

DISCUSSION PAPER SERIES

No. 2638

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TRANSITION ECONOMICS



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Discussion Paper No. 2638
December 2000

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ABSTRACT

The Determinants of Foreign Direct Investment in Transition Economies*

Using a panel data set containing information on foreign direct investment (FDI) flows from market to transition economies, we establish the determinants of FDI inflows to Central and Eastern Europe: country risk, unit labour costs, host market size and gravity factors. In turn, we find country risk to be influenced by private sector development, industrial development, the government balance, reserves and corruption. By introducing structural shift dummy variables for key announcements of progress in EU accession we show that announcements have impacted directly upon FDI receipts but have not influenced country credit ratings. The Agenda 2000 announcement by the European Commission induced a bifurcation between the 'first wave' transition countries and the remainder of our sample. The underlying dynamics of the process illustrate that increases in FDI improve country credit ratings with a lag, hence increasing future FDI receipts. Consequently we suggest that the accession progress has the potential to induce virtuous cycles for the frontrunners but may have serious consequences for the accession laggards.

JEL Classification: C33, F20, P27

Keywords: EU accession, foreign direct investment, transition economies

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*The authors are grateful to the Economic and Social Research Council for financial support under its *One Europe or Several?* Programme, Grant No.L213 25 2003. We would also like to thank Alan Smith, Mario Nuti, Laza Kekic, Paul Geroski, Simon Commander, and participants of the 12th Annual Meeting of the Society for the Advancement of Socio-Economics, London School of Economics, 10 July 2000 and seminars at the Economist Intelligence Unit and Brunel University, for their helpful comments on earlier drafts. Any remaining errors are our own.

Submitted 18 October 2000

NON-TECHNICAL SUMMARY

The transition from socialism to capitalism in Central and Eastern Europe (CEE) is both a political and economic process. One of the most important political aspects concerns the reintegration of CEE into Europe, symbolized for many countries by prospective membership of the European Union (EU). By contrast economic integration, notably through trade and capital flows, is an extremely important aspect of economic transformation. In this regard foreign direct investment (FDI) plays a crucial role, as it opens possibilities of fostering accelerated growth, technical innovation and enterprise restructuring. EU membership can be viewed as a determining element of the operating business environment and this may directly influence the FDI process into the transition economies. Hence in this paper we offer a rigorous econometric model of the FDI process in the CEE transition economies. In so doing, we establish the crucial role played by economic and political risk in the host economy, and the ways in which these factors have been mitigated by the prospects of EU membership.

Our work builds on two strands in the literature. The first is the analysis of the determinants and impact of FDI in the transition economies. Studies in this area have indicated that, as in other developing economies, political and economic factors, the form and timing of the privatisation process, and the need to secure market access have been the primary determinants of FDI across the region. Moreover, FDI is also an important aspect of the transition process itself. There is growing evidence that enterprise productivity, R&D expenditure, innovation and company performance are higher in foreign-owned firms. This opens the possibility of virtuous and vicious circles in the transition process, with one group of countries with positive initial conditions attracting high levels of FDI, which further differentiates their business environment from their more risky transition neighbours. This finding appears to be consistent with the available data. A second strand of the literature concerns the impact of supra-national trade agreements on FDI. Important examples which have been seen as being of relevance to the transition economies include Mexico's involvement in the North American Free Trade Area, and Spain's membership of the EU. Indeed it has been suggested that the bulk of the gain from EU membership for transition economies will derive from increased investment, coming from reduced domestic risk and increased FDI flows. This literature therefore suggests that prospective EU membership could be an important determinant of FDI in transition economies.

Our analysis is based upon a new panel data set which allows us to identify flows from individual donors to host economies. We have information on FDI flows from 18 established market economies to 11 transition economies over the period 1994 to 1998. We develop an eclectic empirical framework, in which FDI is determined by expected profitability, with the latter influenced by

demand and cost factors, transaction costs and an evaluation of country risk given the host country credit rating. We simultaneously seek to model the credit rating of the host transition economy in terms of a variety of macro-economic, transition and environmental factors. The model performs very well and we find FDI inflows to be strongly influenced by country risk, unit labour costs, host market size and gravity factors. The credit rating of the host transition economy is found to be strongly influenced by private sector development, industrial development, the government balance, reserves and corruption. By introducing variables for key announcements of progress in EU accession, we show that announcements have impacted directly upon FDI receipts but have not directly influenced country credit ratings. Hence we find that political announcements concerning timetables for admission to the EU can increase levels of FDI thereby improving economic performance. This result directly contradicts the previously assumed impact of accession and hence our findings suggest that transition economies may be subject to a different accession process than previously thought.

Moreover, while we find that accession announcements have not directly influenced country credit ratings, we identify a dynamic transmission mechanism whereby announcements directly impact upon FDI, which in turn improves country credit ratings with a one period lag and hence improves FDI in the next period. This feedback relationship therefore suggests that countries which proceed along the accession path may benefit from a virtuous circle and hence provides evidence to support the available data.

In contrast, our findings suggest that countries excluded from the EU, typically because of poor progress in transition, will receive lower levels of FDI, which will further limit their relative transition progress. The implications are an increasing concentration of FDI into the more successful transition economies and increasing differentiation in *per capita* income within the region associated with inclusion or exclusion from the EU. Consequently we suggest that the EU may wish to consider the policy implications of these identified processes, as they suggest that the position of delayed entrants could deteriorate relative to those candidates earmarked for early entry, and the long-run consequences for delayed entrants may be grave.

1. Introduction

The transition from socialism to capitalism in Central and Eastern Europe is both a political and an economic process (see e.g. Blanchard *et al* (1991); Portes (1993), Hare *et al* (1999)). An important aspect of the former is the possibility of reintegration into Europe symbolised for many countries by prospective membership of the European Union (EU) (see Grabbe and Hughes (1998), Mayhew (1998)). Integration into the world economy, notably through trade and capital flows, is a crucial and related element of the latter. Foreign direct investment (FDI) is a particularly important element of economic integration, because it opens possibilities for accelerated growth, technical innovation and enterprise restructuring, as well as capital account relief (see Garibaldi *et al* (1999); Holland and Pain (1998)). EU membership can be viewed as a determining element of the operating business environment, and this may directly influence the rate of FDI flows. In this paper, we offer a rigorous econometric model of the foreign direct investment process into the transition economies, establishing the crucial role played by economic and political risk in the host country. We also explore the ways in which these factors have been mitigated by the prospects of EU membership.

Our work builds on two strands in the literature. The first is the analysis of the determinants and impact of foreign direct investment in transition economies. This has drawn on the work of Lucas (1993) and Jun and Singh (1996) for developing economies, and has tended to focus on the business environment, trade integration, labour costs and the form of the privatisation process (see e.g. Lansbury *et al* (1996); Holland and Pain (1998); Brenton *et al* (1998); Garibaldi *et al* (1999); Resmini (2000)). Supplemented by surveys (see e.g. Lankes and Venebles (1996); Meyer (1998)), these studies indicate that, as in other developing economies, political and economic factors, the form and timing of the privatisation process and the need to secure market access have been the primary determinants of the allocation of FDI across the region.

