

Egger, Peter

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## EUROPEAN INTEGRATION IN TRADE AND FDI: A DYNAMIC PERSPECTIVE

PETER EGGER\*

### Introduction

In the late 1980s, the breakdown of the COMECON and the Fall of the Iron Curtain together with the political and economic opening of the Central and Eastern European countries (CEEC) gave rise to extensive research on the possible integration effects between the “West” (i.e. the EU and other OECD countries) and the “East” (i.e. mostly the CEEC but also Russia and the former member countries of the Soviet Union). In the beginning, the literature was mainly concerned with the question of calibrating the bilateral trade potential between Western and Eastern countries.<sup>1</sup> More recently, authors have started to look at integration via FDI in similar ways.<sup>2</sup> I shall depart from this literature in an important way by putting the question dynamically. However, I will first explain the basic lines and methodology of traditional research in order to underpin the importance of a dynamic perspective when looking at European integration or Eastern Enlargement in terms of trade and FDI.

Classical research has built on the so-called gravity model. This is an empirical model for estimating the determinants of bilateral trade flows. The roots of the gravity model go back to the early 1960s.<sup>3</sup> It is called “gravity” model (or gravity equation) because it resembles the famous law of gravity by Isaac Newton. Newton proved that the gravity between two masses is determined by four determinants: The two masses, the distance between them, and a gravity constant. Of course, the heav-

ier two masses are, the higher gravity becomes, and the more distant two masses are, the lower is gravity between them. Similarly, bilateral trade (measured by exports or imports) can be explained by three key determinants: the GDP of the involved countries and the distance between the economic centres or capitals of the countries. Some authors add GDP per capita for each country or try to derive a different specification from an endowment based trade model.<sup>4</sup>

For the purpose of estimating the effects of economic integration, the model has been applied to large cross-sections of countries in order to search for the effect of free trade associations and tariff unions on bilateral trade. Some authors<sup>5</sup> concentrated on the difference between potential and observed trade flows by:

1. estimating a gravity model for a cross-section of developed countries in order to obtain parameters for the impact of the key determinants of bilateral trade;
2. deriving a model prediction for bilateral trade flows given the exogenous determinants (GDP, distance, etc.);
3. comparing the model prediction with the observed bilateral trade relations. The difference between the two can then be interpreted as the unexhausted or over-exhausted bilateral trade potential.

For the EU-CEEC and the OECD-CEEC trade relations, the same authors found rather large unexhausted East-West trade potentials in the early 1990s. Unfortunately, more recent applications concluded that these potentials are already exhausted for most EU-CEEC relations. For some relationships, there is evidence of a large overshooting of observed trade over “natural” relations. Does this mean that we should expect EU-CEEC trade to grow no faster than intra-EU trade?

\* Economist at the Austrian Institute of Economic Research, Vienna.

<sup>1</sup> See especially Z.K. Wang and L.A. Winters (1991), C.B. Hamilton and L.A. Winters (1992), R. Baldwin (1994).

<sup>2</sup> Cf. P. Brenton, F. Di Mauro and M. Lücke (1999).

<sup>3</sup> J. Tinbergen (1962), P. Pöyhönen (1963), H. Linnemann (1966).

<sup>4</sup> Cf. E. Helpmann and P.R. Krugman (1985) and E. Helpman (1987).

<sup>5</sup> Cf. Z.K. Wang and L.A. Winters (1991).

A dynamic approach  
to integration via  
trade and FDI

**Table 1**  
**Actual-to-Potential Ratio of EU Exports to the CEEC from Different Sources**

	Ratio	EU concept	CEEC concept
Baldwin (1994)	2.1	EU-12	CEEC- 7 <sup>a)</sup>
Breuss and Egger (1999)	0.7	EU-12	CEEC-10
Nilsson (2000)	1.1	EU-15	CEEC-10

<sup>a)</sup> Excluding the Baltic States.

I propose to look at the topic in a different way for two reasons. First, the traditional approach to identifying trade potentials faces serious concerns from a purely econometric point of view.<sup>6</sup> Second, one is tempted to look at integration effects in a static way, although a look at the data shows us that the phenomenon is rather dynamic.

