Local Value Chains in European MNEs

February 25, 2022

Abstract

Ghemawat's work in international business strategy demonstrates that MNEs create value both by overcoming and by exploiting the price differences that exist at country borders. This paper evaluates the investment strategies of MNEs with subsidiaries in the 10 Central and Eastern Europe countries that had joined the European Union by 2007 through the lens of this insight. The data show that subsidiaries' activities vary with the parent MNE's home location. The CEE subsidiaries of Western European MNEs are more likely to be producing output that can be traded across country borders, particularly when their output differs from the main product of their parent company. The findings suggest Western European MNEs tend to invest in CEE countries to fragment value chains across the region, exploiting factor cost arbitrage opportunity in a semiglobalized world.

Keywords: Multinational firms, global value chains, EU enlargement.

1 Introduction

Foreign Multinational Enterprises owned nearly 10% of all the firms with more than 10 employees in the 10 Central and Eastern European (CEE) countries in the European Union by the end of 2017. These subsidiary firms were larger and more productive than domestically-owned firms in similar industries, accounting for 28% of employment and as much as 43% of total operating revenues in the region. The huge inflows of foreign direct investment that created these ownership patterns have been part of the dramatic transformation of CEE economies since the end of Communist rule at the start of the 1990s, and which saw seven CEE countries accede to the EU in 2004 with three more joining in 2007. For the MNEs making these investments, each subsidiary in the region reflects a decision to conduct stages of the production process across country borders.

In much of his work on international business strategy, Ghemawat's starting point was that the defining characteristic of the global economy was imperfect integration of markets at international borders (Ghemawat (2003), Ghemawat (2007)). He argued that when markets are segmented, business strategy is necessarily location-specific and the opportunity for value-adding international investment depends on the nature of differences across borders. This paper examines MNEs' investment strategies in the CEE region through the lens of Ghemawat's "semiglobalization" paradigm, and finds that MNEs have tended to invest in order to exploit the differences at country borders rather than to overcome these differences.

The logic of the empirical work relies on the interplay of several sources of variation across MNEs and across MNE activities. First, the MNEs with subsidiaries in the CEE region are based in a variety of home markets, and their home location determines the extent of market segmentation with the markets in CEE countries. Nearly two thirds of foreign subsidiaries are owned by MNEs based in a Western European country, and a further 8% by MNEs from another CEE EU country. These countries are geographically close to the CEE region and, especially after EU enlargement, are also close on other dimensions associated with economic integration and low trade costs. However, wage levels in the region remain relatively low. Although rising over time, the average GDP per capita in the CEE region was less than 40% of GDP per capita in Germany in 2018.

Turning to MNE activities: When subsidiary output is tradable, the extent of market segmentation between the MNEs home market and CEE region determines the relative appeal of the two types of international business strategy described in Ghemawat (2003):

MNEs investing to cope with the differences at country borders produce output in the CEE region rather than export to it from existing production facilities elsewhere. Importing from

other locations is more appealing for MNEs with low trade costs with the CEE region, that is, for MNEs based in other Eastern and Western EU countries.

MNEs investing to exploit differences at country borders produce output in the CEE region to take advantage of factor cost differences. Labor is low cost in the region relative to labor in Western EU countries and also in high income countries outside the EU. While MNEs in all high income countries have an incentive to fragment their value chains in this way, it is a more appealing strategy for MNEs with existing production facilities located near to the region. This is because exporting the output from the CEE subsidiaries incurs trade costs that are increasing in measures of distance between production stages.

The empirical approach taken to distinguishing MNE strategies in the region requires establishing some facts also about output that cannot be traded. For the share of all MNE subsidiaries in the region producing non-tradable output, production and consumption are necessarily colocated. This is the case for many services and construction activities, for example. For these investments, differential trade costs among MNEs from different parent locations are not relevant for MNE strategy in the region. The empirical approach taken in this paper uses the share of subsidiaries producing non-tradable output from each MNE parent region as a benchmark for analyzing the relative share of subsidiaries of MNEs based in different regions producing tradable output.