FDI is also an important aspect of the transition process itself, and therefore of the business environment for investing firms. There is growing evidence that enterprise productivity, R & D expenditure, innovation and company performance are higher in foreign owned firms — both in the transition economies and in the West (see e.g. Holland and Pain (1998); Barrell and Pain (1999)). This opens the possibility of virtuous and vicious circles in the transition

process, with one group of countries with positive initial conditions attracting high levels of FDI, which further differentiates their business environment from their more risky transition neighbours. This analysis is consistent with the raw data (see EBRD (1999)), which reveals that FDI to the transition economies has been relatively high overall¹ but has been very concentrated; around two thirds of investment to the region has been received by three countries — Czech Republic, Hungary and Poland (see EBRD (1999)). Figure 1 below illustrates that although the degree of concentration declined from 1991 until 1997 (with a slight increase in 1995) it remained extremely high even in 1998. Moreover, figure 1 reveals an interesting dynamic picture, whereby FDI receipts to the countries selected to form the first wave of EU accession (see table 4 below) appear to have ratcheted upwards from 1995. It is an important purpose of this paper to explore these dynamics more rigorously, and we therefore return to this point in our empirical analysis.

[INSERT FIGURE 1 HERE]

A second strand of the literature covers the impact of supra-national trade agreements on FDI (see e.g. Baldwin (1994); Barrell and Pain (1999); Balasubramanyana, Salisu and Sapsford (1996)). Important examples which have been seen as being of relevance to the transition economies include Mexico's involvement in the North American Free Trade Area, and Spain's membership of the European Union (see Martin and Velazquez (1997)). Indeed Baldwin, Francois and Portes (1997) have gone so far as to agree that the bulk of the gain from EU membership for transition economies will derive from increased investment, coming from both reduced domestic risk and increased FDI flows. This literature suggests that prospective EU membership could be an important independent determinant of FDI in transition economies. We seek to investigate this issue below by exploring the impact of announcements about EU membership for the transition economies on FDI flows.

Our approach is to build a rigorous econometric model of the foreign direct investment process into the transition economies, using a new panel data set which allows us to identify flows from individual donor to host economies. We have information on FDI flows from 18

¹ This finding is in contrast to the early literature e.g. Sinn and Weichenrieder (1997), which argued that FDI levels to transition economies were low, relative to their income per capita. However, stocks have been growing rapidly, especially since the mid-1990s and in several countries such as Hungary, Czech Republic and Estonia now represent appreciable shares of investment and GDP (see EBRD (1999); Bevan and Estrin (2000)).

market economies to 11 transition economies, 1994-98². We develop an eclectic empirical framework, in which FDI is determined by expected profitability, with the latter influenced by demand and cost factors, transaction costs and an evaluation of country risk given by the host country credit rating. We simultaneously seek to model the credit rating in terms of a variety of macro-economic, transition and environmental factors. The model performs very well and we find FDI to be strongly influenced by risk, labour costs, host market size and gravity factors. A host country's credit rating is determined largely by the private sector share, industrial development, the government balance, reserves and corruption. Announcements concerning EU membership are found not to influence a country's credit rating, but to affect FDI directly. Thus political announcements about timetables for admission to the European Union can increase levels of FDI, thereby improving national economic performance. We find that this process has the potential to be self-reinforcing by later improving the country's credit rating and thus further stimulating foreign investment flows. In contrast, countries excluded from the EU, typically because of poor progress in transition (see Grabbe and Hughes (1998)) will receive lower levels of FDI because their country credit ratings will be poor. This will further limit their progress in transition relative to their more successful neighbours. The implications are an increasing concentration of FDI into the more successful transition economies, and increasing differentiation in per capita income within the regions, associated with inclusion into or exclusion from EU membership. The EU may wish to consider the policy implications of these processes.

The remainder of the paper is organised as follows. In the following section, we outline our conceptual framework and summarise the theory on the determinants of foreign direct investment. Our data are discussed in detail in the third section, which also presents the panel regressions for the FDI and risk equations. The section considers the mechanism by which announcement of progress in EU accession influences FDI receipts and perceived country risk ratings. The relationship between accession progress, FDI receipts and credit ratings, and the potential for vicious or virtuous circles, are explored in the conclusions.

² There is some data for earlier years but the FDI levels are for the most part low and patterns are distorted by single lumpy projects between countries.

2. Conceptual Framework

Though there has been considerable theoretical work on foreign direct investment (see e.g. Hymer (1960); Caves (1982); Buckley and Casson (1976)), there is no agreed model providing the basis for empirical work. Rather, Dunning's (1974, 1980) OLI paradigm has provided a taxonomic framework for most estimating equations. Dunning proposes that FDI can be explained by three categories of factors; ownership advantages (O) for firms to operate overseas, such as intangible assets; locational advantages to investment in the host rather than the donor country (L), and the benefits of internalisation (I). The work on FDI into transition economies has focused primarily on locational advantages of the region (see e.g. Resmini (2000)).

Our estimating framework takes account of the fact that our data concern bilateral flows between individual market and transition economies, denoted i and j respectively. Following Caves (1982), one can assume that firms will invest abroad when the expected return exceeds the costs. One therefore needs to itemise the main factors in the donor and host countries determining expected net profitability from investment.

2.1. Factors Influencing Expected Profitability in Host Economies

The literature indicates that the key locational factors determining FDI are host country market size, input costs — notably of natural resources and labour — and the riskiness of investment, both in terms of the economic and the political environment (see e.g. Singh and Jun (1995); Culem (1988)). Market size, typically measured by host country gross domestic product (GDP) captures potential economies of large scale production. In the transition context, survey evidence suggests most firms invested in search of new market opportunities (Lankes and Venables (1996)), which can also be related to absolute market size.

Expected profitability will also be higher in host economies if inputs costs, most notably labour, energy and raw materials costs, are lower than in the donor economy. For most of the transition economies, the key resource is labour, which is regarded as having relatively high levels of skills and training (in comparison for example to regions with comparable per capita income levels in South East Asia or Latin America) and a strong scientific base (see EBRD (1999)). This indicates the inclusion of labour costs. However, firms only prefer low wage

locations if the reduced labour cost is not compensated by lower labour productivity, or an overvalued currency. Hence the appropriate measure is unit labour costs denominated in a foreign currency.

Studies of FDI in emerging markets have put particular stress on indicators of economic and political risk (see Lucas (1993); Jun and Singh (1996)). This comprises three main elements: macro-economic stability, e.g. growth, inflation, exchange rate risk; institutional stability such as policies towards FDI, tax regimes, the transparency of legal regulations and the scale of corruption; and political stability, ranging from indicators of political freedom to measures of surveillance and revolutions. In the transition context, this has been proxied in a variety of ways. For example, Holland and Pain (1998) follow Wheeler and Mody (1992) in using a principal components analysis across macro-economic and institutional variables, Garibaldi *et al* (1999) use a variety of World Bank and EBRD indicators and Resmini *et al* (2000) use a synthetic indicator of risk (the ‘operation risk index’). We favour an approach in which the country risk is proxied by information actually available to firms at the time of the investment decision — the credit rating — which can be purchased commercially.

It is also widely argued that FDI and openness of the economy will be positively related (see Caves (1996); Singh and Jun (1995)). This in part proxies the liberality of the trade regime in the host country, and in part the higher propensity for multinational firms to export. There are measurement issues in transition economies however. The trade orientation pre-reform was highly skewed towards the former Soviet Union, but did not necessarily reflect comparative advantage (see Portes *et al* (1993)). Hence empirical work on the region has tended to use information about trade with Western economies, or with the major Western trading partner, the EU.