After a few years of troubles in a couple of the CEEC (this period is commonly associated with the beginning of the systemic transformation), the fall of the Iron Curtain has initiated a process of deep restructuring in these countries resulting in faster growth of GDP per capita than in the EU. We should not consider this process a short-run phenomenon but rather a development which is expected to last for a very long time (at least a couple of decades). The result will be a situation when most of the CEEC will have fully or at least to a large extent closed the gap to the average current EU country in terms of GDP per capita. Consequently, economic relations with these countries should become more dynamic than intra-EU relations, and in 50 years most EU economies will be considerably more open with respect to the CEEC than nowadays. This implicitly leads to the conclusion that the static reflection about EU-CEEC trade may be misleading since it ignores the relevance of one main source of European economic integration: the catch-up process of the CEEC in terms of GDP per capita.

### European integration: A brief history of political integration

Only a few years after the fall of the Iron Curtain, the EU removed the import barriers for the majority of the CEEC, integrating them into the General System of Preferences. The economic relationships have

been enforced considerably by the Europe Agreements, which went into effect between 1993 and 1995 for most countries (later only for Slovenia and the Baltic states). These agreements ensure the creation of a free-trade zone between the EU and the CEEC within a period of ten years, along with the abolition of customs duties and quantitative restrictions for the majority of commercial products from the CEEC. Later (1994–1996), this rapprochement led to the application for EU membership, according to the invitation of the EU in the European Council summit of Copenhagen (June 1993), conditional on the three accession criteria: democracy, market economy, and *acquis communautaire*.

In order to facilitate the process of economic and political rapprochement between the incumbent and the entrant countries and probably also because of the fears of a new phase of euro-sclerosis, the European Commission issued the Agenda 2000 in July 1997, containing a reform of the Common Agricultural Policy, the future of economic and social cohesion policy, a pre-accession strategy on the basis of the possible consequences of future enlargement, and the establishment of a financial framework for the Community. The first membership negotiations started in 1998 with six countries, the so-called Luxembourg group (Czech Republic, Estonia, Hungary, Poland, Slovenia and Cyprus). In 2000, these were followed by negotiations with the Helsinki group of countries (Bulgaria, Latvia, Lithuania, Slovakia, Romania and Malta).

An agreement on the financial framework on enlargement was only recently reached at the Berlin European Council, where the current member states decided to finance enlargement without changing their own resources ceiling of 1.27% of GNP between now and 2006. Hence, the current members decided to finance enlargement by a redistribution of supporting measures (mainly structural funds) to the new entrants, at this stage first of all the Luxembourg group.

Since economic and social cohesion is one of the main objectives of the EU, we should expect considerable effects on convergence in terms of GDP per capita within a couple of decades depending on the appropriateness of the economic programmes chosen. This should also be reflected in an intensification of economic interrelationships in terms of both trade and FDI. This complex dynamic process can only be investigated comprehensively in terms

Agenda 2000 to map the process of economic and political integration

<sup>6</sup> See P. Egger (2001b).

of a Computed General Equilibrium Analysis.<sup>7</sup> I will isolate the impact of growth divergence on bilateral economic relationships with simulations of econometric model results which permit an initial investigation of the dynamic effects for a larger sample of countries.

### Economic growth in the CEEC and economic integration with the EU

For our purpose, which looks more at the future than at the past, we shall focus on the period since 1993, excluding from the analysis the period with the most severe problems of systemic transformation. Between 1993 and 1999, macroeconomic performance in terms of GDP per capita growth in many countries (especially in Poland, 6.7%; Slovak Republic, 6.0%; and Slovenia, 4.4%) was persistently better than in the average EU-15 economy (2.4%).

This process was, in part, facilitated by three channels of international exchange:

1. The reduction of trade barriers with the EU, thereby stimulating **exports** in this direction.
2. The involvement of **multinational firms** which located production facilities in the CEEC for two main reasons: low-cost factors in the production of goods for the world market (vertically organised multinationals) and the close proximity to the CEEC markets due to first mover advantages

in order to produce (mainly) for those markets (horizontally organised multinationals).

