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*The Determinants of West-East Business:  
An Analysis of Ownership Advantages*

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**Abstract:**

This paper analyses the ownership advantages of firms engaging in business with Central and Eastern Europe (CEE). Several kinds of ownership advantages are described, based on Dunning's framework. To isolate ownership advantages from internalisation aspects, all forms of international business are considered jointly. Their impact is predicted, and found, to vary across five host countries considered, due specific locational characteristics. The empirical analysis finds important effects of common governance, proximity and barriers to growth. However, intangible assets and property right remain insignificant, in contrast to most prior research. The paper thus suggests that research should pay more attention to ownership advantages other than firm-specific technological knowledge.

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## 1. Introduction

Firms engage in international business if they have firm-specific assets that are in demand elsewhere. These assets enable them to operate in a foreign environment, and to overcome the intrinsic costs of being foreign. They arise with specific technological knowledge as well as organisational or managerial capabilities. John Dunning [1993] integrated the concept of firm-specific assets into his eclectic OLI paradigm. He calls them ownership advantages, and adopts a very broad definition including all sources of competitive advantage. In the paradigm, O-advantages take a central role in that they are necessary condition for firms to engage in international business. Together with locational advantages (L) and internalisation incentives (I) they are pre-condition for international production to emerge.

This paper analyses the ownership advantages of firms engaging in business with Central and Eastern Europe (CEE). Several kinds of ownership advantages are described, based on Dunning's framework. Their impact is predicted, and found, to vary across five host countries considered, due specific locational characteristics. The empirical analysis finds important effects of common governance, proximity and barriers to growth. However, intangible assets and property right remain insignificant, in contrast to most prior research. The paper thus suggests that research should pay more attention to ownership advantages other than firm-specific technological knowledge.

The analysis focuses on business relationships of British and German<sup>1</sup> manufacturing companies with the transition economies in CEE. To isolate ownership advantages from internalisation aspects, all forms of international business are considered jointly. This includes not only direct foreign investment (DFI) but also international trade and contractual cooperation. This West-East business is a part of firms' international business, but with special features due to the relatively recent establishment of business contacts and the economic transformation of these economies. Most businesses entered the region after 1989, while firms with prior contacts to the region had to redesign their regional strategy. Therefore, all activities in the region are based on recent strategic decisions. They occur in response to unique opportunities due to attractive markets and the relatively low labour costs, with however additional risks and costs of operating in a transition environment.

This paper is structured as follows: in the next section, hypotheses are developed from a discussion of relevant ownership advantages. Section three explains the methods of empirical analysis and discusses the regression equations. Section four reviews the evidence of the regression analysis for each hypothesis, and section five concludes.

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<sup>1</sup> Including East Germany would have added an additional layer of complexity to the study. Therefore, the sample includes only West German firms and investment in other transition economies. For legibility, the word West is henceforth omitted.

## 2 Theoretical Background and Hypotheses

John Dunning [1977] integrates many theories of multinational enterprises into a general paradigm of international production, known as OLI-paradigm. He extends the framework [Dunning 1993], most recently to explain strategic alliances [Dunning 1995]. The basic premise is that DFI is undertaken if three conditions are simultaneously met. With ownership advantages alone, trade or contracting may be a superior strategies. The three conditions are:

- The active firm needs 'ownership advantages' (O), that is specific assets to obtain a competitive advantage over local competitors. They include property rights and intangible assets, named 'Oa advantages' as well as advantages arising from common governance, named 'Ot advantages'. Oa advantages include advantages due to abilities that facilitate the generation of new assets, especially knowledge. Ot advantages are capabilities of organising Oa advantages with complementary assets. They include (i) those of branch plants of established enterprises over *de novo* firms and (ii) those arising specifically from multinationality.
- The host country must possess 'locational advantages' (L), which include factor cost advantages and also proximity to the market, the existing economic structure and the legal, social and political frameworks.
- 'Internalisation incentives' (I) must make it more efficient for the multinational enterprise to use its competitive advantage internally rather than selling components in the market place. These advantages may arise from market failure as discussed in the transaction cost and internalisation literature [e.g. Caves 1971, Buckley and Casson 1976, Casson 1995], but may also arise because of distortions in the regulatory environment.

To assess the determinants of West-East business, two tasks are necessary: First, the locational advantages of the region must be assessed, using the concepts considered in the theory of location. Secondly, the ownership advantages that may be valuable for business with this region must be identified. Internalisation incentives do not apply for this analysis.

### 2.1. Central and Eastern Europe as Business Location

Trade theory suggests that location of international production would be based on comparative advantages of factor-costs. DFI would move where production costs are lowest. Traditionally, analysts focused on trade barriers and labour costs. Empirical research shows that this is a very incomplete framework to analyse the location of DFI. The concept of 'locational advantages', as reviewed by Caves [1982] and Dunning [1993], covers many more aspects. While popular debate is often focusing on production costs, research suggests that attraction of local markets is at least as important.

#### a) Costs of production

Production cost advantages are an important component of locational decisions in industries with low transportation costs. Their location of production depends on costs of production in the host

economy compared with any other potential host country. The crucial variable is productivity-adjusted relative labour costs. Thus, factors influencing productivity are determinants of location. This includes transportation and telecommunications infrastructure,<sup>2</sup> the quality of the human capital, especially education and employee motivation,<sup>3</sup> and quality, reliability and costs of local supplies.

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<sup>2</sup> see e.g. Coughlin, Terza and Arromdee [1991], or Woodward and Rolfe [1993] for empirical analysis of the impact on DFI.

<sup>3</sup> Educational and technological infrastructure was shown to be significant in attracting DFI by Swedenborg [1979], Dunning [1980], Cantwell [1989]. For this reason, some studies found a positive association between endowment with skilled labour [e.g. Svensson 1996].

**Table 1: Selected Indicators of CEE Business Environments**

	<i>Czech R.</i>	<i>Hungary</i>	<i>Poland</i>	<i>Russia</i>	<i>Romania</i>
<i>Demand Indicators</i>					
GDP per capita in US\$	3,500	3,979	2,412	n.a.	1,324
GDP growth	2.6%	2.0%	5.0%	-15%	3.4%
- " - OECD forecast (1996)	5.0%	3.0%	5.0%	2.5%	4.5%
Population, million	10.3	10.3	38.6	148.2	22.7
<i>Labour Costs</i>					
Gross monthly wages, in US\$	240	317	241	96	n.a.
<i>Value Added per worker<sup>a</sup></i>					
Food Processing Industry	-6.7	0.3	-0.0	n.a.	n.a.
Chemicals Industry	9.6	8.2	8.7	n.a.	n.a.
Engineering Industry	4.7	5.1	5.6	n.a.	n.a.
<i>Progress in Transition</i>					
Legal reform	++++	++++	++++	++	++
Banking reform	+++	+++	+++	++	+++
private sector in GDP 1989	11.2	29.0	28.6	5.3	12.8
private sector in GDP 1994	56.3	55.6 <sup>(1993)</sup>	56.0	25.0	35.0
Main mode of privatisation	voucher	direct sale	mixed	voucher	delayed
<i>Risk Indicators</i>					
Inflation	10.0%	21.2%	29.5%	203%	61.7%
Euromoney ranking <sup>b</sup>	39	46	73	136	77

source: EBRD [1995] except <sup>a</sup> and <sup>b</sup>; data refer to 1994 unless otherwise shown.

<sup>a</sup> in US\$ '000, calculations by Hare and Hughes [1994].

<sup>b</sup> credit rating assigned to the countries in September 1994.

n.a. = not available.