The two different MNE investment strategies create contrasting predictions for the relative prevalence of subsidiaries producing tradable output among MNEs. If the MNEs based in Western Europe are relatively less likely to have subsidiaries producing tradable output, then MNEs are investing to overcome differences at borders—an aggregation strategy (Ghemawat (2003)). This is because lower trade costs means local production and trade are closer substitutes for these MNEs. On the other hand, if MNEs from Western Europe are relatively more likely to have subsidiaries producing tradable output, then MNEs are investing to take advantage of differences at borders—an arbitrage strategy. Lower trade costs means local production and trade are closer substitutes for these MNEs. These predictions are independent of the share of all subsidiaries with parents in each home location and are based only on the composition of the activities of the subsidiaries of each MNE grouping.

MNE strategies in the CEE region are described in this paper using a dataset that gives the country of the parent firm for MNE subsidiaries in the 10 Central and Eastern new member states in 2018. The data yield a picture of the activities in the CEE region of the 15,933 MNEs who owned at least one subsidiary there by the end of 2017 and also the investment flows between 2007 and 2017. The data also show the primary activity is given in the data for all of

the MNE subsidiaries and is included for just over half of the parent MNEs. This information comes from a combination of firm-level and cross border acquisition-level data drawn from the Bureau van Dijk ORBIS databases.

The subsidiaries and parent firms are categorized into those producing outputs that can be traded and those producing non-tradable outputs. Traded output is defined as the primary activity being in a manufacturing or wholesale activity. Non-tradable output are services, utilities, construction, and retail, which, for the most part, must be produced and consumed in the same location.[1] 52% of MNE subsidiaries are producing tradable output.

The findings show that EU-based MNEs are relatively likely to have investments in the CEE region that are producing tradable output compared to MNEs based outside the EU. This therefore suggests that the majority of MNE investment in the region occurs because of the differences in factor markets at country borders that remain after EU accession. Since labor is one important factor that differs in cost across borders, it is likely that arbitraging labor costs plays a key role in attracting MNE investment. The result is limited to MNEs based in Western European countries, in line with the fact that the opportunity for labor cost arbitrage is much reduced across the group of CEE labor markets.

One implication of this inference is that the arbitrage motive exists only as long as there are factor cost differences at country borders. Since real incomes in the CEE region have been increasing over recent decades, while still below Western EU averages, the appeal of investing to exploit differences in wages has been falling. Consistent with this, the data show that the greater relative prevalence of Western EU MNE subsidiaries producing tradable output is lower for investments made after 2007 than in those made before. That is, the mix of activities for MNEs from difference regions is converging over time.

The data also allow an investigation of the role of other factors that moderate the relative incentives for arbitraging versus aggregation strategies. Countries within the CEE region are differently distant from the Western European markets where the majority of investing MNEs are based. Trade costs with these markets are lower when importing to or exporting from bordering countries. An analysis of the variance in MNE activities across CEE countries shows that subsidiaries in bordering countries are more likely to be producing tradable output. Further, Western-EU MNE subsidiaries are more likely to be producing tradable output in border countries and also in non-border countries.

Existing literatures offer theories of entry mode choice, and several prominent papers suggest entry via greenfield investment is more likely when parent firms have superior technological

[1] The binary categorization is approximate and overlooks the fact that, for example, some digital services may be tradable.

capabilities or existing knowledge of the local markets. There is also some work that relates the entry mode decision to the nature of the MNE strategy in the host country. The data on MNE investments since 2007 in the CEE region show that among MNEs that entered via acquisition, those from outside the EU are more likely to be making a non-tradable output perhaps because acquired assets are more valuable for MNEs with limited host country knowledge. Among those that entered via greenfield investment, those from an Eastern EU country were less likely to be making a tradable output.

Finally, for the share of MNEs whose main activity is also available in the data, it is possible to study whether subsidiary output tradability is related to the whether the subsidiary is producing the same output as its parent. The opportunity to arbitrage factor costs is most valuable when the MNE is able to locate different stages of production in different countries according to variation in the factor intensity of the production stage. The data show that the subsidiaries of Western European MNEs producing output different from the parent are far more likely to be producing output that is tradable, consistent with the arbitrage strategy.

