale, then, this may produce an intra-regional division of labor characterized by the geographical clustering of similar activities and products.

The same procedure may be set in motion by strategic asset seeking FDI², which tries to get access to skills, technologies, R&D facilities and other intangible resources all of which are country idiosyncratic in nature and subject to culture, institutions and agglomeration. Access to clusters of similar technological and other intangible resources does not necessarily mean that FDI is established within the same country of the cluster but rather in a bordering country and in close physical proximity to the initial cluster. In effect, it may be developed a concentration of FDI activity in a few supranational but of spatial concentration clusters³. In any case agglomeration economies may be one of the principal motives for inward FDI in an integrated region and in particular for its location close or even within the industrial core countries of the region⁴.

Besides, firms will continue to exploit intangible firm specific income and market power generating resources, such as brand names, managerial expertise and other non-codified information intensive assets, for which market failure is high via common ownership, viz. FDI rather than licensing or other arm's length transactions.

In that case, trade liberalization does not substitute for FDI but is rather complementary to it since FDI means the transfer of a complete package of inputs across national boundaries that are facilitated by free intra-regional trade.

Marketing intensive FDI is also not substituted by trade. Diversified demand, which is an increasing function of per capita income, is met by continuous product differentiation, investments in dealer networks, after sales and maintenance services that all need to be within individual markets leading thus to FDI. The reduction of non-tariff barriers and the establishment of free market entry in services sectors, such as banking, financial services, telecommunications, etc. is also expected to increase FDI in the tertiary sector.

In general, regional economic integration accelerates liberalization, deregulation and privatization policies across national markets and sectors, ensures the implementation of common competition policies, standards of treatment, harmonizes asymmetries in business practices and regulations, administrative procedures and business support measures all of which facilitates the flow of FDI by decreasing information, adaptation and transaction costs of doing business and coordinating value added activities in different countries.

3. Hypotheses and Variables

Based on the above theoretical considerations the following hypotheses may be established:

1. Regional economic integration manifested in the abolition of all trade barriers is expected to have a positive effect on intra-regional trade that substitutes intra-regional FDI aiming at servicing protected host markets. At the same time, FDI aiming at producing to a single location, in order to take advantage of economies of scale and interrelated activities and of relatively low production cost, is expected to be facilitated using free intra-firm transfer of tangible and intangible inputs for production purposes, and free trade of final products for servicing individual markets.

An increasing portion of intra regional trade to the total trade of the region (intra plus extra regional trade) may indicate increasing regional trade integration. In order to avoid double counting, since part of the exports of one country are imports for another, the ratio of intra regional exports to total EU exports is proposed as the approximation of the EU trade integration. The sign of the relationship between this variable and the intra regional FDI is indecisive and assumed to be determined by the relative strength of the positive complementary and the negative substitution effect of trade on FDI.

2. Industrial restructuring promoted by regional economic integration is expected to trigger intra-regional rationalized FDI that involves relocation of value added activities to the most cost efficient site. Rationalized FDI takes the form of either vertical or horizontal integration and it is initiated by advantages stemming from inter-country differences in the supply conditions of productive inputs.

Two variables are proposed as proxies for supply cost. The real unit labor cost and labor productivity. As supply cost converges throughout the EU the

motive for relocating production phases is diminishing, hence the relationship between FDI and cost convergence would be negative.

The following convergence-divergence index is assumed to measure the convergence-divergence degree at a time t:

$$CDI_t = \sum_{ti} (V_i - V_{EU})^2$$

Where: CDI_t stands for convergence-divergence index at time t

Σ stands for summation

V_i stands for the variable under consideration for individual country i

V_{EU} stands for the average value of the variable under consideration for the total EU

As the value of the convergence-divergence index increases so it does the divergence in the EU with respect to the variable under consideration, hence the expected sign is positive.

3. Inter country differences in profit rates is expected to induce intra regional FDI. Long term interest rates is proposed as an approximation to profit rates under the neoclassical economic theory suggestion of equalization of investment returns to the marginal productivity of capital and to interest rates at the long run equilibrium. Furthermore, economic theory predicts that financial market integration, which presupposes perfect capital mobility that flows from countries of relative lower interest rates to those with higher returns, results to converging interest rates region wide. Therefore, converging interest rates may have a negative effect on FDI reducing the motive for investing to other member countries for achieving higher returns.

At the same time the region wide free capital mobility and the accompanied deregulation of individual country capital markets and the harmonization of codes, procedures and standards may result to lower capital that facilitates FDI. The freeing of capital transfer may also have an equally beneficial effect on FDI. Thus, the overall outcome is *a priori* indecisive. The convergence - divergence index described in point #2 may be used as a measure of interest rate convergence, hence financial market integration.

4. Inter country differences in demand structures, as they are expressed by per capita income deviations from a region average may induce FDI in marketing intensive sectors. At the same time, per capita income differences may manifest differentiation of the development level between countries, hence different resources especially created ones, available, as well as different levels of agglomeration economies and business opportunities in each country. These differences may benefit FDI motivated by the availability of resources complementary to firm specific ownership advantages. Convergence of per capita income may indicate an harmonization of resource levels and demand structures, hence it reduces the scope of FDI. The convergence-divergence index described in point #2 may be used for measuring the degree of per capita income convergence.

The dependent variable is the ratio of intra regional outward FDI to total FDI originated from the EU. An increasing ratio reveals an increasing tendency of European firms to invest within the EU rather than outside. This may be partly the outcome of convergence-divergence trends within the region, which in turn may be

the result of the transformation of the initial customs union to a single internal market and to a monetary union.

Given that the EU has been enlarged four times since its first formation as a customs union, dummy variables are used for capturing any effect such enlargement might have on intra regional FDI. The current fifteen member states are considered for the whole period of investigation, i.e. 1980 – 2000, for reasons of compatibility and comparison.