In our work, we look at openness in terms of imports sourced from the EU-15. The EU operates a trade regime designed to afford some protection to EU incumbents from third party import competition, by application of a common external tariff and through product licensing. The latter has been particularly important for the transition economies, and hence applicant’s export trade with the EU reflects not only domestic trade policy, but also that of the EU. Moreover, in assessing applicants’ preparedness for accession the EU has considered such factors as product licensing, hence inducing a potential collinearity between EU export trade and our announcement variables. This explains our use of import rather than export shares.

An important aspect of trade linkages is involvement or potential involvement in free trade agreements, customs union and supra-national economic structures, such as the European Union. Third party countries may invest into such regions to avoid tariffs on exports, while the enhanced growth and trade from the economies of scale of integration provide a demand stimulant to FDI. Within the EU context, accession for the transition economies would entail membership of the Single European Market, and hence provide EU firms with the opportunity to relocate production in areas of lower labour cost. Moreover the prospect of EU membership might be viewed by potential investors as reducing country risk; both because to meet the requirements for EU admission represents an external validation of progress in transition, and because ultimate EU membership implies guarantees in terms of macro-economic stability³, institutional and legal environment⁴ and political stability. In our econometric work, we therefore analyse the direct impact of a variety of agreements and announcements between the EU and individual transition economies on FDI itself, as well as the indirect impact via country-specific risk.

2.2. Factors Influencing Expected Profitability in Donor and Host Economies

An important feature of our methodology is that it is based on bilateral FDI flows, and thus enables us also to consider donor country characteristics and the differences between donor and host economies. Commencing with donor country characteristics, large domestic markets may encourage firms with significant economies of scale to concentrate production in a single plant, and export to other countries. However, economies of scale and scope in logistics could also allow firms to run multiplant operations, and therefore locate production close to markets. Hence it is unclear whether the size of the donor economy GDP will be positively or negatively related to FDI. The OLI framework suggests that, as trade becomes concentrated in goods produced by firms using knowledge-intensive aspects, FDI will gradually replace exports. According to Grossman and Helpman (1991), small developed countries which are particularly R & D intensive, such as Sweden and Switzerland, are more likely to invest abroad, which suggests an inverse relationship between FDI and donor GDP.

³ For example, eradicating exchange rate risk via membership of the European Monetary System.

⁴ EU membership involves the enactment into law of EU legislation across the range of commercial and civil law, including trade rates, financial regulation and competition policy (see Mayhew (1998)).

Brainard (1997) developed a model which integrated the enterprise based approach of OLI to general equilibrium trade models. Multinational enterprises' choices in serving foreign markets are determined by the trade-off between incremental fixed costs of investing and the costs of exporting. While many of these costs are determined by the factors discussed above — economies of scale, relative input costs, intangible assets — the success of the gravity model in explaining bilateral trade flows points strongly to the inclusion of distance variables in FDI equations. In these models, distance is used as a proxy for the transactions costs of undertaking activities, which are assumed to increase (in a non-linear way) as the activities become based further away. For example, the costs of transport and communication rise, as do the impact of cultural and language differences, the costs of using personnel placed abroad, and the informational costs of local property rights, regulations and tax systems, as firms operate in regions which they do not know. It can be assumed that this unfamiliarity is broadly a positive function of distance from home.

However, for the transition economies, there are potentially three important provisos to this argument. The first concerns Germany, which has traditionally had close ties of culture, language and tradition, as well as extremely tight economic integration, with the countries of Central and Eastern Europe. While some of these ties were disrupted during the Soviet era, even then the region remained closely integrated with East Germany. Transition and reunification of Germany has seen a strong re-emergence of these relationships. Hence, all other things being equal, one would expect lower transactions costs for German firms operating in the transition economies; a phenomenon for which we test in the empirical work which follows.

Simple distance measures are also a poor indication of the transactions costs of doing business in the Baltic states. The Baltic states have a dichotomous character owing to the fact that while they are small states that were part of the Soviet Union from 1939-91, their traditions, languages and institutions are linked to the Baltic basin, primarily Scandinavia. Thus, though they are geographically distant from most potential investors, they are psychologically much closer, and this greatly reduces the cost of undertaking operations. For this reason, we also account for the Baltic states as a group in our regressions. Moreover, though many of the macro-economic indicators are poor because of their previous integration into the Soviet Union, their underlying economic potential is arguably better than implied by

their formal country rating. We therefore interact the Baltic dummy with the risk variable to test for this phenomenon.

Finally, the United States is by far the largest foreign direct investor in the world, with a share of global direct investment stocks in 1998 of 24 percent (United Nations (1999)). There are a number of possible reasons for this: the exploitation of scale and scope economies, including the transport costs; the preponderance of firms specialising in knowledge based assets; and the learning effects from the large scale of overseas operations reducing transactions costs of foreign investment. This suggests that, other things being equal, US firms may invest relatively more than would be indicated by a simple gravity model, and we test for this our empirical work.

Finally, there may be financial and capital constraints on foreign direct investment. As a rudimentary attempt to control for these capital supply factors, we include an indicator of the relative opportunity cost of capital in the donor and host country, based on long run interest rates in each pair of economies.

2.3. The Determinants of Country Specific Risk

We use the credit rating of the host country to measure the investor's perception of country specific risk. These ratings give weight to economic, political and institutional performance, and hence we do not include any other indicators of macro-economic stability or prospects in our equations. However, in order to identify the independent effects of EU announcements on risk, we estimate a risk equation which includes proxies for macro-economic performance, progress in transition and corruption. After some experimentation, the included variables for macro-economic stability are the inflation rate, the government balance, the external debt stock and the end of year reserves. Crucial transition variables include the extent and method of privatisation and the industrial sector share, while corruption is proxied by estimates of the extent of bribery required to undertake business in each country.

3. Empirical Estimation

In this section we firstly detail the nature of the compiled dataset and explain the methodological approach adopted. Sub-section 3.2 presents the results of our basic estimations to explain the determinants of FDI and country risk. In sub-section 3.3 we extend these specifications to incorporate indicators of progress in EU accession. We also extend the analysis to consider whether there exists a dynamic feedback relationship between FDI receipts and country credit ratings.

3.1. Data and Methodology

In order to assess the determinants of foreign direct investment flows and country risk, we have assembled a large panel dataset covering the period 1994 to 1998 inclusive. Each observation point in our dataset constitutes a relation between source country i (EU-14, as Belgium and Luxembourg are merged, Korea, Japan, Switzerland and the USA) and recipient country j (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia and Ukraine). Hence each observation details the flow of FDI from i to j — e.g. from Austria to the Czech Republic — in DM th. Our choice of source countries reflects the fact that they are the major source of world FDI flows: their combined FDI outflows in 1998 accounting for 87 percent of total world FDI outflows (United Nations (1999)); consequently residual FDI, and particularly that to the region under consideration, is mainly noise. Similarly, our choice of host countries was governed by the fact that their total receipts constituted 82 percent of total FDI received by the region in 1998 (United Nations (1999)). Moreover, given the focus of the current study, countries were also chosen on the basis of their inclusion in the accession process, or in the case of Ukraine, being used as a control. We deliberately exclude Russia, the former Yugoslavia and other satellite states of the Former Soviet Union, as their conditions render them special cases which require country-specific explanations⁵. FDI data is derived from various issues of the International Direct Investment Statistics Yearbook published by the OECD, supplemented with data from the US Chamber of Commerce and Central Banks and Central Statistical Offices in the Baltic States in order to obtain the required level of disaggregation for the Baltics.