Slicing up the value chain across national borders has been one of the dominant trends shaping the volume and composition of international trade flows since the 1990s (Krugman et al. (1995)). MNEs—who own stages of production in at least two countries (Caves (1996)) and mediate as much as 80% of world trade (UNCTAD (2013))—are viewed as a driving force behind this process, referred to by Ghemawat (2007) as the globalization of production. The opportunity created by imperfectly-integrated factor markets provides one of the key rationales for the existence of such MNEs (Buckley and Casson (1976)), permitting cost advantage through across-country specialization according to comparative advantage. While Bartlett and Ghoshal (2002) describe global firms as those that reduce cost by concentrating production at a global scale, the data studied in this paper are consistent with cost advantage being achieved via concentrated specialization within the CEE region. The findings suggest that MNEs operating in the CEE region take advantage of the fact that close-by countries that differ in income levels form part of a goods and services free trade area, fragmenting supply chains locally across countries within the EU.

The paper proceeds as follows: Section 2 describes the CEE region in a semiglobalized world, motivates the empirical work, and briefly reviews the existing literature on MNE investments in the region since the early 1990s. Section 3 describes the data used in the analysis. Section 4 presents the empirical work distinguishing MNE strategies. Section 5 presents the additional results and section 6 concludes.

2 Empirical Setting and Theoretical Motivation

2.1 Semiglobalization of the CEE region

Ghemawat (2003) points out that semiglobalization is a sufficient condition for location-specificity to matter for MNE strategy. This paper studies investment in the 10 Central and Eastern European countries that had acceded to the European Union by 2007. These are: the Czech Republic (CZ), Estonia (EE), Hungary (HU), Lithuania (LT), Latvia (LV), Poland (PL), Slovenia (SI),and Slovakia (SK), that acceded in 2004, and Bulgaria (BG) and Romania (RO), that acceded in 2007.[2] Decades of state-directed economic control under Communist rule were followed by substantial institutional reform and the development of market mechanisms. Starting in 1994, countries began to enter into Association Agreements with the European Union with the long-term goal of acceding to the Union. The Copenhagen criteria had set out conditions for eligibility for EU membership in 1993. These conditions were wide-ranging, along geographic, political and economic dimensions, as well as establishing legislative alignment requirements.[3]

The CAGE framework set in out in Ghemawat (2007) focuses on degrees of differences at country borders. It explicitly models distance between countries along cultural, administrative, geographic, and economic dimensions. It is clear that EU accession helped to bridge the remaining administrative and economic distances between pairs of countries within the EU that existed from the end of the 1990s. Of course, geographically, and perhaps also culturally, the countries in the CEE region are closer to other countries in Western Europe than to countries outside the European Union. Since 2007, the free movement of goods, services, capital and people has been allowed across these countries' borders within the European single market, creating an arguably "borderless" free trade area.[4] While intra-EU levels of trade are still below what we might expect from fully integrated goods markets, Curran and Zignago (2011) show that it is much higher than in other free trade areas elsewhere in the world.[5] The institutional context of the EU together with geography therefore permit the assumption that goods markets are more fully integrated within the EU than they are between CEE countries and other countries outside the EU.

Although free movement of labor was one of the four freedoms within the EU, real incomes

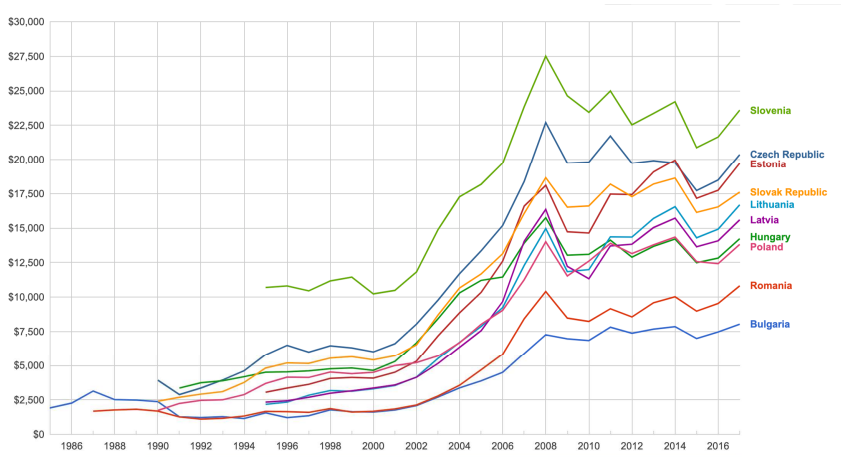
[2] Croatia, the newest EU member, acceded during the period studied, in 2013, and is not included in the analysis here.