Factor costs differ substantially between Eastern and Western Europe. Under distinct economic systems, the industrial structure of the economies developed along very dissimilar trajectories from 1945 to 1989, despite geographic proximity. While the socialist countries focused on scale intensive, heavy industries [e.g. Ellmann 1989, Gregory and Stuart 1988], Western Europe moved on to knowledge intensive industries and services. This resulted in a large gap of productivity and real wages. Wages were additionally kept low by politically imposed constraints that emphasised equality over incentives. When the Iron Curtain fell, the wage gap was expected to generate massive factor movements. As migration of labour is constraint, low wages in the East were predicted to motivate Western businesses to relocate their production lines, and thus to move jobs from the West to the East.

Economic theory of the location of production, and comparisons with East Asia, suggest that substantial DFI would enter CEE in search of lower labour costs [Ozawa 1979, 1992, Meyer 1997, UN 1995]. The region should have strong comparative advantages for intermediate level technical skills as the level of education in the region is relatively high. Factor cost advantages may also arise from low cost of some still subsidized raw materials, especially in Russia. Economic policy strengthened this advantage by effective undervaluation of the exchange rate and incomes policy such as constraints on wage increases, e.g. the Polish wage increase tax.

However, the productivity is often low despite a qualified workforce. The level of technical skills is not matched by managerial skills, nor entrepreneurial culture and willingness to take business risks. Further costs arise from weak infrastructures, outdated capital stock, social costs, and the regulatory environment. Although rapid improvements are being reported for these criteria, it may still be difficult to find a local partner with the necessary business skills. Hare and Hughes [1992, 1994] calculated a number of indices for pre-transition productivity. From their studies, table 1 includes estimates of value added per worker based on world market prices. Among the industries covered by this study, the food industry was particularly weak with miniscule or negative value added.

## **b) Markets**

Market related advantages are becoming increasingly important. This can be attributed, firstly, to worldwide converging structures of demand for many goods. Secondly, economies of scale and scope allow the use of physical production facilities and intangible assets to serve multiple markets. More importantly, product development and other research activity has a high component of sunk costs that enable supply of additional markets at low extra costs. With high development costs, few if any competitors are likely to emerge giving opportunities for selling a product globally, and lengthening a product cycle.

Markets also become the overriding consideration for the location of production in the presence of protectionism,<sup>4</sup> transportation costs, or close interaction between the productive and sales operations. Business characterized by any of these factors is becoming more important with modern management in production and marketing. This investment depends primarily on the potential market (market size and growth) but also on costs of local production.<sup>5</sup>

Three features make the markets in CEE particularly attractive for West European businesses. Firstly, consumers in CEE had no access to many consumer goods that have been readily available in countries at similar levels of per capita income elsewhere. This created a catch-up demand that unleashed immediately after trade liberalisation. The high esteem for Western

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<sup>4</sup> While the relative empirical relevance of tariffs as determinants of DFI decreased over the last decades [see Dunning 1993, p. 155, p. 165] quotas were found highly relevant by Stehn [1992].

<sup>5</sup> The positive relationship between market attraction and DFI-inflow has been established in cross-country studies such as Swedenborg [1979], Kravis and Lipsey [1982], Veuglers [1991], and Svensson [1996].

goods is in part a result of Western media penetration even before 1989. It was sustained through effective advertising and brand building in the newly liberalised local media. Manufacturers of consumer durables and fast moving consumer goods thus met eager customers yet untouched by mass-consumption.

Secondly, multinationals in oligopolistic industries are motivated by their strategic position *vis-à-vis* their global competitors. Dominated firms may see the new markets as an opportunity to gain competitive advantages, while global leaders wish to prevent such challenges and the emergence of new competitors from within the region. Multinational enterprises established in both Western and Eastern Europe may have superior opportunities to exploit price discrimination, product differentiation or vertical integration [Estrin and Hughes 1997]. In industries with major network externalities, such as consultancy and financial services, presence in the region may be necessary for global competitiveness.

## 2.2 Hypotheses

According to the OLI paradigm, ownership advantages combining with locational advantages are a necessary condition for international business. In this section, ownership advantages are discussed with respect to their relevance for business with CEE to develop propositions on determinants of West-East business. The kinds ownership advantages considered are property rights and intangible assets (Oa advantages), economies of common governance (Ot advantages), relative advantages of psychic proximity, and threats to existing O-advantages requiring cost-oriented restructuring.

The five countries covered in this study vary by several aspects relevant to potential Western business partners (table 1). This includes markets, progress in economic transition as well as psychic proximity to Western Europe. The impact of alternative ownership advantages thus should vary between the countries. This is accounted for by supplementary hypotheses on the variation of the impact of variables. Such interaction hypotheses have not been tested in the literature before.

### a) Property rights and intangible assets

Oa-advantages arise from specific assets in possession of the firm. This is first of all superior production technology, product innovations and innovative capabilities. Any firm with superior technological resources and capabilities can maximise its revenues by serving the largest accessible markets, and by combining them with a wide range of complementary assets found at other locations. As markets and complementary assets are found abroad, this motivates international business. In line with prior empirical research on exports [Ito and Pucik 1993] and DFI,<sup>6</sup> technology-intensity is proxied by R&D expenditures and predicted to increase activity:

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<sup>6</sup> The positive relation between R&D and the propensity for DFI has been shown *inter alia* by Grubaugh [1987], Wagner and Schnabel [1994], Kogut and Chang [1996] and Svensson [1996].

*H-1: The more technology intensive a firm, the more likely it has business with CEE.*

The realised value of intangible assets is dependent on the strategic position of the firm. The timing of entry may determine the position *vis-à-vis* their main competitors and thus the value of their O-advantages. Strategic entry motives include follow-the-leader [Knickerbocker 1973], entry deterrence [Dixit 1980], and platform investment to prepare for future opportunities [Kogut and Chang 1996]. In the CEE markets, first-mover advantages are of special importance. They induce potential long-term benefits from brand recognition or access to distribution channels, preferenced relations with local suppliers and contacts to governments. Early entrants may even be able to influence the local regulatory environment in their favour. The strategic motives thus induce early activities especially by firms in internationally oligopolistic industries. In fact, early entry has been observed for many multinational corporations in such industries [Kogut 1996, Estrin and Hughes 1997].

Many consumer goods industries have oligolistic structures. Their O-advantages include established brand names and the organisational capabilities to design and implement successful marketing strategies. These assets can be transferred to the virgin markets in CEE as long as no major competitor is able to erect entry barriers. Early establishment of a market share and brand building thus could ensure a leading position in the long-run. Thus, consumer goods manufacturers can be predicted to move into the new markets sooner than producers of industrial products and investment goods. The dummies for the food and beverage industry (FOOD) and for non-food consumer good manufacturers (NON\_FOOD) are predicted to have a positive effect.<sup>7</sup>

*H-2: Consumer goods manufacturers are likely to be more active*

The largest market, in terms of number of potential customers, is Russia. However, the level of income was low and declining at the time of the survey. Only a small proportion of 148 million people were able to buy Western consumer goods. The Czech Republic and Hungary have the highest per capita income. Poland combines a large market with relatively high income. In addition, she was the first country to overcome the transition recession and enter a positive growth path. Market oriented businesses would thus primarily focus on Poland, followed by Hungary, Czech Republic and Russia.

However, Hare and Hughes indicate a substantial variation in competitiveness between the countries for the food industry. This implies that the less competitive Czech food industry would be less attractive for foreign partners. Thus, first two supplementary hypotheses are:

*H-S1: Consumer goods manufacturers prefer larger markets and thus Poland.*

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<sup>7</sup> A common proxy for similar hypotheses is advertising expenditures, which is not available for the present sample. It had been requested in the questionnaire, but less than half of respondents provided usable information.



*H-S2: The food industry attracts less business in the Czech Republic than in Poland and Hungary.*

### **b) Advantages of Common Governance**

Advantages of common governance are defined by Dunning [1993, p. 81] as advantages of organising Oa-advantages with complementary assets. He distinguishes advantages of branch plants of established firms over a de novo entrants, and advantages from international experience as such. In addition, governance advantages vary between diversified and specialised enterprises.