3. Technical progress due to **knowledge spillovers** caused by contact with “Western” knowledge and production know-how via imports from OECD countries and – again and maybe more importantly – the presence of multinational enterprises (MNEs).

Of course, increased production and process know-how and other factors themselves have stimulated economic integration in terms of CEEC exports to the EU. On the other hand, GDP per capita growth has led to a significant increase in imports from the EU. Altogether, the phenomenon can most easily be demonstrated a look at the increase in bilateral integration in terms of both export and import shares in GDP, comparing 1993 and 1999 figures.

Table 3 provides insights into the EU country-specific trade with the 10 CEE applicant countries for Eastern enlargement. Two stylised facts are obvious. First, in 1993 export and import openness vis-à-vis the CEEC is more pronounced the greater the respective EU countries’ geographical proximity. This is especially true for Austria, Greece, Germany, and Finland which face common borders with some of the CEEC. Second, the same pattern arises for the increase in openness between 1993 and 1999. Hence, the winners from the increased economic openness of the CEEC within the last decade are the adjacent, (mostly) high GDP per capita EU-countries. Third and in contrast to the conclusions from recent gravity models on EU-CEEC trade relations, this process does not seem to be completed.

### Quantifying the impact of growth on European integration in trade and FDI

I base my simulations on a dynamic econometric specification, which is derived from a theoretical model of the so-called proximity-concentration trade-off, where firms decide to serve a foreign market either as an exporter (via trade) or as a multinational enterprise (via foreign affiliate sales). The trade-off between the two modes of market entry is essentially determined by transport costs and the fixed costs of setting up a foreign plant, i.e. a foreign affiliate.<sup>8</sup> Besides these determinants, both exports and MNE activity (e.g. FDI, foreign affiliate sales,

<sup>7</sup> Ch. Keuschnigg and W. Kohler (1998) and Ch. Keuschnigg, M. Keuschnigg and W. Kohler (2001).

**Table 2**  
Average Annual Change in Real GDP, %  
1993–1999

EU Countries	Change	CEEC Countries	Change
Austria	2.3	Czech Republic	1.5
Belgium-Luxembourg	2.7	Slovak Republic	6.0
Germany	1.6	Poland	6.7
Denmark	3.0	Hungary	3.4
Spain	3.3	Slovenia	4.4
Finland	4.6	Romania	-0.1
France	2.2	Bulgaria	-1.2
Great Britain	3.0	Estonia	3.3
Greece	8.7	Latvia	2.7
Ireland	2.7	Lithuania	0.9
Italy	1.8		
Netherlands	3.4		
Portugal	3.2		
Sweden	2.9		
EU-15	2.4	CEEC-10	4.0

Source: IMF, International Financial Statistics, OECD, National Accounts, Volume 1, and Vienna Institute of International Economic Studies.

<sup>8</sup> Cf. R. Baldwin, H. Braconier and R. Forslid (1999), J.R. Markusen and A. Venables (2000), P. Egger and M. Pfaffermayr (2000).

Fast growth between 1993 and 1999 was facilitated by trade, FDI, and knowledge spillovers

**Table 3**  
**Shares of Exports to and Imports from the 10 CEEC**  
**in GDP of the EU Countries, %**

Reporting Country	Export Share			Import Share		
	1993	1999	Change <sup>a)</sup>	1993	1999	Change <sup>a)</sup>
Austria	10.3	13.3	3.0	5.8	9.4	3.6
Belgium-Luxembourg	1.2	2.3	1.1	0.8	1.8	1.0
Germany	4.8	7.8	3.1	4.7	8.4	3.7
Denmark	2.4	3.8	1.4	2.6	3.8	1.2
Spain	1.0	2.2	1.1	0.6	1.3	0.7
Finland	4.6	7.6	3.0	3.1	4.1	1.0
France	1.5	2.7	1.2	1.2	2.1	0.9
Great Britain	1.5	1.9	0.4	0.9	1.6	0.7
Greece	6.5	8.2	1.7	2.1	3.1	1.0
Ireland	0.4	1.1	0.7	0.6	1.1	0.5
Italy	3.3	5.4	2.1	2.5	4.2	1.7
Netherlands	1.8	2.4	0.6	1.6	2.1	0.5
Portugal	0.2	0.9	0.7	0.3	0.8	0.5
Sweden	2.2	4.3	2.1	2.1	4.1	2.1
EU-15	2.8	4.3	1.5	2.3	3.7	1.3

<sup>a)</sup> Percentage points.