[3] Lipsey (2007) documents that most of the progress in corporate governance ratings for countries in the region since 1996 took place between 1996 and 2003.

[4] In addition, Slovenia was the first of the 10 countries to join the Euro currency area, and four further countries had adopted the Euro by 2014.

[5] Some of the trade literature distinguishes between trade integration in final goods and in intermediates (for example, Caliendo and Parro (2015)). While different MNE strategies do have different implications for whether MNEs trade final or intermediate goods across country borders, this distinction is not part of the empirical work in this paper.

Figure 1: GDP per capita in CEE EU Countries



and wages are lower in CEE countries than in Western EU countries. In 2018, the average GDP per capita across the 10 countries studied was $\$18,811$, or 37% of the German figure of $\$50,842$, and 30% of the US figure of $\$62,152$ (IMF (2018)). Wage differences across countries are consistent with imperfect labor market integration arising from restrictions to labor mobility. Indeed, several Western European countries maintained formal restrictions on the right to work for citizens of newly-acceded countries for a transition period of up to several years after 2007.[6] Although incomes have been growing in the CEE EU countries in recent decades, as shown in Figure 1, income levels in 2018 meant that the local workforce remained relatively good value, particularly when observing that the levels of numeracy and literacy by age group were comparable to those in higher-income countries (Hoftijzer and Gortazar (2018)).

To the extent that imperfect integration of labor markets manifests in wage differences across countries, the relatively low incomes in CEE countries present MNEs from higher income countries with the opportunity to arbitrage factor costs when they are able to fragment production across country border by locating stages of production that use an input factor intensively in a country where that factor can be employed at lower cost.

2.2 Motivating the empirical analysis

The empirical work divides CEE foreign subsidiaries into three groups based on the location of their MNE parent: those based in a Western EU country, those based in another CEE EU country, and those based outside the EU. The parent's location determines the extent of market integration between the markets in which the parent already operates and the goods and factor markets in CEE countries.

[6] See: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_06_64 for more detail.

Subsidiaries are also divided into two groups based on the nature of their output, either tradable or non-tradable. It is only for tradable output where the degree of market integration with the MNEs home markets are relevant for the strategy the MNE pursues in the region. This is because, for non-traded outputs, all MNEs must employ local factor markets in order to serve local consumers. In contrast, for tradable output, MNEs can access local consumer markets via exports or via local production. MNEs can also opt to employ local factor markets to produce output to sell there or to export as part of a value chain.

Consider an MNE based in a Western European country such as Germany, which the most common parent country in the region, and one based outside the EU, for example, in the US, which is the third most prevalent MNE country. The German MNE can sell to CEE consumers via exports from existing production facilities incurring lower trade costs than the US MNE who likely produces outside the EU. That is, the German MNE can more easily substitute trade for local investment.

Both MNEs have an incentive to conduct a labor intensive stage of production in the CEE region rather than at home if the value chain can be fragmented, but the German MNE will find it less costly to do so because the cost of exporting from the CEE region to later stages of the value chain will likely be lower than for the US MNC. That is, the German MNE investment is a closer complement to trade.

The implications of this comparison are that the profitability threshold at which Western EU MNEs will consider investing in the CEE region to access consumers is higher than for MNEs based outside the EU. Conversely, the profitability threshold at which Western EU MNEs will consider investing in the CEE region to access factor markets is lower than for MNEs based outside the EU.

For each group, their willingness to invest in subsidiaries producing tradable output is benchmarked to the extent to which they produce non-tradable output in the region. For non-tradable output, the trade costs with home countries are irrelevant. The empirical prediction is therefore as follows: if MNEs tend to invest in the CEE region to access consumers via an aggregation strategy, then the ratio of the number of subsidiaries producing tradable output to the number producing non-tradable output should be larger for MNEs from outside the EU (because EU MNEs have a lower-cost substitute way to access consumers). If MNEs tend to invest in the CEE region to access factor markets via an arbitrage strategy, then the ratio of the number of subsidiaries producing tradable output to the number producing non-tradable output should be larger for MNEs from within the EU (because EU MNEs find complementary trading activity lower cost).