Industries with large economies of scale at plant or firm level are more internationalised. Plant level economies of scale increase international trade in final goods. At firm level, a large corporation can economise on headquarters functions, such as marketing, finance and R&D. These economies of common governance of multi-plant firms create advantages that rise directly in relation to the firm size. Thus, larger firms have lower marginal costs of adding CEE to their operations. They can be predicted to be more active in CEE and smaller firms. Size is measured by the employment of the firm, which enters the equations in linear and quadratic form (EMPLOY and EMPL\_SQ).<sup>8</sup>

*H-3: Large firms are more likely to be active.*

In addition, multinational firms have competitive advantages that arise from multinationality as such. This includes international accumulation of know how [Cantwell 1989], arbitrage opportunities, flexibility for production shifting [Kogut and Kulatilaka 1994], superior recognition of opportunities, and international diversification of risk. Firms with international experiences thus can be expected

- to know better how to make best use of new opportunities in CEE,
- to have lower costs of entry as they utilise synergies with other international operations, and
- may increase the value of their network by covering more countries.

International experience of firms is measured by the share of turnover obtained outside the home country (INTL\_TO), and is expected to increase firms propensity to engage in West-East business:

*H-4: Internationally experienced firms are more likely to be active in CEE.*

Furthermore, the nature of firms' competencies determines potential common governance. Diversified companies have managerial competencies in the coordination of different activities,

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<sup>8</sup>These proxies have been frequently significant in previous research [e.g. Ito and Pucik 1993, Wagner and Schnabel 1994]. All other measures of intangible assets have been controlled for size to separate the size effect.

often specific to the economy in which they operate.<sup>9</sup> If they face competitive pressures for a product, they may primarily consider to redesign their product portfolio. Uncompetitive products are phased out as new competitors gain market shares. Other firms have technological and managerial capacities that are very specific to a specialised range of goods. Many small and medium German firms are successful through their product specialisation and a worldwide market leader strategy [Simon 1996]. Their core competencies are highly product specific, with two implications for their international strategy:

- Their marketing strategy is based on worldwide presence, or leadership, in their narrow product range. Thus they would enter CEE early once local demand emerges.
- If they face competitive pressures, they will consider strategies of redesigning or relocating the production process rather than changing to different kinds of productive activity. They would thus be more likely to utilise lower labour costs in CEE by sourcing or relocation.

Thus, for two reasons, a negative association between diversification, adjusted for size (DIVER\_TO), and the propensity to engage in CEE business is to be expected.<sup>10</sup>

*H-5: Diversified firms are less likely to be active in CEE.*

Capabilities arising from common governance are especially relevant for operations in countries with high economic risk. International and large firms are able to cope with country risk by hedging it with other operations. Firms specialised in a narrow range of products would be more willing to accept the risk as their product specific assets give them a substantive advantages over local competitors.

All five countries made progress in the process of systemic transformation from socialist to market economy [e.g. World Bank 1996]. The three Central European countries are most advanced. Russia is lagging behind, for instance with the reform of the legal and institutional framework and the banking sector. Delayed reforms and weakening civic society increase business risk. Also other types of environmental risk are high in the region. The inflation rate and the Euromoney index suggest that business risk would be highest in Russia (table 1). Especially capital intensive firms avoid any commitment to investment in Russia at this time. Therefore, advantages of common

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<sup>9</sup> The interaction between international and product diversification has been discussed for instance by Hitt, Hoskisson and Ireland [1994] and Sambharya [1995]. On diversification strategies also see Markides [1996] and references therein.

<sup>10</sup> Complementary, this hypothesis can be developed from a perspective of risk management: diversification across product groups and across regional markets are alternative strategies to diversify financial risk. As firms choose either strategy or a mix thereof, product and international diversification should be negatively related.

governance are especially relevant to enter the Russia market:

*H-S3: Firms with advantages of common governance as indicated by international experience, size or low diversification are relatively more active in Russia.*

### **c) Proximity**

The arguments on ownership advantages originally arose from the view that they enable foreign firms to overcome competitive disadvantages *vis-à-vis* local competitors. This competitive disadvantage of foreignness is lower for firms based in nearby or similar countries in "psychic proximity". They are therefore more active, *ceteris paribus*, than their counterparts from distant origins. Many researchers have established that internationalising firms typically enter markets in close psychic proximity first [e.g. Johanson and Wiedersheim-Paul 1975, Davidson 1980].<sup>11</sup> For the countries of origin selected for this research, this suggests that:

*H-6: German firms are more active in the region than British firms.*

The GERMAN dummy captures the proximity effect along with other home country effects. The hypothesis can be extended by including the location within the home country in the analysis. More personal or cultural contacts exist in areas close to the border. They are strengthened by the pattern of post World War II refugees within Germany, in particular *Sudentendeutsche* in Bavaria and *Ostpreußen* in the Northern parts near the Baltic Sea. Dummies named BAVARIA and BALTIC are used to capture the within-country proximity effect, a proposition not been considered in previous research.

*H-7: Firms from an area close to Germany's Eastern borders are more likely to establish business relationships eastwards.*

Psychic proximity would favour in particular the countries bordering Germany or related to her historically. German firms would thus be relatively more active in Poland, Czech Republic and Hungary. As the relations with Poland historically were subject to tensions, and British prefer Poland, the sign of the coefficient for Poland becomes ambiguous. If proximity also applies to regional level, then specific effects would also be observed for BALTIC or BAVARIA firms:

*H-S4: German firms are more active than British in the Czech Republic and in Hungary. Firms from Bavaria prefer the Czech Republic and Hungary, while firms from regions near the Baltic Sea prefer Poland and Russia.*

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<sup>11</sup> Recent research showed a declining importance of psychic proximity for the sequence of entry [Sölvell 1987, Nordström 1991].

#### **d) Threats to existing ownership advantages**

Threats to existing ownership advantages can be as much driving force of internalisation as expansion of growing advantages. Firms facing constraints to growth, or threats to survival, with their present strategic configuration are forcefully pushed into exploring new opportunities. Barriers to growth rise in markets as well as procurement sources and production locations. If markets are saturated or a rising costs reduce competitiveness in established markets, this creates strong inducements towards restructuring, relocation and search for new markets. This suggests that firms most affected by the 1993 recession and experiencing slow growth are more likely to engage in new activities.<sup>12</sup>

*H-8: Firms with slow growth of sales are more likely to engage in new business with CEE.*

The change of turnover in 1993 over the previous year is used as a proxy for growth during the recession (GROWTH).<sup>13</sup> The best opportunities for new growth opportunities would emerge in the largest markets, which leads to expect a country variation for GROWTH in line with market attraction as predicted for consumer goods (H-S1).

The high wage costs in Germany in the early 1990's put competitive pressures in particular on labour intensive production. The developmental model of DFI [Ozawa 1979, Meyer 1997] stresses the importance of such competitive push for the relocation of production and sourcing. If the model is applicable to CEE, sourcing of intermediate inputs and even relocation of production would be a major motivation for business activity. Firms with labour intensive production processes are most likely to shift procurement to the region, or to set up local production. Arm-length imports, subcontracting, and investment in upstream production are considered equally. Thus, following the literature emphasising the importance of labour costs for decisions over location of production to CEE, the following hypothesis is proposed. Labour intensity is measured by the employment over turnover ratio (LABOUR).

*H-9: Firms with labour intensive production processes are more likely to import from the region, with a positive effect on the probability of being active.*

#### **e) Complementary Variables**

The internationalisation of business varies between the three industries covered by this study: food processing, chemicals and engineering. This is firstly because of difference in their economies of

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<sup>12</sup> On the other hand, rapidly growing firms have opportunities to accumulate internal cash flow and have better access to financial markets. They have more resources to redeploy and thus would be more likely to expand to new regions. This proposition based on Penrose's [1959] theory of the firm provides an alternative to the hypothesis.