⁵ See Bevan, Estrin and Meyer (2000) for an example of the way in which the peculiarities of the Russian case impact on explanations of FDI receipts. In addition as Laza Kekic pointed out, FDI to Russia, as for Kazakhstan

Our empirical analysis has two-stages. In the first we analyse the determinants of foreign direct investment flows from source country i to recipient transition economy j , estimating an equation of the form:

$$FDI_{ij} = f(DGPC_i, HGPC_j, DBER_{ij}, EUSMP_j, RISK_j, DIST_{ij}, ULC_j, GER, USA, BALTIC) \quad (1)$$

where:

$DGPC_i$ and $HGPC_j$ represent respectively the Gross Domestic Product of source country i and host country j in DM th. and are derived from International Financial Statistics Yearbook (IMF (1999));

$DBER_{ij}$ represents the differential between the end-year bond yield rate in source country i and the end-year deposit rate in host country j , both of which are also derived from the International Financial Statistics Yearbook (IMF (1999));

$EUSMP_j$ represents the percentage of total imports of host country j from the EU-15, and was calculated from data in the Direction of Trade Statistics Yearbook (IMF (1998)) for the period 1994 to 1997 and from the Direction of Trade Statistics Quarterly (IMF (1999)) for 1998;

$RISK_j$ represents the credit rating of host country j derived from various issues of Institutional Investor magazine. Institutional Investor publishes their country credit ratings bi-annually in March and September on a scale of 0 (the lowest possible rating) to 100 (maximum creditworthiness). We average the bi-annual scores to produce our annualised data;

$DISTANCE_{ij}$ represents the distance between capital cities of source country i and recipient country j in kilometres;

ULC_j represents the unit labour cost in manufacturing in recipient country j in DM⁶.

and Azerbaijan, is likely to be significantly influenced by the substantial natural resource base of the economy, and hence would require additional country-specific explanatory variables to account for this.

⁶ In the absence of complete information on employment and value added in manufacturing, our proxy for unit labour costs is calculated as the ratio of the annual average wage in manufacturing to annual GDP per capita, the latter being derived from EBRD (2000). We are grateful to Simon Commander for providing us with this data.

GER, *USA* and *BALTIC* are respectively dummy variables coded 1 for Germany, the United States and each of the Baltic States and 0 otherwise;

The second stage of the analysis estimates the determining factors of the perceived risk of recipient country *j*:

$$RISK_j = f(PSHR_j, PRIV_j, INF_j, GGB_j, EDS_j, GRES_j, IND_j, BT_j, BALTIC) \quad (2)$$

where:

PSHR_j represents the percentage private sector share of GDP in recipient country *j* and is derived from the EBRD Transition Report Update (EBRD (2000));

PRIV_j is a constructed index indicating the perceived quality of the method of privatisation followed by recipient country *j*. The variable is constructed on the same basis as Holland and Pain (1998), where sales to outside owners receives the highest quality rating, while voucher distribution and management-employee buyouts receive the lowest rating (see Holland and Pain (1998)).

INF_j, *GGB_j*, *EDS_j*, *GRES_j* and *IND_j* are macro-economic indicators, along the lines of Jun and Singh (1996), and represent the percentage annual average year on year change in consumer prices, the general government balance as a percentage of GDP, the external debt stock of recipient country *j* in DM mn, the end-year gross reserves excluding gold in DM mn and the share of industrial output to GDP in percent respectively. Each of these indicators is derived from 2000 Transition Report Update (EBRD (2000)).

Finally it is widely argued (see e.g. Smarzynska and Wei (2000)) that corruption has a deleterious impact on FDI, primarily via the risk premium. To capture this *BT_j* is a measure of the frequency of ‘bribe tax’ in recipient country *j* derived from the Business Environment and Enterprise Performance Survey conducted by the EBRD and reported in their 1999 Transition Report and Transition (December 1999). The indicator reflects the percentage of surveyed firms in each recipient country that answered ‘always’, ‘mostly’ or ‘frequently’ to the

statement ‘It is common for firms in my line of business to pay some irregular ‘unofficial’ payments to get things done’.

We estimate equations (1) and (2) under random effects panel regression in order that we do not preclude the use of key fixed effect indicators which we wish to identify separately. The most obvious of these is our distance measure, our traditional proxy for transactions costs; moreover country credit ratings change very slowly over time, and hence appear to have a considerable fixed effects component which may have an important bearing on FDI inflows.

Furthermore, in order to develop a better understanding of the dynamics of the FDI process we additionally estimate (1) in first differences. This allows us to address two separate issues. Firstly while the levels equation details the impact of initial conditions upon the level of FDI receipts, the first difference equation enables us to identify those factors which influence the growth rate of FDI receipts, independently of the levels of both FDI receipts and of the determining variables — hence controlling for initial conditions. Given that FDI to the transition economies has grown extremely rapidly from a very low initial base (see Bevan and Estrin (2000)), identifying the dynamics of the process in this manner is thus clearly of great interest. Moreover, this approach enables us to identify indicators of accession progress that led to a once and for all shift in the level of FDI and those which induced a structural shift in the rate of growth of FDI receipts.

Nonetheless, because FDI inflows have grown extremely rapidly from a very low base in an economic milieu that remains in a state of flux, it is not clear that our levels equation necessarily represents the long-run equilibrium of the FDI process. Hence we do not *ex ante* necessarily expect consistency between the level and first difference forms of the equation.

The results of our estimation and the precise manner in which accession progress is introduced to our specified equations are presented in the following sub-sections.

3.2. Empirical Estimation

In the first stage of our analysis we estimate (1) in levels, and present the results in table 1 below.

[INSERT TABLE 1 HERE]

The results of model 1 illustrate that our specification has significant overall explanatory power, with a chi-squared value that allows us to reject the null hypothesis of joint insignificance of our coefficients. We find that the coefficient upon host country GDP is positive and highly significant, confirming the market size hypothesis that larger host countries are associated with greater FDI owing to greater market opportunities for investors. By contrast, we do not find support under this specification for the hypothesis that source country size is a significant determinant of FDI inflows⁷.

The recipient country credit rating variable ($risk_j$) is also found to be significantly positively correlated with FDI inflows: improved credit ratings are therefore associated with greater FDI receipts in our sample. The commonly available evaluation of country specific risk therefore acts as a parsimonious way to represent the evaluation of the required risk premia in corporate FDI choices. We conclude risk is an important factor in FDI decisions.

Conversely, we find that both distance and unit labour costs are negatively associated with FDI receipts⁸. At first glance the former results appears surprising, if distance were positively correlated with FDI which would substitute for trade. However, we have argued that there may be a negative correlation between distance and FDI as a result of increasing cultural and/or psychic distance — which increases the costs of communication and co-ordination. Our finding therefore clearly supports these latter hypotheses.

The finding that unit labour costs are negatively associated with FDI supports the consensus opinion that foreign investors are attracted by low labour costs. This result did not emerge in

⁷ Additional specifications that are not reported illustrated that source country GDP was found to be significant until the introduction of dummy variables to control for the influence of Germany and the USA. Though the explanations are related, we feel that the impact is via lower transactions costs of FDI, not because host GDP is larger. Hence the specification reported.

⁸ Although we find distance to be negatively correlated with FDI, we do not find any evidence that its impact is non-linear in additional tests which we do not report.

previous tests using the average manufacturing wage rather than unit labour costs, hence confirming that the attraction lies in labour that is relatively inexpensive *and* productive⁹. This is an important result because previous work based either on surveys or a shorter sample period have stressed market access rather than labour cost factors. Given that wage differentials between CEE and the EU are around 10:1 at current exchange rates, it seems likely that this will become an increasingly important determinant of FDI post-accession.