4. The Model, Estimation Methodology, Data and Results

The model function can be summarized as it follows:

$$\mathbf{FDI} = \mathbf{F}(\mathbf{YN}, \mathbf{I}, \mathbf{LPR}, \mathbf{W}, \mathbf{X}, \mathbf{D1}, \mathbf{D2})$$

Where:

FDI = ratio of intra EU outward FDI over total outward FDI of EU origin

YN = $\sum_i (\text{GDP}_i - \text{GDP}_{\text{EU}})^2$ = GDP per capita convergence-divergence index

GDP_i = GDP per capita of country i (i=1.... 15)

GDP_{EU} = EU average GDP per capita

I = $\sum_i (R_i - R_{\text{EU}})^2$ = long term interest rate convergence-divergence index

R = long term interest rate of country i (i=1....15)

R_{EU} = EU average long term interest rate

LPR = $\sum_i (\text{LPR}_i - \text{LPR}_{\text{EU}})^2$ = labour productivity convergence-divergence index

LPR_i = labor productivity in country i (i=1.... 15)

LPR_{EU} = EU average labor productivity

W = labor cost index

$W = \sum_i (W_i - W_{EU})^2 =$ labor productivity convergence-divergence index

$W_i =$ real unit labor cost in country i ($i=1 \dots 15$)

$W_{EU} =$ EU average real unit labor cost

$X =$ ratio of intra EU exports over total EU exports

$D_1 =$ dummy variable for the EU enlargement in 1986 (Spain and Portugal enter EU). The dummy takes the value of 0 prior to 1986 and the value of 1 after.

$D_2 =$ dummy variable for the EU enlargement in 1996 (Austria, Sweden and Finland enter EU). The dummy takes the value of 0 prior to 1996 and the value of 1 after.

The log linear form of the equation is estimated using OLS with annual data for the period 1980-2000. The equation has a log linear form because under this specification elasticities given by the estimated coefficients are constant.

The GDP per capita, long term interest rate, real unit labor cost, labor productivity and exports data have been sourced from *Eurostat*, while FDI data from the *OECD FDI statistics*.

The results are presented in Table 1. The statistically significant variables are: the constant term, the per capita income convergence-divergence index with a positive sign, the labor productivity convergence-divergence index with a positive sign, and the ratio of intra EU exports over total EU exports. All statistically significant explanatory variables have a positive relationship with the dependent variable. As convergence concerning per capita income and labor productivity proceeds in the EU, intra EU FDI as a share of total EU originated FDI decreases. Intra EU trade is positively related with intra EU FDI. Convergence concerning interest rates and

labor cost, and the enlargements of EU taken place in 1986 and 1996 has no significant bearing on intra EU FDI.

Applying the Phillips-Perron unit root test has tested the stationarity of all used data series. It was found that all series are of level zero. The results of all unit root tests are reported in Table 2. The Durbin-Watson statistic indicates the absence of autocorrelation.

Table 1: OLS estimates of FDI for period 1980-2000.

Constant	-10.37* (3.20)
YN	0.41* (3.60)
I	-0.09 (1.36)
LPR	0.17* (2.23)
W	-0.004 (0.57)
X	4.32* (1.86)
D₁	-0.35 (1.54)
D₂	-0.40 (1.55)
R²	0.85
F stat.	11.36*
DW	2.20

- * Means significance at 5% level.
- The values in parenthesis are τ -statistics.

Table 2: Phillips-Perron unit root test (τ -statistic)

FDI	-5.02**
YN	-5.13**
I	-2.88*
LPR	-5.79**
W	-3.98**
X	-4.46**
D1	-4.36**
D2	-4.36**

- The Phillips-Perron unit root test is conducted in level zero.
- * Means significance at 10% level.
- ** Means significance at 5% level.

5. Conclusions

The fitness of the proposed model is quite high. Its OLS estimation produced a R^2 equal to 85% and a significant F statistic value.

Enlargement after 1980 had no significant effect on intra regional FDI. Any observed increase of the latter's share in the total EU outward FDI should be attributed to some extent to incentives created to the integration process itself. In that respect the anticipation of the monetary integration seems to have been rather neutral to the creation of additional relocation of economic activity within the region. However, since the common currency has been only recently introduced its full-scale effects on FDI remain to be assessed at a later stage. What can be said

though is that financial integration, to the extent it has been accomplished in the past, had no significant bearings on intra regional FDI.

On the contrary, the process towards creating a single internal market of goods and services has induced intra regional FDI. Internal EU trade has been proved complementary to intra regional FDI, and the opening of markets has facilitated the relocation of economic activity and the formation of production and marketing networks within the region.

The divergence of the member states economies in development levels have generated additional motives for intra regional FDI. The latter's patterns are rather determined by disparities in demand structures, technology and human capital type and quality, production organization methods and management techniques, and social and economic externalities. To the extent that convergence in these areas would succeed the expectation is that intra regional FDI would feel some negative consequences on its level.

Labor cost deviations have not been a statistically significant incentive for intra EU FDI. This may be an indication that the latter follows rationalized patterns rather than a simple product cycle process. The policy lesson could be that relatively low labor cost countries, especially in the European South, which desire increasing flows of FDI cannot rely on this factor but they should rather develop an efficient and well functioning economy.

Notes

1. See Cantwell (1992).
2. See Ozawa (1992) and Pearce (1992).
3. Dunning (1997) for instance estimated that three-fifths of inward FDI in the core countries of the EU prior to 1985 was within a 500-mile radius of Frankfurt.
4. See Thomsen and Woolcock (1993) for an examination of that matter in the EU.

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