<sup>13</sup> Haiss and Fink [1995] mention that weaker firms would be more actively investing in CEE.

scale and transportation costs which are at the centre of the new theory of international trade [Markusen 1995]. These are captured by two industry dummies, FOOD and CHEM. The chemical industry is scale and research intensive. Therefore, the chemical industry can be expected to be more active in trade with CEE. On the other hand, the competitiveness of the industries in host countries varies, as indicated by the Hare and Hughes [1994] study. As these effects work in opposite directions, no prediction is made here for industry dummies.

Firms with foreign parents have access to more resources and their business development would exceed that of a domestic firm of equal size (which is implicit in using the local firms' accounting data for size). For instance, an American multinational may instruct its British affiliate to undertake business in CEE. On the other hand, firms may be constrained in their international business by the global strategy of the parent, in particular not to compete with other affiliates of the company. The predicted signs are therefore ambiguous for dummies for foreign owned firms, both from outside Europe (NONEUR) and from different European country (EUROPEAN).

The sample contains some firms that were not sampled randomly but drawn from a chamber-of-commerce-list of active firms. To control for any bias arising from this sub-sample, dummy COC\_L is included. It should be positively signed since it was known *ex ante* that these firms had business with at least one country of the region.

Table 2 summarises the variables proposed for the empirical analysis, and their expected signs. If some effects are expected to be stronger in some equations than in others it is indicated by double-plus or double-minus signs. This applies to variation among the five countries with respect to market size, progress in transition, and proximity to the source countries.

The table also distinguishes effects on the probability to be active in CEE, and the probability to establish business everywhere in the region. For instance, consumer goods manufacturers have good incentives to establish a presence throughout the region, whereas labour intensive firms may be looking for one or a small number of local suppliers or production relocations.

**Table 2: Expected Coefficients**

	Active	Every- where	CR	HU	PL	R	RO	Hypotheses
<i>Intangible Asset Advantages</i>								
R&D	+	+	+	+	+	+	+	H-1
NON_FOOD	+	++	+	+	++	+	+	H-2, H-S1
FOOD	?	?	-	+	++	+	+	H-2, H-S1,2
<i>Common Governance Advantages</i>								
EMPLOY	+	++	+	+	+	++	+	H-3, H-S3
EMPL_SQ	-	--	-	-	-	--	-	
INTL_TO	+	++	+	+	+	++	+	H-4, H-S3
DIVER_TO	-	-	-	-	-	--	-	H-5, H-S3
<i>Barriers to Growth</i>								
GROWTH	-	-	-	-	--	-	-	H-8, H-S1
LABOUR	++	+	+	+	+	+	+	H-9
<i>Proximity</i>								
GERMAN	++	+	++	++	?	0	0	H-6, H-S4
BALTIC	+	0	0	0	++	++	0	H-7, H-S4
BAVARIA	+	0	++	+	0	0	0	H-7, H-S4
<i>Controls</i>								
CHEM	?	?	?	?	?	?	?	
NONEUR	?	?	?	?	?	?	?	
EUROPEAN	?	?	?	?	?	?	?	
COC_L	+	+	+	+	+	+	+	

### 3. Empirical Analysis

#### 3.1. The Dataset

The study focuses on West Germany and the UK as these are contrasting cases of countries which are unusually active and unusually inactive in their business activity in CEE - compared with their world-wide business activities. The questionnaire requested information on business with five transition countries: the Czech Republic (CR), Hungary (HU), Poland (PL), Russia (R) and Romania (RO). These countries are large enough to attract the attention of multinational businesses while representing a variation of economic and political conditions in the region. The

Visegrad countries (CR, HU and PL) are the most advanced but differ in their policy towards DFI and by their privatisation processes. Russia attracts many multinational businesses to a very different environment. Romania was selected as a contrasting case that, until the time of the survey, received only little attention by foreign investors.

The base population for the survey covers manufacturing companies following the important role of manufacturing investment in the region. Three industries have been selected to reduce variation but retain policy relevance: (a) food and beverages (USSIC code 20), (b) chemical industry including pharmaceuticals and petroleum refining (USSIC 28, 29), and (c) engineering (USSIC 35, 36, 37). These industries are all active in the region. Engineering and food processing industries have a higher share in DFI in CEE than worldwide. The chemical industry, on the other hand, appears yet under-represented in the region [Meyer 1995a]. All three industries vary in technology and marketing intensity, as they all include consumer goods industries and, except food, high-tech firms. Labour intensive production is important in some engineering industries in this broad definition. Furthermore, the sample was stratified by firm size to capture a large proportion of major businesses as well as small and medium enterprises.

The base population was retrieved from a company database (Fame-Amadeus) using its own selection routine. This database is the most comprehensive database available and also provides data on company accounts needed for further analysis. In addition to the random sample, some companies were added known to be active from Chamber of Commerce sources. In total, 677 companies were contacted.

As a result of careful questionnaire design and administration, the return rate of 39.3% is high relative to similar studies on CEE [e.g. Genco et al. 1993, Wang 1993]. The return is consistently high across size groups, home countries and sectors, with more than 30% for each category considered. There was no intra-firm variation in the responses on the parts of the survey used in this analysis. Of the responses, 40 observations had to be removed because they did not meet the pre-specified criteria or were local affiliates of multinational corporations.<sup>14</sup> For the remainder, the full information on the independent variables is available for 198 observations. The survey requested information on various aspects of the companies' business relationships with CEE. This study uses only the information on whether not and in which countries they have business.

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<sup>14</sup> These are, firstly, enterprises with main business activity in an industry other than the three specified branches of manufacturing. These companies have activities in three specified industries according to the selection routine provided by database, that however turned out to be only a small part of their business. Secondly, the database contains business units of multinationals from third countries. These are an indigenous part of the British or German industry and therefore had been included in the base population. However, respondents indicated in 21 cases, that their firm's strategic responsibilities do not include business or investment with CEE. Mostly, they were limited to supplying the domestic market.

### 3.2. Methods of Analysis

The concept 'West-East business' is analysed using four alternative definitions:

- the incidence of a firm having business anywhere in CEE,
- the incidence of a firm having business with a particular country in CEE,
- the number of countries in which a firm is active, and
- as the categorical variable 'not active - some activity - active in all countries'.

For the first two concepts, the dependent variable for West-East business is binary, taking the value of one if the firm has any business relationships with the region, or the particular country considered, and zero otherwise. This analysis informs about who is active in the region, and in the particular country. In the third case, the dependent variable is the number of countries in which a firm is active, which takes the values of zero to five. The fourth is a categorical variable taking three values. These analyses additionally account the different extend of involvement in the region.

For binary dependent variables, both Logit and Probit models are commonly used. These regression models approach the values of zero and one for very small and very large values of predictor set, based on density functions of a logistic and a normal distribution respectively. Their empirical results do not differ substantially [Greene 1993]. For this research, a Probit model is used because the ordered model was not estimable using a Logit specification.