This simple empirical analysis will reveal whether MNEs' dominant international strategy in the CEE region can be determined from aggregate patterns in the data. Later sections will also draw inferences from differences in activities of subsidiaries of CEE MNEs.

2.3 Literature review

The majority of prior studies have studied variation across CEE countries in the extent to which they attracted foreign investment in the 1990s rather than looking at the CEE region as a whole. Carstensen and Toubal (2004) examine FDI during the early transition period, long before these countries joined the EU. Using panel data from 1993-1999, they analyze factors that influenced the volume of FDI, including population size, GDP per capita, labour cost, the speed of transition towards a market economy, market potential, level and method of privatization and country risk. Bevan and Estrin (2004) analyzed data on bilateral FDI flows from Western European countries to Eastern European hosts during a similar period. Although these studies agreed upon the effect of unit labour costs, gravity factors, and market size on the flows between origin and host countries, they found contrasting results for the role of country risk, with the latter study finding it had no influence. This paper, instead, focuses on variation in market integration between the countries in the CEE region with countries outside the region, either in the Western EU or globally.

Several papers have looked into the entry mode of foreign investment into the CEE region. These studies tended to focus on a particular subset of host countries. Alessandrini (2000) analysed foreign investment in the 1990s and concluded that proximity to the EU stimulated investment from EU multinationals, but the effect of location was small for greenfield investments. Based on surveys of foreign investments in Poland, Gorynia et al. (2007) suggest that motives for acquisition—by far the dominant choice of entry mode—rather than greenfield investments largely relate to lowering production cost.[7]

A more recent paper by Damijan et al. (2015) uses similar data to the data used in this paper to examine the performance consequences of foreign acquisition for firms in 7 of the 10 accession countries. They find that foreign MNCs tended to acquire better-performing domestic firms and also that performance improved after acquisition compared to similar firms that remained under domestic ownership. They document these patterns in both manufacturing and services industries, closely aligned with the traded and non-traded activity distinction made in this

[7] Klimek (2011) used data from 1995-2009 on Polish multinationals operating abroad—many invested in other Eastern European countries—to analyze entry mode decisions. This study shows that greenfield investment was preferred in markets with low competition, while mergers and acquisitions were more likely if a market contained a large number of existing firms in the industry. Klimek (2011) also showed that larger firms were less likely to conduct greenfield investment.

paper.

While research into the relative appeal of different countries in the CEE region and the mode of entry are informative about MNEs' investment motives, the studies referred to so far have not emphasized how an MNE's origin can be informative about its motives. This is despite the fact that MNEs based elsewhere within the EU face borders of a very different nature when operating across EU countries to those faced by MNEs who are based outside.

One study that considers MNE origin is Lipsey (2007) who analyses the characteristics of MNE foreign subsidiaries by parent firm source country and by subsidiary host region in 2003. He shows that the subsidiaries of German MNEs in Central and Eastern Europe had lower assets per employee—a measure of capital intensity—than German subsidiaries in every other region, with the exception of China. US MNEs had lower assets per employee in subsidiaries in Central and Eastern Europe in all regions other than in Latin America and in China. That is, MNEs from both countries tended to locate less-capital-intensive activities in Central and Eastern European region. This evidence is consistent with Antràs and Yeaple (2014) who use OECD data from 2007 to compare MNE subsidiaries across six countries, including Poland. They document that relative R&D intensity of Polish subsidiaries (relative R&D share divided by relative revenues share) is lower than for subsidiaries in Finland, France, Ireland, Holland, and Sweden. Their paper also shows that exports account for a greater share of subsidiaries' revenues in Poland than in for subsidiaries in these other countries. These facts suggest MNEs from high-income countries tend to operate relatively labor-intensive fragments of the value chain in the CEE region, producing intermediary products that are then exported to downstream stages of production. This investment motive, hence, aligns well with the MNE strategy based on arbitraging differences at country borders.