Of our country dummies, we find the coefficient upon our Germany dummy variable to be positive and highly significant, illustrating that German FDI flows are greater than would be expected given all other contributory factors in the equation. The importance of controlling for Germany was revealed in additional tests as the introduction of the German dummy variable led to an increase in the coefficient of our distance variable. This illustrates that our negative distance effect result is robust even when controlling for the magnitude of FDI flows from Germany which is in close proximity to our host transition economies.

Similarly we find support for the need to control for the Baltic States. Given the prior discussion above highlighting the dichotomous character of the Baltic states, we control with a Baltic dummy variable both as an intercept dummy and interacted with our country credit rating variable. We firstly find that our intercept dummy is positive and highly significant indicating that *ceteris paribus* the Baltic states receive more FDI than one would expect given their fundamentals. However, in addition we find a negative and significant coefficient on the interactive variable (*baltic.risk_j*). Hence, as predicted, while country credit ratings are important in explaining FDI receipts in general, they have a reduced impact upon FDI received by the Baltic states, probably because of the downward bias as a result of their ex-Soviet status and their attractiveness given their close ties with Scandinavia.

Table 2 presents the results of the estimation of our FDI equation in first differences. The letter ‘d’ in parentheses in the first column illustrates the first differenced independent variables that are used in model 2. Hence we regress the change in FDI inflows against the change in all of our previous determining factors — with the obvious exceptions of the ‘fixed effects’ country dummies, and distance measure.

⁹ Moreover, wage levels tend to be higher among the western transition economies in our sample and hence a

[INSERT TABLE 2 HERE]

Although the R-squared and chi-squared statistics are considerably smaller than under the levels version of the equation, the overall regression is significant at the 1 percent level. Our framework therefore also provides an explanation for the dynamics of FDI. There are however some marked differences in the determinants of the change in FDI from that of the level. While the coefficient on host country GDP in our levels equation supported the market size hypothesis, the significance of the change in host country GDP in our first difference specification suggests that there is also a strong market growth effect. Thus we find FDI increases in countries with faster growth in GDP.

By contrast, the negative and significant coefficient upon the change in unit labour costs illustrates that not only do low unit labour costs attract FDI, but that the rate of growth of unit labour costs is negatively correlated with the rate of growth of FDI. Hence wage inflation which is not compensated by increased productivity is *ceteris paribus* associated with a decline in the growth rate of FDI inflows. Once again this highlights the central role of changing labour costs in the dynamics of FDI to the region. Finally the positive coefficient on the German dummy variable indicates that, given all other factors controlled for in the equation, not only the level but the growth rate of FDI inflows from Germany exceeds that of all other source countries in our sample¹⁰.

Overall, the results illustrate that, as one would expect, while fixed effects elements are important determinants of the level of FDI inflows to the transition economies, the same is not true of our first difference estimation. The results of model 2 illustrate that — with the exception of the Germany dummy — pure fixed effects, and even those variables that change very little over the time frame of our estimation, such as risk, have no significant bearing on the dynamics of FDI inflows. Although in established market economies it would be surprising to find rapid change in our significant variables, GDP and unit labour costs, these variables have changed considerably during a short period of transition, with significant

failure to control for productivity is likely to lead to collinearity between wage rates and our distance measures.

repercussions for the dynamics of FDI. It is however striking that both the level and the growth and the growth of FDI is significantly higher for Germany, even when the other determinants are taken into account.

Table 3 presents the results of our regression examining the determinants of our institutional investor country credit ratings. The sample size is reduced as we limit our analysis to the set of transition economies — hence we only estimate in the j dimension rather than the i by j dimension used previously.

[INSERT TABLE 3 HERE]

The explanatory variables explain a large proportion of the variation in our risk measure, and the overall regression is highly significant, the Wald statistic of 118.78 being significant at less than the one percent level. We find the private sector share of GDP to be a highly significant explanatory variable and it thus seems clear that private sector development is a key factor in determining perceived country risk. Moreover, the coefficient on quality of the privatisation method employed (*priv*) is positive and significant at less than the 1 percent level, supporting the Holland and Pain hypotheses. The coefficient upon the general government balance variable (*ggb*) is positive and significant, indicating that government deficits increase perceived country risk. Similarly we find a positive coefficient assigned to reserves (*gres*) — increased reserve stocks are positively correlated with improved country credit ratings.

The results also indicate that the share of industry in GDP is significantly positively related to country credit ratings, while increased ‘bribe tax’ is highly significant and negatively correlated with credit ratings. This latter result most probably captures several transition specific features simultaneously, including notions of institutional capacity and capability, rule of law and so on, all of which should be highly negatively correlated with credit ratings and hence with FDI inflows. Finally, although insignificant, we note that the coefficients on

¹⁰ It had been suggested to us that the significance of the German dummy under first differences implies the need to include an interactive *Germany.time* trend variable in the levels for consistency. However, experimentation found no significant time trend, either independently or interacted with the German dummy, in the levels equation. We suggest that instead this result further illustrates the failure of the assumption that model 1 represents a long run equilibrium, and hence the need to examine the dynamics of the process independently.

the inflation variable (*inf*) and the external debt stock variables (*eds*) are both negative, as would be expected.

Our prior discussion of the dichotomous nature of the Baltic state, together with the need to control for them in the FDI equations by interacting this dummy with the risk variables suggests the likely importance of introducing such a control to our risk equations. Our results confirm this expectation, with a large and highly significant negative coefficient being attributed to our Baltic dummy variable. This suggests that the Baltics do indeed receive a lower credit rating than they would merit given all of the other factors in the regression — most likely as a result of their size and geo-political history. Our previous FDI results illustrate, however, that this low rating does not adversely affect FDI to the Baltic states; the intercept dummy in our FDI levels equation indicated that the Baltic states receive more FDI than would be expected given their fundamentals, while the interactive dummy indicated that FDI was negatively correlated with country credit rating in the Baltic case. Hence foreign investors appear to look beyond the macroeconomic fundamentals and credit ratings when investing in the Baltic states.

Having established robust specifications explaining FDI inflows in levels and first differences, and perceived country risk, we extend our analysis to consider the influence of announcements of EU accession progress. We do so by constructing variables for the major announcements that have occurred during our sample horizon, and introducing them to the specifications estimated above. The procedure followed and results obtained are detailed in the following sub-section

3.3. The Impact of Announcements of EU Accession Progress

In order to test for the impact of announcements of progress in accession we constructed several dummy variables representing the key Intergovernmental Conferences and major announcements from the European Commission. We constructed dummy variables for the Essen European Council conference, which launched the pre-accession strategy for the applicant countries, the Madrid Council where the European Commission reaffirmed its commitment to enlarge, and the Agenda 2000 announcement. Table 4 below details the precise timing of the announcements and the country-specific element of each announcement.

[INSERT TABLE 4 HERE]

In this section we limit ourselves to three key announcement variables¹¹. In each case, rather than a single period time dummy, we constructed the dummy variable under the hypothesis that the event led to a structural shift from the impact date until the end of the time horizon of the panel. Hence:

ESSEN takes the value zero for all *ij* combinations in 1994 and one from 1995 to the end of our panel, in order to reflect the impact of the Essen European Council Meeting;

AGEND1 takes the value zero for all *ij* combinations prior to 1997 and one from 1997 for each *ij* combination where *j* is a member of the ‘first wave’ group of countries identified by the European Commission in its Agenda 2000 document;

AGEND2 takes the value zero for all *ij* combinations prior to 1997 and one from 1997 for each *ij* combination where *j* is a member of the ‘second wave’ group identified in Agenda 2000 (hence Ukraine is assigned a value of zero for both *AGEND1* and *AGEND2*).