Limited dependent variable models, such as the Probit, can be rationalised using index functions. Decision makers have a utility function with an unobservable utility  $y^*$ , which is a function of various independent variables  $x$ . If the unobserved utility obtained from a positive choice passes a threshold limit, the decision is in favour of 'one', here in favour of engaging in business with CEE. Thus,

$$(1) \quad \text{ACTIVE} = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{if } y^* \leq 0 \end{cases}$$

$$\text{with } y^* = \beta'x + \epsilon$$

where  $\epsilon$  is the residual, which in the case of a Probit are assumed to be normal distributed.  $\beta'x$  is called the index function. The Probit is modelled as the density function of a normal distribution:

$$(2) \quad P(\text{ACTIVE}=1) = \int_{-\infty}^{\beta'x} \phi(t) dt = \Phi(\beta'x)$$

where  $x$  is a vector containing firm and industry specific variables. This binomial Probit is used to analyse the firm's propensity to engage in the region in general, and in each of the five countries. If the dependent variable takes more than two values that have an ordinal but not a cardinal order, then the utility function contains several thresholds. As the utility from activity in CEE increases,



firms would engage in a higher order of business activity, i.e. start business with more countries. The observed dependent variable #COUNTRIES thus takes values from zero to five that stand in an ordinal relationship.<sup>15</sup> It is a function of unobserved utility  $y^*$  in the following form:

$$\begin{aligned}
 (3) \quad \#COUNTRIES &= 0 && \text{if } y^* < 0 \\
 &= 1 && \text{if } 0 \leq y^* < \mu_1 \\
 &= 2 && \text{if } \mu_1 \leq y^* < \mu_2 \\
 &= 3 && \text{if } \mu_2 \leq y^* < \mu_3 \\
 &= 4 && \text{if } \mu_3 \leq y^* < \mu_4 \\
 &= 5 && \text{if } \mu_4 \leq y^*
 \end{aligned}$$

with

$$y^* = \beta'x + \epsilon .$$

The threshold parameters  $\mu_j$  have to be estimated with the model. It has always two less threshold parameters than categories, as the first threshold is set at zero. As before, error terms  $\epsilon$  are assumed to be normal distributed. The model is subsequently simplified by defining a new dependent variable:

$$\begin{aligned}
 (4) \quad ACTIVE\_3 &= 0 && \text{if the firm is not active (NO_COUNTR = 0)} \\
 &= 1 && \text{otherwise (0 < NO_COUNTR < 5)} \\
 &= 2 && \text{if the firm is active in all countries (NO_COUNTR = 5)}
 \end{aligned}$$

This variable captures the same ordinal relationship as the NO\_COUNTR variable with a more parsimonious model. Thus, four different models are estimated to capture different interpretations of the concept ‘West-East business’: A binomial model of the incidence of activity, an ordered model on the number of countries of activity, an ordered model with three categories, and binomial models for activity in each of the five countries. The analysis of first three models is repeated for a reduced set of independent variables.

Table 3 reports the descriptive statistics for the independent and alternative dependent variables. Note that employment and employment-square have been scaled for readability of the results tables. Table 4 shows the correlations of the independent variables. CHEM and NON\_FOOD are naturally related as most chemicals firms are producing consumer goods. The effects of these two dummies thus have to be interpreted together.

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<sup>15</sup> This is not a cardinal relationship as the variable is truncated at zero and the selection of countries has been constraint in the questionnaire. Therefore, a linear approximation using OLS is not suitable.

**Table 3: Descriptive Statistics**

	<i>Unit of Measurement</i>	<i>Mean</i>	<i>Standard Error</i>	<i>Median</i>
<i>Dependent</i>				
ACTIVE	binary	0.79	0.17	1
#COUNTRIES	count	2.99	1.98	4
ACTIVE_3	3 categories	1.14	.75	1
<i>Independent</i>				
EMPLOY	10 <sup>-5</sup>	.1113	.1898	.0361
EMPL_SQ	10 <sup>-10</sup>	.0484	.1584	.0013
R&D	per cent	3.55	3.66	2.82
INTL_TO	ratio	.4204	.2937	.4348
GROWTH	per cent	5.35	15.86	3.34
DIVER_TO	ratio	.00012	.00024	.00001
LABOUR	ratio	10.73	6.87	9.90

**Table 4: Correlations of the independent variables**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	EMPLOY	1.0														
2	EMPL_SQ	.92	1.0													
3	R&D	.03	-.01	1.0												
4	NON_FOOD	.19	.17	.17	1.0											
5	INTL_TO	.33	.25	.25	.17	1.0										
6	GROWTH	.00	.01	-.13	.01	-.01	1.0									
7	DIVER_TO	-.28	-.15	-.02	-.11	-.24	.03	1.0								
8	NONEUR	.01	.02	.03	.04	.08	.05	-.09	1.0							
9	EUROPEAN	-.09	.02	.03	-.05	.04	-.08	.06	-.09	1.0						
10	BALTIC	-.09	.06	.06	.13	.21	-.01	-.07	.02	-.05	1.0					
11	BAVARIA	-.01	.04	.08	.08	.02	-.09	-.08	-.08	.04	-.04	1.0				
12	COC_L	-.12	.08	.01	.05	-.04	-.05	.10	.06	.08	.14	-.07	1.0			
13	GERMAN	-.12	-.08	.01	.04	-.04	-.22	-.22	-.17	.04	.21	.25	-.06	1.0		
14	FOOD	-.10	-.07	-.26	-.23	-.38	-.01	.01	-.10	-.01	-.03	.06	-.11	-.04	1.0	
15	CHEM	.15	.14	.20	.44	.20	-.07	-.12	.13	-.08	.09	-.07	-.04	-.04	-.28	1.0
16	LABOUR	.03	-.04	.02	-.10	-.05	-.07	.30	-.14	.03	-.11	-.02	.10	-.22	-.20	-.21

Correlations are significant at 5% level if they are > 0.14.

The regression models were first estimated with the full set of independent variables.<sup>16</sup> In this analysis, five variables are consistently insignificant that were removed in a second regressions with a more parsimonious model. This also removes some moderate collinearity. The results of the regression analysis are reported in tables 5 to 8. The overall performance of the empirical models is quite satisfactory. The  $\chi^2$ -statistics are highly significant. The critical values at 1% are 24.725 for 11 degrees of freedom (df) and 32.000 for 16 df. The reported  $\chi^2$ -statistics are substantially higher indicating that the models as a whole make a significant contribution to explain the variation of the dependent variable.

The correct predictions are very high for all models. They should be seen relative to the proportions prediction that would be correct using a random draw. These are given by

$$(5) \quad \text{random predictions} = a^2 + b^2 + c^2 + d^2 + e^2 + f^2$$

where a, b, c, d, e, f are the proportions of actual observations in each of the six categories. For the binomial Probit this formula reduces to  $a^2 + (1-a)^2$ . Relative to this benchmark, the share of correct predictions of the model is more than 20 percentage-points higher is each model-specification including the general and the country specific models.

Table 7 provides detailed information on the correct predictions of the three general models. The ACTIVE and ACTIVE\_3 models show a very good predictive ability: for each actual value, the majority of predictions are correct.<sup>17</sup> This does not hold for the #COUNTRIES model. Almost all observations in category zero or five are correctly predicted. Yet the model is unable to provide a reasonable prediction for the four intermediate categories. The statistical reason for this is that most observations are in the tails of the distribution of the unobserved utility function  $y^*$  and the intermediate intervals are very narrow. This holds for both regressions with full and reduced sets of independent variables. Therefore, the ACTIVE\_3 model has been developed.

**Table 5: Probit and Ordered Probit Models, Full Set of Independent Variables**

<i>Dependent</i>	<i>ACTIVE</i>	<i>#COUNTRIES</i>	<i>ACTIVE_3</i>
<i>Method</i>	<i>Probit</i>	<i>Ordered Probit</i>	<i>Ordered Probit</i>
<i>No of Categories</i>	2	6	3
R&D	.0479 (.064)	.0434 (.037)	.0499 (.391)

<sup>16</sup> For the estimation, the maximum likelihood estimation of the statistical package LIMDEP has been used.

<sup>17</sup> One firm had business with the CEE region reported in the questionnaire but not in any of the five countries for which specific information was requested. Therefore the zero category of not-active firms has 42 and 43 observations respectively in different models.