Source for the trade figures: UN World Trade Database and Vienna Institute of International Economic Studies.

GDP figures: IMF, International Financial Statistics, OECD, National Accounts, Volume 1, and Vienna Institute of International Economic Studies.

etc.) depend on relative and absolute factor endowments. Here, I concentrate on the latter, since absolute factor endowments are most commonly measured by GDP, on which data are easy to obtain. According to Helpman and Krugman (1985) and Helpman (1987), two GDP-related variables must be considered from the perspective of an endowment based model. These are the sum of bilateral GDP (measuring bilateral economic space) and relative GDP (measured by a similarity index).<sup>9</sup>

Of course, real GDP growth affects both variables. Whereas bilateral GDP increases independently of which country grows faster, similarity in GDP grows only if the smaller country grows faster than the larger one. Because of the availability of data I focus on real stocks of outward FDI rather than foreign affiliate sales. Additionally, I allow for the presence of adjustment costs, since neither exports nor FDI react immediately to changes in foreign demand because of the presence of investment plans, capacity constraints etc. Moreover, linkage effects between exports and FDI are accounted for by the inclusion of cross effects between exports and FDI (lagged FDI in the export equation and exports in the FDI equation).

Table 4 summarises the regression results for the lagged dependent variables and the two exogenous

<sup>9</sup> See Helpman (1987).

variables of interest from a specification estimated by Egger.<sup>10</sup> Except for the cross effects (lagged FDI in the export equation and exports in the FDI equation), all parameters are significant at the five percent level. Both, the bilateral sum of GDP and similarity in country size exhibit a positive impact on exports and FDI as suggested by theory. The long-term effects can easily be calculated using the short-run coefficients in Table 4.<sup>11</sup> The lagged endogenous variables also tell us something about adjustment dynamics after a shock in the exogenous determinants. As illustrated below, after a shock in the sum of bilateral GDP or similarity in country size, 95 percent of

the long-run change in real exports (real FDI) is adjusted in less than four (seven) years.

Controlling for changes in other exogenous determinants and knowing the parameter estimates for the two mentioned variables (bilateral sum of GDP and similarity in GDP), we can now simulate the impact of average annual growth in GDP in the EU and CEE countries on their bilateral relations in terms of both exports and FDI, distinguishing between short-run and long-run effects. However, the validity of this experiment relies on a crucial assumption which is common in this area of research. The parameter estimates are obtained from regressions on real bilateral

<sup>10</sup> P. Egger (2001a).

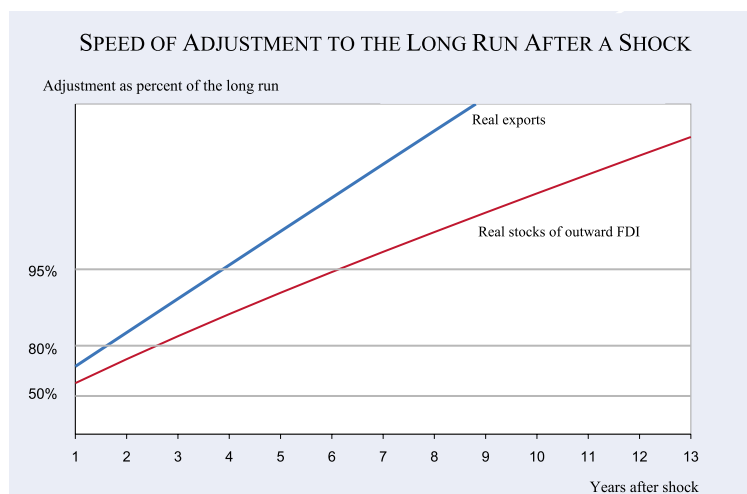
<sup>11</sup> See Egger (2001a) for more details.