We introduce these three variables to each of our previous three models, and present the results of the regressions in tables 5, 6 and 7 below.

[INSERT TABLE 5 HERE]

At the most simple level, the results of table 5 illustrate that none of our announcement variables are significant in the FDI levels regression (model 4). Indeed the coefficient on our ‘first wave’ Agenda 2000 variable (*agend1*) is of a sign that contradicts *ex ante* expectations. It is however notable that the introduction of the variables results in a marginal increase in the overall significance — as measured by the chi-squared statistic — of each of our regressions over those present in table 1. Moreover we note that most coefficients are unaffected by the announcement variables being introduced: we again find FDI inflows to be positively

¹¹ Our Madrid dummy variable and additional dummies representing the signing of EU Association Agreements were rejected empirically in tests of various alternative specifications of our equations, in large part through multicollinearity. The results presented in this section therefore represent the most robust of our findings.

correlated with recipient country GDP, risk to be positively correlated and distance to be negatively correlated. The coefficients attributed to our country dummies are also unaffected. The only exception to this concerns the slight reduction in the magnitude and significance of the risk coefficient, suggesting that there may be some correlation between risk and our announcement variables.

Nonetheless, this result is intuitively unappealing as figure 1 showed that the Visegrad countries received a large increase in FDI inflows immediately following the Essen announcement, from 1995 to 1998. In order to test this we interact the Essen announcement variable with a dummy taking a value of one if the recipient country is a Visegrad state and zero otherwise. Strikingly under this model (model 5) we find a positive and significant coefficient upon this interactive variable (*vis.eessen*). The remaining results correspond to those of model 4 in every respect, other than a slight decline in the unit labour cost variable (*ulc_j*). Hence it would indeed appear that the Essen announcement had a positive impact upon the level of FDI inflow received by the Visegrad nations¹². We suggest therefore that the Essen announcement induced a large increase in FDI inflows, but that investors only directed this to the psychically close nations which were frontrunners in the accession process at the time.

[INSERT TABLE 6 HERE]

The results of our first difference equation (models 6 and 7, in table 6 above) reveal a somewhat different picture however. The introduction of the announcement variables increases the overall significance of the regression considerably, with substantial increases in the associated Wald statistic¹³. While the *essen* and *agend2* variables remain insignificant, including when *essen* is interacted with our Visegrad dummy, our first wave *agend1* variable is positive and highly significant. This result indicates that under our specification the announcement of first wave status in Agenda 2000 led to a significant upward shift in the rate of change of FDI to the first wave nations — a finding reflected in figure 1 above. While the insignificance of *agend2* indicates that the second wave nations were not adversely affected

¹² A Wald test marginally fails to reject the joint insignificance of the four accession variables ($\chi^2(4)=6.80$), but rejects the insignificance of the Visegrad.Essen interacted variable at the 5 percent level ($\chi^2(1)=3.88$) and of the joint insignificance of the interacted and non-interacted Essen variables ($\chi^2(2)=4.64$).

¹³ This substantial impact is reflected by the fact that in this case we are able to reject the joint insignificance of all accession variable at the 1 percent level, with an associated $\chi^2(4)$ of 14.11.

in absolute terms, their relative position clearly deteriorated as a result of being excluded from the first wave. Furthermore the insignificance of *essen*, whether interacted or otherwise, suggests that although the Essen announcement led to a once and for all shift in the level of FDI to the Visegrad nations, it did not influence on the rate of growth of FDI to the first wave applicant countries. Agenda 2000 may have to some extent been pre-empted by a combination of the Essen announcement and investors perceptions therefore, although the impact on the growth rate of FDI will feed through to increases in the level of FDI over time.

Otherwise we find limited change in what appears to have been a robust specification before and after the inclusion of the announcement variables. There is a decline in the magnitude of the recipient country GDP coefficient, and a reduction in its significance, becoming insignificant once we control for the Visegrad nations in model 7. Furthermore, the risk measure increases considerably under this specification and, although it remains insignificant, is now of the correct sign. However, the most notable difference is the large change in the absolute size of the coefficient upon the change in unit labour costs (*ulcd_j*). Although there is no purely statistical correlation between *ulcd_j* and any of the announcement variables, it may be that the announcement variables control for the higher wage increases that appear to have occurred in the second wave nations over our sample horizon.

Finally table 7 presents the results of estimation of our risk equations with the announcement variables included. The results of model 8 illustrate that none of our announcement variables have any significant impact upon country credit ratings in our sample, even when *essen* is interacted with our Visegrad dummy variable¹⁴.

[INSERT TABLE 7 HERE]

Comparison of the results of models 8 and 9 with those of model 3 in table 3 illustrate that the inclusion of our announcement effects, if anything, detracts from the specification and they have little role to play. Indeed with the exception of the inflation rate variable (*inf*) in model 8, all coefficients are extremely robust to the inclusion of our announcement variables. By contrast controlling for the Visegrad nations under model 9 detracts significantly from the

¹⁴ We fail to reject the joint insignificance of the accession variables in models 8 and 9 with associated values of $\chi^2(3)=2.18$ and $\chi^2(4)=1.59$, respectively.

specification, by reducing the significance of the private sector share variable (*pshr*), and rendering the inflation variable (*inf*) and the bribe tax variable (*bt*) insignificant.

Consequently the introduction of our announcement variables allow us to identify that announcements of progress in EU accession have indeed had a differential impact upon applicant countries. Contrary to expectations from the existing literature, this effect has not occurred through country credit ratings, and we speculate that this may be because institutional credit ratings are more likely to respond to actions rather than merely announcements. Moreover, we find that while the Essen announcement induced a once and for all increase in the level of FDI inflows to the Visegrad nations, the Agenda 2000 announcement impacted only upon the rate of change of FDI. Hence in the first instance the Essen announcement appears to have led to an increase in FDI flows to psychically close countries which were making relatively stronger transition process at the time. By contrast the countries selected for the first wave of accession in Agenda 2000 appear to have received a significant boost to their growth rate of FDI, while there was no impact upon those excluded from the first wave. Hence while excluded countries do not appear to have suffered in absolute terms from the announcements — as there is no significant negative impact — they seem likely to have done so relative to the first wave applicants.

This may have important implications in the context of the current debate as to whether the European Commission should commit to entry dates for the applicant countries. Taking all applicant countries as a group, such an announcement appears to have the capacity to increase the rate of growth of FDI inflows. If such FDI would encourage more rapid reform, there is the possibility that this may induce virtuous cycles, easing the accession process by stimulating development. In order to test whether such a feedback relationship exists, we introduce lagged FDI into the risk equations estimated previously. A finding that lagged FDI positively influences country credit ratings illustrates that a virtuous cycle does indeed exist: EU announcements impact upon the level and growth rate of FDI, which in turn will improve future country credit ratings, increasing FDI and so on. We present the results of this amended specification under model 10 in table 8 below¹⁵.

¹⁵ We do not introduce our announcement variables to this specification, as the finding that announcements influence the level and growth rate of FDI implies that simultaneously introducing lagged FDI and announcement variables to the risk equation would induce significant multicollinearity.

[INSERT TABLE 8 HERE]

The results of model 10 support this hypothesis by illustrating the significance of lagged FDI for country credit ratings. Our lagged FDI variable (*fdi1*) is positive and significant at less than the 10 percent level, increasing the overall significance of the regression substantially over that of model 3 in table 3. Hence we find evidence that a virtuous cycle does exist, in which announcements of accession progress stimulate FDI, in turn inducing improved country credit ratings and further stimulating FDI.