NON_FOOD	.1317 (.547)	.2194 (.325)	.2124 (.330)
FOOD	-.2863 (.387)	-.1351 (.262)	-.0794 (.290)
EMPLOY	3.8204 (2.55)	<b>2.7478 (.591)*****</b>	<b>3.0280 (.648)*****</b>
EMPL_SQ	-3.8967 (2.73)	--	--
INTL_TO	<b>1.7018 (.598)****</b>	<b>1.8750 (.375)*****</b>	<b>1.9601 (.403)*****</b>
DIVER_TO	<b>-2750.7 (873.5)****</b>	-600.35 (579.7)	-600.49 (607.4)
GROWTH	<b>-.0279 (.010)****</b>	<b>-.0157 (.007)**</b>	<b>-.0143 (.007)**</b>
LABOUR	-.0006 (.023)	-.0196 (.016)	-.0160 (.017)
GERMAN	<b>.8167 (.358)**</b>	<b>.7947 (.211)****</b>	<b>.7896 (.223)****</b>
BALTIC	.2790 (.866)	.1839 (.731)	.1106 (.823)
BAVARIA	.0480 (.818)	.7158 (.582)	.5402 (.592)
CHEM	.5273 (.541)	.2323 (.275)	.1886 (.300)
NONEUR	2.0774 (1.46)	.2323 (.303)	.3993 (.362)
EUROPEAN	.8373 (.727)	-.3991 (.463)	-.1495 (.529)
COC_L	5.0186 (38.1)	<b>.8020 (.395)**</b>	.8508 (.543)
Constant	-.0984 (.548)	-.1956 (.373)	-.3485 (.402)
MU(1)	--	.3952 (.104)****	1.7762 (.190)*****
MU(2)	--	.7503 (.132)*****	--
MU(3)	--	1.1694 (.149)*****	--
MU(4)	--	1.7662 (.168)*****	--
$\chi^2$ -statistic	106.220	143.933	137.873
Log-Likelihood	-49.21	-251.29	-141.57
correct predictions	87,37%	51,01%	67,17%
random predictions	66,57%	19,73%	35,57%

Notes: -- = Variable not included. Levels of statistical significance: \* = 10%, \*\* = 5%, \*\*\* = 1%, \*\*\*\* = 0.5%, \*\*\*\*\* = 0.005%

**Table 6: Probit and Ordered Probit Models, Reduced Set of Independent Variables**

<i>Dependent</i>	<i>ACTIVE</i>	<i>#COUNTRIES</i>	<i>ACTIVE_3</i>
<i>Method</i>	<i>Probit</i>	<i>Ordered Probit</i>	<i>Ordered Probit</i>
<i>No of Categories</i>	2	6	3
R&D	.0645 (.061)	.0402 (.035)	.0468 (.036)
NON_FOOD	.4627 (.489)	.4158 (.313)	.3677 (.319)
FOOD	--	--	--
EMPLOY	3.6609 (2.30)	<b>2.4942 (.561)*****</b>	<b>2.8303 (.627)*****</b>
EMPL_SQ	-3.7410 (2.47)	--	--
INTL_TO	<b>1.8523 (.538)****</b>	<b>1.9771 (.341)*****</b>	<b>2.0261 (.365)*****</b>
DIVER_TO	<b>-2771.5 (850.0)****</b>	-589.13 (550.1)	-588.91 (577.5)
GROWTH	<b>- .0272 (.009)****</b>	<b>- .0142 (.006)**</b>	<b>- .0133 (.007)**</b>
LABOUR	--	--	--
GERMAN	<b>.8759 (.320)***</b>	<b>.9617 (.199)*****</b>	<b>.9206 (.213)*****</b>
BALTIC	--	--	--
BAVARIA	--	--	--
CHEM	--	--	--
NONEUR	2.1795 (1.42)	.3532 (.276)	.4920 (.328)
EUROPEAN	.8302 (.698)	- .4171 (.424)	- .1586 (.487)
COC_L	4.9980 (38.2)	<b>.7176 (.377)*</b>	.7784 (.513)
Constant	- .2649 (.340)	- .4076 (.330)	- .5731 (.247)**
MU(1)	--	.3927 (.101)****	1.7535 (.181)*****
MU(2)	--	.7390 (.127)*****	--
MU(3)	--	1.1415 (.143)*****	--
MU(4)	--	1.7279 (.163)*****	--
$\chi^2$ -statistic	103.915	137.858	135.544
Log-Likelihood	-50.36	-254.32	-142.73
correct predictions	87,88%	52,02%	68,18%
random predictions	66,57%	19,73%	35,57%

Notes: -- = Variable not included. Levels of statistical significance: \* = 10%, \*\* = 5%. \*\*\* = 1%, \*\*\*\* = 0.5%, \*\*\*\*\* = 0.005%

**Table 7: Predicted versus Actual Outcome in Probit and Ordered Probit Models**

**a) models with the full set of independent variables**

<i>ACTIVE</i>	<i>Predicted</i>				<i>ACTIVE_3</i>	<i>Predicted</i>			
<i>Actual</i>	0	1	Total		<i>Actual</i>	0	1	2	Total
0 not-active	25	17	42		0 not-active	26	16	1	43
1 active	8	148	156		1 active	5	60	19	84
Total	33	165	198		2 active in all	1	23	47	71
					Total	32	99	67	198

  

<i>#COUNTRIES</i>	<i>Predicted</i>						
<i>Actual</i>	0	1	2	3	4	5	Total
0 not-active	35	0	0	0	2	6	43
1 country	11	0	0	0	1	3	15
2 countries	6	0	0	0	1	9	16
3 countries	10	0	0	0	0	12	22
4 countries	7	0	0	0	2	22	31
5 all countries	6	0	0	0	1	64	71
Total	75	0	0	0	7	116	198

**b) models with the reduced set of independent variables**

<i>ACTIVE:</i>	<i>Predicted</i>				<i>ACTIVE_3</i>	<i>Predicted</i>			
<i>Actual</i>	0	1	Total		<i>Actual</i>	0	1	2	Total
0 not-active	25	17	42		0 not-active	26	16	1	43
1 active	7	149	156		1 active	4	60	20	84
Total	34	164	198		2 active in all	1	21	49	71
					Total	32	99	67	198

  

<i>#COUNTRIES</i>	<i>Predicted</i>						
<i>Actual</i>	0	1	2	3	4	5	Total
0 not-active	37	0	0	0	0	6	43
1 country	11	0	0	0	0	4	15
2 countries	5	0	0	0	1	10	16
3 countries	11	0	0	0	0	11	22
4 countries	9	0	0	0	1	21	31
5 all countries	6	0	0	0	0	65	71
Total	77	0	0	0	2	117	198