Research in the field of international economics has emphasized how MNE investment complements trade when MNEs undertake "vertical" FDI, locating stages of production in different counties, and substitutes for trade when MNEs undertake "horizontal" FDI, producing locally to avoid trade costs. Blonigen (2001) uses variation in the type of product traded to establish that Japanese investment complements trade in automobile parts but substitutes trade in final products. This comparison confirms that the nature of the activity being performed by the subsidiary, producing either intermediate or final output, can reveal the strategy associated with the subsidiary investment. Other work suggests that the main tendency across countries and over time is for trade and investment to be complementary activities, consistent with firms investing to create global supply chains. Fontagné (1999) shows that foreign direct investment tends to be positively associated with the growth of exports in OECD data. Martínez et al.

(2012) examine relationships between trade and FDI between 19 EU countries and and between EU and non-EU countries in a gravity framework, between 1995 and 2006. Their results show that trade and investment grew together in both samples, consistent with complementarity between the two.

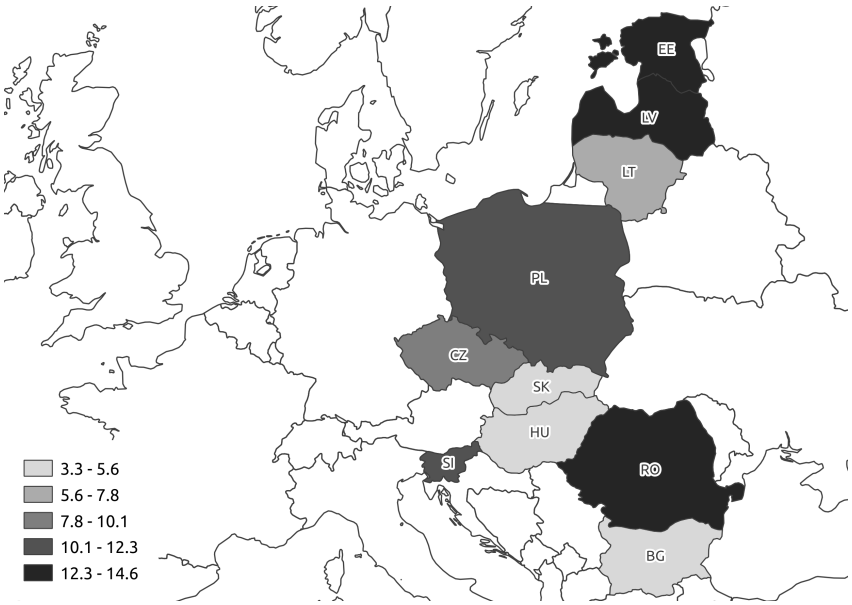
Research on determinants of more recent foreign investment in Eastern Europe, after the transition to market economies, and, particularly, since the financial crisis of 2008, has been relatively scarce. Because the European Union enlargement by 2007 coincided with the large downturn in the total volume of FDI flows globally (Broner et al. (2013)), exploring why multinational firms sought out investment opportunity in the CEE region at this time is particularly informative about these firms' international strategies. Thomas and Bernard (2019) shows that MNEs tended to make investments in CEE countries that already hosted a large number of investments by other firms from the same source country, but only when investing in the region for the first time. That study did not contrast the investment strategies of MNEs based inside and outside the EU, which is the focus of this paper. While some prior work has explored differences in investment strategy for firms in manufacturing and services, this paper is the first to explore how the tradability of subsidiary output together with the location of the parent firm interact to shape international strategy.

3 Data

The data used in the paper are from Bureau van Dijk's ORBIS database that includes country-by-country records of all firms required to submit financial statements. These data include some information on ownership and, in particular, they record whether a firm is owned by a foreign entity. When combined with snapshots of past data in Historical versions of ORBIS, the data also reveal changes in ownership over time. The key variable is the "global ultimate owner", which is the identity of the parent firm controlling at least 50% of the firm either directly or indirectly through other subsidiaries. In addition, annual data from the financial statements, including total employment, are available in ORBIS for the majority of these firms, as is the year of incorporation. The most recent four-digit NACE Rev 2 industry code is also available in ORBIS, as is the four-digit NACE Rev. 2 industry code for just over half of the subsidiaries' global ultimate owners.