Notably however, the significance of the gross reserves (*gres*) variable is lessened under this specification, probably as a result of the correlation between our FDI data which is derived from balance of payments information and foreign reserves. Equally, the loss of a significant impact of the privatisation method most likely results from collinearity between the two variables, as sales to foreign owners is a determinant of the privatisation method index.

4. Conclusions

The analysis presented in this paper has enabled identification of several key determinants of FDI inflows to the transition economies of Central and Eastern Europe, and highlighted the implications of announcements of progress in EU accession for FDI inflows to the applicant countries. By utilising an extremely detailed dataset which permits us to identify FDI inflows to our sample of transition economies and the source country of these inflows, we have found that FDI inflows are significantly influenced by risk, unit labour costs, host market size and gravity factors. Moreover, at the second stage of the analysis we have identified that private sector development, industrial development, the government balance, gross reserves and corruption are significant determinants of perceived country risk in our sample.

Most importantly however, our framework has permitted us to identify the implications that key announcements of accession progress have had upon FDI receipts. Our finding that such announcements have impacted directly upon FDI itself and have not operated through improvements in country credit ratings directly contradicts the previously assumed impact of accession. Our findings therefore suggest that transition economies may be subject to a rather different accession process than previously thought.

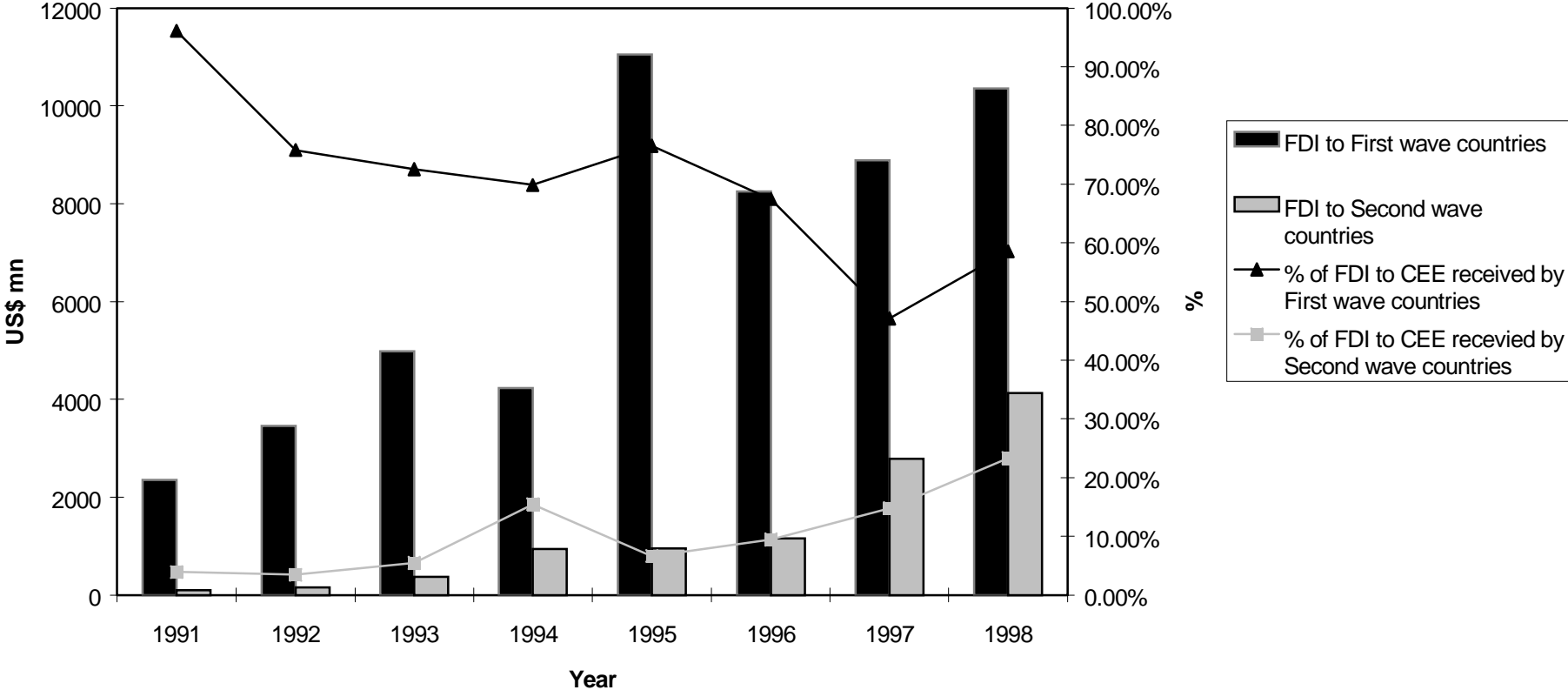
Moreover, while we find that accession announcements have not directly influenced country credit ratings, the final stage of our analysis uncovered a dynamic transmission mechanism whereby announcements directly impact upon FDI which in turn improves country credit ratings with a one period lag, and hence improves FDI in the next period. This feedback relationship therefore suggests that countries which proceed along the accession path may benefit from a virtuous cycle, hence increasing the differential between them and the accession laggards. Consequently our results suggest that the position of the delayed countries could well deteriorate relative to candidates earmarked for early entry, and that the long-run dynamic consequences for delayed entrants may be grave.

We suggest therefore that the EU may wish to consider the policy implications of such findings. We note, however, that these implications are far from clear. Our results illustrate that the Agenda 2000 announcement led to a bifurcation in the growth rate of FDI to the transition economies, with the second wave group suffering relatively. Hence, at first blush,

one would suggest that the implication is that the EU should shy from high profile country-specific announcements.

Unfortunately we also find that the Essen announcement, an announcement that was not country-specific, led to an increase in the level of FDI received by the Visegrad countries only. We have suggested that this result implies that investors realised that accession was a possibility, and so chose to invest in countries that were physically and psychically close, who were frontrunners in the transition process. However, if our interpretation is correct, it implies that even general announcements from the EU have the potential to cause divisions in FDI receipts. Finally we note that it would clearly not be sensible for the EU to respond by attempting to heal divisions by exaggerating the prospects of laggards, as doing so would call its credibility into question with repercussions that would likely extend beyond FDI.