**Table 8: Probit Models for Activity by Host Country**

<i>Country</i>	<i>Czech</i>	<i>Hungary</i>	<i>Poland</i>	<i>Russia</i>	<i>Romania</i>
R&D	-.0250 (.041)	.0412 (.040)	.0049 (.045)	<b>.1194 (.045)***</b>	<b>.0854 (.038)**</b>
NON_FOOD	.5291 (.400)	-.0832 (.371)	.5137 (.453)	.1932 (.394)	-.0690 (.349)
FOOD	<b>-.6825 (.337)**</b>	-.2144 (.331)	-.0827 (.347)	.0657 (.330)	-.0593 (.333)
EMPLOY	<b>5.1807 (2.21)**</b>	<b>5.1272 (2.01)**</b>	<b>5.3162 (2.20)**</b>	<b>5.4996 (2.01)***</b>	<b>3.5874 (1.89)*</b>
EMPL_SQ	<b>-4.4771 (2.49)*</b>	<b>-4.5026 (2.11)**</b>	<b>-5.6448 (2.36)**</b>	<b>-5.1808 (2.11)**</b>	-2.2960 (2.17)
INTL_TO	<b>1.4645 (.487)****</b>	<b>1.6843 (.468)****</b>	<b>1.7898 (.493)****</b>	<b>.9968 (.462)**</b>	<b>1.6402 (.461)****</b>
DIVER_TO	-1027.0 (736.4)	<b>-1467.6 (722.3)**</b>	<b>-1497.0 (788.6)*</b>	<b>-2909.7 (842.2)****</b>	-872.57 (750.5)
GROWTH	<b>-.0216 (.008)**</b>	-.0096 (.008)	<b>-.0338 (.009)****</b>	<b>-.0165 (.008)**</b>	<b>-.0172 (.008)**</b>
LABOUR	-.0242 (.021)	-.0071 (.019)	-.0430 (.026)	-.0180 (.018)	-.0391 (.026)
GERMAN	<b>1.2110 (.304)****</b>	<b>.8338 (.275)****</b>	<b>.5266 (.299)*</b>	.0612 (.265)	<b>.4706 (.259)*</b>
BALTIC	-.2888 (.726)	-.1867 (.587)	.0109 (.742)	1.1729 (.735)	.1659 (.610)
BAVARIA	.0772 (.657)	.8325 (.720)	.5464 (.724)	.8842 (.716)	.7455 (.552)
CHEM	.2854 (.364)	.0927 (.322)	-.5776 (.403)	.2763 (.327)	-.0317 (.302)
NONEUR	.4293 (.409)	.2614 (.345)	-.0357 (.403)	.0763 (.357)	-.2939 (.346)
EUROPEAN	-.3769 (.468)	-.8227 (.510)	-.3129 (.448)	.0021 (.496)	<b>-.8630 (.517)*</b>
COC_L	<b>.8531 (.424)**</b>	<b>.6832 (.376)*</b>	<b>1.4070 (.499)****</b>	<b>.7047 (.421)*</b>	<b>.9868 (.385)**</b>
Constant	-.4692 (.469)	-1.0092 (.441)**	-.1676 (.496)	-.5001 (.438)	-1.0998 (.466)**
$\chi^2$ -statistic	106.337	93.883	103.889	92.655	83.664
Log-Likelihood	-74.84	-86.63	-72.65	-85.98	-94.592
correct pred.	87.37%	77.27%	83.33%	78.79%	74.24%
random pred.	54.59%	56.25%	51.84%	52.47%	50.41%

## 6.4. Results of the Hypotheses Tests

### 6.4.1. Intangible Asset Advantages

Ownership advantages of intangible assets were hypothesised to motivate business by R&D intensive firms (H-1: R&D) and for consumer goods manufacturers (H-2: FOOD, NON\_FOOD). Research-based intangibles appear to increase the propensity of firms' activity, but are not statistically significant. The R&D variable is positive but insignificant in each of the general models with both, the full and parsimonious dataset (tables 5 and 6). The alternative hypothesis of no

contribution cannot be rejected although the coefficient is not small considering that R&D is measured in percent.

Surprisingly, the effect of R&D is larger for business with Russia and Romania than in all other equations, and statistically significant. This suggests that business with these two more distant countries is driven by the kind of intangible assets that have frequently been found important for business around the world, while the business relationships with the Central European countries are driven by other motives. Note that the coefficient even turns negative for the Czech Republic. No hypothesis had been offered of such country variation. We come back to this observation later.

Consumer good manufacturers show no consistent pattern of higher activity. In the general models and most of the country models, NON\_FOOD has a positive sign and FOOD a negative sign, mostly not significant. Both sectors include some highly internationalised sectors with branded goods and high internationalisation of the industry, but also others with high transportation costs and low internationalisation. These opposite effects may lead to insignificance in aggregate and to the surprising negative effects for the FOOD dummy.<sup>18</sup>

The larger market in Poland was predicted to attract more market oriented business than, say, Romania. This effect would lead to larger positive effects of consumer goods. The coefficients of NON\_FOOD are positive for business with the Czech Republic and Poland, but negative for Romania and Hungary. This pattern is in line with the hypothesis but remains insignificant. The FOOD dummy is in contrast significantly negative in the Czech model. The nature of the local industry may have induced this result contrary to the attraction of the market. The variation of the FOOD dummy can be explained by the fact that this industry in the Czech Republic is less competitive (H-S2). The coefficient is negative, and significant only for the Czech Republic. This result empirically supports the results of the much debated calculations of world-market competitiveness by Hughes and Hare [1994].

In conclusion, the coefficients on intangible assets remain insignificant in the main models and appear dominated by other influences. The hypothesis that intangible assets increase firms' propensity to engage in East-West business cannot be rejected but does not receive statistically significant support either. Neither does the variation across countries does not show the predicted pattern, except for FOOD.

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<sup>18</sup> Negative coefficients for NON\_FOOD emerge in the same analysis on sub-samples of British firms and the food and chemicals industry. Correspondingly larger effects are observed for German firms and the engineering industry. This indicates an interesting country and industry difference that, however, is statistically not significant and thus requires further research. This analysis is not reported in tabular form.



### **Advantages of Common Governance**

Ownership advantages arising from economies of common governance were hypothesised to increase firms' propensity to be active. As measures of common governance, firm size (H-3: EMPLOY), international experience (H-4: INTL\_TO) and diversification (H-5: DIVER\_TO) are tested. All hypotheses receive strong support.

The size variable is highly significant. In the binomial models, a quadratic expression has been more successful in capturing the influence than a linear variable. On the other hand, the ordered Probit performed better without a quadratic term such that the squared component has been omitted.<sup>19</sup> Thus, even though all other measures have been controlled for firm size, larger firms are more likely to be active. Their economies of size reduce the costs of engaging in business with CEE. The negative sign of the quadratic element can be attributed to some outliers, British firms with a large domestic distribution network, but few international operations.

The variable INTL\_TO is significantly positive throughout all model specifications. It reaches the highest levels of significance. The coefficients show little variation between the models but are slightly higher in the parsimonious model where, among others, the FOOD variable (which has a negative correlation of -0.38 with INTL\_TO) has been removed.

The coefficient on the diversification proxy is always negative, as hypothesised. However, the size of this effect varies for the different models. The propensity to be active is negatively related to diversification. Yet this effect does not translate to the decision to become active in several or all countries considered. The coefficients in the Ordered Probit are less than a fourth that of the binomial model, and statistically insignificantly different from zero. This emerges from both the full and the parsimonious model. Specialised firms appear more likely to enter at least some countries of the region, but that they are not seeking a presence in every single market. Thus, the inverse relationship between product and regional diversification is confirmed.

Furthermore, it was proposed that firms with advantages of common governance would be better equipped to enter distant and uncertain markets in Russia (H-S2) . The empirical results in table 8 give partial support for this hypothesis: the size effects are of a similar magnitude across host countries. International experience has a pattern opposite to that hypothesised: it appears less relevant for longer psychic distance and high risk countries. The coefficient in the Russia model is *smaller* than for all other countries. This difference is significant between Russia and Poland. This suggests that internationally experienced firms are expanding to both Central Europe and Russia, but experience is less important for Russia. Different kinds of ownership advantage must therefore

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<sup>19</sup> Coefficients to EMPLOY are reported multiplied by  $10^5$ , and EMPL\_SQ by  $10^{10}$  to facilitate readability of the tables.

be more important here. This may be product specialisation. The effect of DIVER\_TO is twice as large with respect to business with Russia than with Central Europe. Thus, a product specific leadership strategy may induce firms to accommodate high costs and risk in Russia.

To sum up, significant effects are found for all proxies suggested for common governance ownership advantages. Size and international experience are the most important determinants of firms' activity, more important than various measures of intangible assets. Product specialisation favours involvement in West-East business, and interestingly matters more for the decision to be active than for activity throughout the region. The determinants differ between Russia and the other countries: advantages of international experience are less important in Russia, and product specialisation is more important.

### **Proximity**

German firms, in particular those located near Germany's Eastern border, are predicted to be more active due to their psychic proximity to the region (H-6, 7). Also, priorities within the region are expected to vary according to country and region of origin (H-S4). These propositions receive considerable support, but the pattern of psychic proximity is more complex than hypothesised.