**Table 4**  
**Explaining Real Growth of Bilateral Exports**  
**and Stock of Outward FDI in the EU**

Exogenous Variables:	Growth of exports		Growth of FDI stocks	
	Short-run	Long-run	Short-run	Long-run
Lagged export growth	0.539	2.167	-0.116	-0.886
Lagged FDI growth	0.001	0.008	0.717	3.535
Growth of the sum of bilateral GDP	0.578	1.291	4.555	16.780
Growth of similarity in country size	0.316	0.698	1.883	6.551

Source: Egger (2001a).

A model based on bilateral economic space and similarity of country size



Adjustment paths are derived by the following transformation:  $-\ln(1-Y/100)=-at$ . Y is the percentage of the long-run value of real exports or stocks of outward FDI according to a shock, which is already reached after t years, and (-a) is the corresponding speed of adjustment (i.e. the slope of the above lines) with  $a < 0$ . The steeper the corresponding locus, the faster is the adjustment to the long run. Percentage lines (50%, 80%, 95%) indicate, at their intersection with the respective adjustment lines, how long it lasts until the corresponding effect has reached 50%, 80% or 95% of its long-run value.

exports and stocks of outward FDI between the current EU members. We therefore have to assume that the CEEC behave similarly to the EU countries with respect to the estimated elasticities.

Let us assume that the gap in real GDP per capita existing in 1999 between the CEEC and the EU economies is closed by one percent, leaving population figures unchanged in a typical year within the estimation period (say in the mid-1990s). In 1999, GDP per capita in real USD amounted to about USD 25,100 in the average EU country. Among the CEEC, Slovenia had the highest GDP per capita at about USD 11,200, whereas Bulgaria and Romania reported real GDP per capita figures of about USD 1,400.

Table 5 presents the short-run and long-run effects on both real exports and outward stocks of FDI of the 15 current EU member countries to the 10 CEEC under the assumption that the respective change in CEEC-GDP were such as to close the gap in GDP per capita to the average EU country by one percent. According to the parameter estimates presented in Table 4, the simulated impact on real outward stocks of FDI is markedly larger than the impact on real exports. Since the average CEEC is small in terms of real GDP as compared to the current average EU member state, the resulting change is most pronounced on both exports and FDI of the relatively smaller EU

countries like Ireland, Greece, Portugal or Finland. If the first three countries were really to behave like the typical EU country (i.e. if the estimated parameters were the same for all countries and pooling were adequate), we could derive an important conclusion from this result: Given that these three countries are most negatively affected by the ceiling on the EU's structural funds, part of the negative effects of the reduction in structural expenditures could be outweighed by the countervailing effect on exports and FDI induced by the catching-up process in the CEEC. The latter is itself enforced by the redistribution

of structural funds from the current EU area to the applicant countries.<sup>12</sup>

## Conclusions

Since the political and economic opening up of the CEEC in the late 1980s and the early 1990s, a dynamic catching-up process in most of these countries has been observed. I have argued that

Closing the gap in real GDP between EU and CEE countries will take a long time

<sup>12</sup> See Breuss et al. (2001).

**Table 5**  
**Closing the Gap in GDP per Capita by 1% and the Effects on EU Exports and FDI to the 10 CEEC**

	Exports		FDI	
	Short-run	Long-run	Short-run	Long-run
	Growth rates in %			
Austria	2.9	6.5	23.2	113.3
Belgium-Luxembourg	2.8	6.3	22.0	105.9
Germany	2.1	4.8	14.3	60.2
Denmark	3.0	6.7	24.4	121.5
Spain	2.5	5.6	18.6	84.6
Finland	3.1	6.9	25.4	128.6
France	2.2	5.0	15.3	65.6
Great Britain	2.3	5.1	16.2	70.8
Greece	3.1	7.1	26.1	133.4
Ireland	3.2	7.3	27.3	142.2
Italy	2.3	5.2	16.5	72.2
Netherlands	2.6	5.9	20.2	94.1
Portugal	3.1	7.1	26.4	135.4
Sweden	2.9	6.5	23.0	112.6
EU-15	2.4	5.3	17.2	77.3