Figure 1. Levels and Concentration of FDI Inflows to Central and Eastern Europe EU Applicant Countries



**Table 1: Determinants of FDI in levels
(standard errors in parentheses)**

	Model 1 fdi
dgpc	0.00776 (0.00778)
hgpc	1.70185*** (0.22765)
dber	0.29839 (0.32824)
eusmp	-25.68055 (79.94373)
risk	2.09926** (1.03442)
distance	-0.02109** (0.01076)
ulc	-180.4689** (86.2308)
ger	294.2238*** (52.9106)
usa	67.15333 (94.3763)
baltic	153.8072*** (60.08711)
baltic.risk	-3.25513** (1.64065)
constant	82.45929 (94.3763)
No. of obs	558
No. of groups	151
R ² :	
within	0.1194
between	0.4065
overall	0.3533
Wald χ^2	157.17***

***, ** and *, significant at the 1, 5 and 10 percent level respectively;

Source: Authors' calculations

**Table 2: Determinants of FDI in first differences
(standard errors in parentheses)**

	Model 2 fdid
dgpc(d)	0.03315 (0.02865)
hgpc(d)	1.21174*** (0.43391)
dber(d)	-0.07895 (0.51575)
eusmp(d)	216.6028 (160.9087)
risk(d)	-0.34311 (2.02942)
distance	-0.00592 (0.00886)
ulc(d)	-385.333** (168.6353)
ger	108.8459*** (33.4374)
usa	-16.39642 (52.45219)
baltic	-5.46339 (26.89902)
baltic.risk(d)	-2.68627 (3.48442)
constant	22.98858 (17.0984)
No. of obs	461
No. of groups	135
R ² :	
within	0.0185
between	0.1846
overall	0.0552
Wald χ^2	26.24***

***, ** and *, significant at the 1, 5 and 10 percent level respectively;
Source: Authors' calculations

**Table 3: Determinants of Risk
(standard errors in parentheses)**

	Model 3 risk
pshr	0.50006*** (0.12028)
priv	3.07571*** (1.16677)
inf	-0.00886 (0.00545)
ggb	0.90786* (0.47141)
eds	-0.00014 (0.00012)
gres	0.00068** (0.00030)
ind	0.66837** (0.33807)
bt	-0.26057** (0.12001)
baltic	-13.65701*** (4.68377)
constant	-8.46564 (12.98774)
No. of obs	44
No. of groups	10
R ² : within	0.3113
between	0.9516
overall	0.7755
Wald χ^2	118.78***

***, ** and *, significant at the 1, 5 and 10 percent level respectively

Source: Authors' calculations

Table 4: Announcements of EU Accession Progress

Date	Event	Which Applicants?
June 1993	Copenhagen European Council announces 'Copenhagen Criteria'	All
Dec. 1994	Essen European Council launches pre-accession strategy	All
Dec. 1995	Madrid European Council reaffirms commitment to enlarge EU	All
July 1997	Agenda 2000 released after Amsterdam IGC in June:	Identified two waves: 1 st : Czech Republic, Estonia, Hungary, Poland and Slovenia 2 nd : Bulgaria, Latvia, Lithuania, Romania and Slovakia

Table 5: Determinants of FDI in levels and first differences with Accession Announcements (standard errors in parentheses)

	Model 4 fdi	Model 5 fdi
dgpc	0.00701 (0.00803)	0.00743 (0.00804)
hgpc	1.80855*** (0.24221)	1.82681*** (0.27594)
dber	0.26435 (0.33901)	0.54884 (0.38154)
eusmp	-25.08954 (81.157)	-68.39043 (84.28941)
risk	1.92973* (1.09059)	1.89955* (1.13676)
distance	-0.02074* (0.01086)	-0.02107* (0.01090)
ulc	-215.8148*** (88.41388)	-223.5148** (97.73762)
ger	295.0738*** (53.4351)	292.974*** (53.63227)
usa	73.28 (96.38531)	68.29071 (96.57921)
baltic	169.4764*** (60.94694)	144.1122** (62.37652)
baltic.risk	-3.70183** (1.66106)	-3.16575* (1.72184)
constant	102.798 (109.4911)	170.5089 (122.5597)
essen	16.69632 (15.43704)	-13.92024 (22.35757)
vise		-57.9863 (47.07707)
vise.essen		56.7158* (31.04957)
agend1	-23.07244 (19.73995)	-24.59978 (20.35287)
agend2	21.82761 (19.77867)	25.03441 (19.83316)
No. of obs	558	558
No. of groups	151	151
R ² :		
within	0.1295	0.1363
between	0.4063	0.4064
overall	0.3545	0.3543
Wald χ^2	160.39***	163.57***

***, ** and *, significant at the 1, 5 and 10 percent level respectively

Source: Authors' calculations

Table 6: Determinants of FDI in first differences with Accession Announcements (standard errors in parentheses)

	Model 6 fdid	Model 7 fdid
dgpc(d)	0.01922 (0.02908)	0.02115 (0.02908)
hgpc(d)	0.81612* (0.45013)	0.72280 (0.50600)
dber(d)	-0.08948 (0.52321)	0.21017 (0.55284)
eusmp(d)	193.7194 (164.2038)	83.01837 (180.3498)
risk(d)	0.96383 (2.05783)	0.96672 (2.05677)
distance	-0.00594 (0.00879)	-0.00546 (0.00879)
ulc(d)	-333.1853** (169.0383)	-317.4825* (171.399)
ger	107.7678*** (33.18454)	108.0401*** (33.18949)
usa	-10.66553 (52.10013)	-13.0252 (52.13269)
baltic	-7.05913 (27.2329)	7.17345 (30.63619)
baltic.risk(d)	-4.29654 (3.50980)	-4.04861 (3.51018)
constant	-14.00548 (26.17954)	12.95852 (39.6756)
essen	27.71761 (27.69497)	-22.38564 (43.56435)
vise		-43.87457 (4845154)
vise.essen		83.20532 (54.36701)
agend1	83.05059*** (30.67444)	81.45782*** (30.66216)
agend2	18.69879 (29.26455)	30.31829 (30.16634)
No. of obs	461	461
No. of groups	135	135
R ² : within	0.0381	0.0402
between	0.2096	0.2308
overall	0.0766	0.0824
Wald χ^2	36.99***	39.86***

***, ** and *, significant at the 1, 5 and 10 percent level respectively

Source: Authors' calculations

**Table 7: Determinants of Risk with Accession Announcements
(standard errors in parentheses)**

	Model 8	Model 9
	risk	risk
pshr	0.52281*** (0.13944)	0.43757* (0.23022)
priv	2.96598** (1.22503)	3.04870** (1.27548)
inf	-0.00982* (0.00581)	-0.00946 (0.00603)
ggb	0.86301* (0.47966)	0.85093* (0.49669)
eds	-0.00019 (0.00013)	-0.00021 (0.00014)
gres	0.00078** (0.00032)	0.00076** (0.00037)
ind	0.51406 (0.36024)	0.52788 (0.37466)
bt	-0.22332* (0.12654)	-0.21418 (0.13208)
baltic	-14.77119*** (4.80588)	-13.32537** (5.97132)
constant	-2.42042 (13.80905)	-0.91321 (14.7936)
essen	-4.60341 (3.30115)	-2.703117 (5.11750)
vise		3.87434 (7.57850)
vise.essen		-1.73023 (6.20672)
agend1	2.17838 (3.26456)	2.77175 (3.58720)
agend2	1.13337 (3.42490)	1.77605 (3.802574)
No. of obs	44	44
No. of groups	10	10
R ² : within	0.3150	0.3118
between	0.9598	0.9586
overall	0.7921	0.7940
Wald χ^2	118.10***	111.77***

***, ** and *, significant at the 1, 5 and 10 percent level respectively
Source: Authors' calculations

**Table 8: Determinants of Risk Including Lagged FDI
(standard errors in parentheses)**

	Model 10 risk
fdi1	0.02461* (0.01298)
pshr	0.42428*** (0.12262)
priv	2.02071 (1.25465)
inf	-0.00731 (0.00532)
ggb	1.10292** (0.46587)
eds	-0.00008 (0.00012)
gres	0.00051* (0.00030)
ind	0.64289** (0.32613)
bt	-0.25227** (0.11576)
baltic	-10.26246** (4.85635)
constant	-3.03204 (12.84203)
No. of obs	44
No. of groups	10
R ² : within	0.2843
between	0.9784
overall	0.7993
Wald χ^2	131.45***

***, ** and *, significant at the 1, 5 and 10 percent level respectively

Source: Authors' calculations

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