The GERMAN dummy is significant in all general models giving strong support to H-6. The coefficients are slightly larger in the parsimonious models as these exclude the special dummies for regions within Germany. The German proximity advantage emerges for all five host countries, with the predicted variation: the coefficient is largest for the Czech Republic, followed by Hungary. Poland and Romania take an intermediate position, while it is small and insignificant for Russia. Thus, the psychic distance between the two home countries differs most *vis-à-vis* the Czech Republic and Hungary. In Poland the difference is smaller, presumably as a combination of the British preference for Poland and tensions in the German-Polish political and economic relations. This is an example of diverging patterns of psychic and geographic proximity. Russia is more distant for both German and British companies.

The dummies for regions within Germany, BALTIC and BAVARIA, are not significant. However, an interesting pattern emerges for business of Northern German firms. The coefficient for BALTIC is large and positive in the Russia equation, but small or negative in the others. Thus these firms are not more active in the region. However, if they are active then they are more likely to engage in business with Russia. The number of BALTIC firms in the sample is too small to obtain a significant effect to prove the proposition. No such preference exists by Northern firms for Poland nor by Bavarian firms for the Czech Republic. In fact, the BAVARIA coefficient is *smallest* in the Czech model. However, the sample does not contain firms from the Bavarian Forest region close

to the Czech border, courtesy of the random sampling framework. Thus, a special border effect cannot be tested with this data set.

Thus, evidence in favour of the proximity hypothesis is found by the GERMAN dummy, and its variation across the five CEE countries. There may be other reasons for British-German differences, but only psychic proximity would explain this pattern. Regional differences within Germany emerge only with a special preference of Northern firms for Russia that is not significant.

### **Barriers to Growth and Control Variables**

Firms facing barriers to growth were hypothesised to be more active in the region. These firms would be characterised by low growth of turnover (H-8: GROWTH) or labour intensive production (H-9: LABOUR). The GROWTH variable is consistently negatively signed and significant for all models, except for Hungary. In both cases, the difference between Poland and Hungary is statistically significant and supports the proposition that large markets are a prime attraction for slow growing firms.<sup>20</sup> Thus, firms experiencing slow growth, or even a fall of output in the base year, are more active in CEE. The region offers opportunities to overcome barriers to growth, though to a different extent across the region.

The production relocation argument suggested that labour intensive firms would be more active because they can use labour cost differences. The results show no support for this hypothesis. The coefficient on LABOUR is negative, though insignificant, in every model specification. Thus, capital and human capital intensive firms are relatively more active. Exports based on comparative advantages dominate over relocation of labour-intensive production. This confirms the analysis of motives for DFI [e.g. Meyer 1995b]: labour cost differentials are not the major driving for West-East business. Taking the two variables on barriers to growth together, there is little evidence that constraints on the supply side, in particular labour cost, would account for a major wave of business in CEE. However, barriers to growth in present markets are being overcome by entering the new markets in the East.

In addition, the analysis includes four control variables. The industry dummy CHEM is insignificant. Two parent dummies, NONEUR and EUROPEAN, account for differences in corporate strategy imposed by parent firms. NONEUR has a positive effect while EUROPEAN has a negative effect; both are mostly insignificant. The COC\_L dummy controls for a mixed sampling framework, and has the predicted positive coefficient.

### **5. Conclusions**

The evidence supports all four groups of hypotheses: intangible assets, common governance, barriers to growth and proximity all have a role in determining firms' propensity to engage in business with CEE. However, the evidence is weakest for the most frequently cited intangible asset

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<sup>20</sup> In the full model, for GROWTH, the difference is .0242, its standard error .0120 and t=2.01.

advantages, and strongest for variables often not considered in empirical analyses of ownership advantages.

The common governance variables show high statistical significance. They show that large, internationally experienced and specialised firms are more active in the region. With the advantage of proximity, German firms are more active especially in the Czech Republic and in Hungary. Consistent support also emerges for the negative association of sales growth and propensity of West-East business. Barriers to growth thus induce firms to seek new opportunities in the East. On the other hand, the result were mostly insignificant for the R&D and consumer goods variables.

The analysis reveals some differences in the determinants of business with the Visegrad countries. Slow-growing firms and, insignificantly, non-food consumer goods manufacturers focus on the larger Polish market. The food industry in the Czech Republic attracts less business, presumably because of its low productivity. More substantial differences emerge between the Visegrad countries and Russia, where research intensity is, surprisingly, more important while diversified firms are abstaining even more from business. The pattern of determinants of international business is more in line with predictions in the case of Russia. This applies especially with respect to research intensity and production specialisation strategies. Firms with very specific and technologic ownership advantages appear most willing to cope with the distant and highly uncertain environment. On the other hand, Central Europe also attracts numerous businesses without the hypothesised specific advantages. For firms with international exposure, this region seems the natural extension of their global strategy.

Diversification is the only variable that significantly varies between the binomial and the ordered model. Thus, specialisation induces firms to engage in business in the region - even in the distant Russian market - but it does not foster a presence in all accessible market. Product leadership requires positioning in important markets, but not in all markets.

All these results together indicate the importance of advantages of common governance, termed Ot-advantages by Dunning, over the more frequently discussed Oa-advantages of intangible assets and property rights. The dominance of common governance variables over intangible assets suggests that international business is increasingly a matter of multinational enterprises. Their capabilities are of an organisational rather than a technological or a product specific nature. Corporations acquire technological and organisational knowledge across their locations but retain home country specific abilities and strategies as the difference between British and German firms in this sample illustrates. Empirical research thus should pay more attention to ownership advantages other than intangible assets and property right as motivators for international business activity.

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#### **Appendix: Definitions of Independent Variables**

- BALTIC      Dummy, taking the value of one if the firm is located with 100 km from the Baltic Sea.
- BAVARIA     Dummy, taking the value of one if the firm is located in Bavaria.
- CHEM        Dummy, taking the value of one if the firm has its main activity in the chemical or petroleum industry (USSIC codes 28, 29).

COC_L	Dummy, taking the value of one if the firm has been added to the base population from the list of firms known to be active from chamber of commerce sources.
DIVER_TO	Number of USSIC codes plus UK-CIS codes reported in the AMADEUS database, divided over turnover. This variable neutralises some bias that any one coding system may have, and is adjusted to size to avoid multicollinearity with the SIZE variable.
EMPLOY	Number of employees of the firm, from (i) Fame and Amadeus database (ii) annual reports (iii) Dun Bradstreet and Hoppensteadt directories, (iv) follow-up questionnaires. For regression analysis divided by $10^5$ .
EMPL_SQ	Square of EMPLOY. For regression analysis divided by $10^{10}$ .
EUROPEAN	Dummy, taking the value of one if the firm is an affiliate of a multinational with headquarters in a European country other than the firm contacted.
FOOD	Dummy, taking the value of one if the firm has its main activity in the food and beverage industry (USSIC code 20).
GERMAN	Dummy, taking the value of one if the contacted firm is in Germany.
GROWTH	Percentage change of company turnover in 1993 over 1992, calculated from Fame and Amadeus database and annual reports.
INTL_TO	Percentage share of employment outside the home country in total employment, from (i) annual reports, (ii) Fame and Amadeus, (iii) Dun Bradstreet and Hoppensteadt directories, (iv) question 12 of the questionnaire.
LABOUR	Ratio of employment over turnover in 1000 £ sterling, calculated with the data from the Fame and Amadeus database.
NONEUR	Dummy, taking the value of one if the firm is an affiliate of a multinational with headquarters in a country outside Europe other than the firm contacted.
NON_FOOD	Dummy, taking the value of one if the main activity of the firm is in consumer goods industries including pharmaceuticals but not food and beverages.
R&D	Percentage ratio of research and development expenditures over turnover, from (i) annual reports, (ii) "The 1993 UK R&D Scoreboard" [Company Reporting Limited], (iii) question 13 of the questionnaire, (iv) follow-up questionnaires, (v) predicted values of a regression equation using only variables not employed elsewhere in this research.