the conclusions about potential integration effects from static empirical analysis are probably misleading. I have simulated the effects of a catch-up in real GDP per capita assuming that the gap between the average EU country and the average CEEC were closed by one percent. The process of closing this gap will take a long time regardless of whether it will be fully or only partly closed. Hence, we will experience a long time-span during which the CEEC will grow faster than the current EU members on average. I have demonstrated that we should expect a continuation of the integration dynamics between the current and the future EU members in terms of trade and stocks of FDI.

## References

- Baldwin, R. (1994). *Towards and Integrated Europe*, Centre for Economic Policy Research.
- Baldwin, R., H. Braconier and R. Forslid (1999). "Multinationals, Endogenous Growth and Technological Spillovers: Theory and Evidence". Mimeo. Graduate Institute of International Studies, Geneva.
- Brenton, P., F. Di Mauro and M. Lücke (1999). "Economic Integration and FDI: An Empirical Analysis of Foreign Investment in the EU and in Central and Eastern Europe". *Empirica* 26(2), pp. 95–121.
- Breuss, F. and P. Egger (1999). "How Reliable are Estimations of East-West Trade Potentials Based on Cross-Section Gravity Analyses?". *Empirica* 26(2), pp. 81–94.
- Breuss, F., P. Egger and M. Pfaffermayr (2001). "The Impact of Agenda 2000's Structural Policy Reform on FDI in the EU". Vienna: Austrian Institute of Economic Research.
- Egger, P. (2001a). "European Exports and Outward Foreign Direct Investment: A Dynamic Panel Data Approach". *Weltwirtschaftliches Archiv* 137(3), forthcoming.
- Egger, P. (2001b). "An Econometric View on the Estimation of Gravity Models and the Calculation of Trade Potentials". *WIFO-Working Paper* No. 141, Vienna: Austrian Institute of Economic Research.
- Egger, P. and M. Pfaffermayr (2000). "Trade, Multinational Sales, and FDI in a Three-Factors Model". *University of Linz Working Paper* No. 0013.
- Hamilton, C.B. and L. A. Winters (1992). "Opening up International Trade with Eastern Europe". *Economic Policy* 14, pp. 77–116.
- Helpman, E. (1987). "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries". *Journal of the Japanese and the International Economies* 1(1), pp. 62–81.
- Helpman, E. and P.R. Krugman (1985). *Market Structure and Foreign Trade*, MIT Press.
- Keuschnigg, Ch. and W. Kohler (1998). "Eastern Enlargement of the EU: How Much is it Worth for Austria?". *Review of International Economics*, forthcoming.
- Keuschnigg, Ch., M. Keuschnigg and W. Kohler (2001). "The German Perspective on Eastern EU Enlargement". *The World Economy*, forthcoming.
- Linnemann, H. (1966). *An Econometric Study of International Trade Flows*, North-Holland.
- Markusen, J.R. and A. Venables (1998). "Multinational Firms and the New Trade Theory". *Journal of International Economics* 46, pp. 209–234.
- Markusen, J.R. and A. Venables (2000). "The Theory of Endowment, Intra-industry, and Multinational Trade". *Journal of International Economics* 52, pp. 209–234.
- Nilsson, L. (2000). "Trade Integration and the EU Economic Membership Criteria". *European Journal of Political Economy* 16(4), pp. 807–827.
- Pöyhönen, P. (1963). "A Tentative Model for the Volume of Trade Between Countries". *Weltwirtschaftliches Archiv* 90, pp. 93–99.
- Tinbergen, J. (1962). *Shaping the World Economy. Suggestions for an International Economic Policy*, Twentieth Century Fund.
- Wang, Z.K. and L.A. Winters (1991). "The Trading Potential of Eastern Europe". CEPR Discussion Paper No. 610.