The main sample is made up of firms in the ten EU-accession countries that were foreign-owned at the end of 2017. Figure 2 shows the share of all firms with more than 10 employees in each of the ten countries that was foreign-owned. These 25,812 subsidiaries made up 8.9% of all the firms in the region with at least ten employees. Foreign-ownership is more prevalent

Figure 2: Share of firms owned by foreign MNEs, 2017



Note: Each of the 10 CEE countries that joined the EU by 2007 are shaded to reflect the share of all firms with more than 10 employees that are foreign-owned.

in Latvia, Estonia, and Romania.[8] Foreign-owned subsidiaries were larger and more productive than domestically-owned firms, as is generally true elsewhere as well (Antràs and Yeaple (2014)).[9]

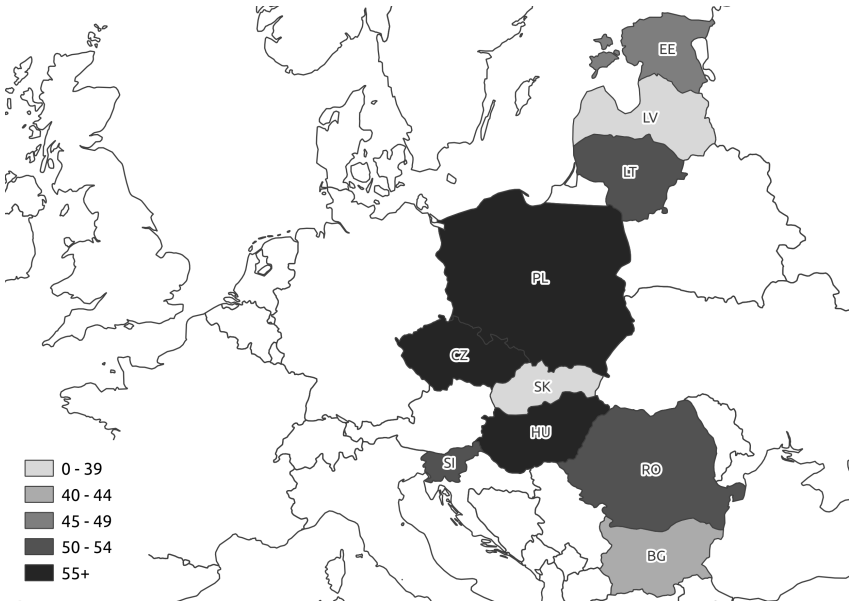
There are 15,933 MNEs in the data that, between them, are the global ultimate owners of these 25,812 subsidiaries at the end of 2017. The modal number of CEE subsidiaries is one, with 12,887, or 81% of MNEs in the data owning only one subsidiary in the region. The mean number of subsidiaries is 1.62, and the maximum number of is 56. 11,446, or 72% of the MNEs are based in one of the EU single market countries.[10] The vast majority of these parents are in one of the Western EU countries. There are 2,630 German MNEs in the data, who, collectively, own 17% of all CEE subsidiary firms. The next most frequent source of foreign parents is Italy, with 1,408 subsidiaries. Altogether, just over 8% of subsidiaries in the region are owned by a parent firm in another CEE country. The US is the third-most popular overall source country for MNEs in the region, and 1,019 parents are headquartered there. There are relatively few MNE firms from Asia present in the region, with 600 parent firms from Japan, China, Korea,

[8]However, the analysis of investment patterns in the region reveals similar patterns when excluding these three countries.

[9]These subsidiaries accounted for 43% of total operating revenues generated in the region, 39% of total assets, and 28% of all employment in firms with more than ten employees by the start of 2018.

[10]These countries are the 27 member states in 2008, which includes the UK, but excludes Croatia, which became a member state in 2013. Also included are the European Economic Area countries Liechtenstein and Norway, the home country of 58 and 167 parent firms. The other EEA but non-EU country is Iceland, but the data do not include any Icelandic parent firms with subsidiaries in the CEE region. Finally, Switzerland, home to 540 parent firms, is included because it is a member of the EU single market.

Figure 3: Share of foreign-owned subsidiary firms in traded activities, 2017



Note: Each of the 10 CEE countries that joined the EU by 2007 are shaded to reflect the share of foreign-owned firms that are in manufacturing or wholesale activities, collectively referred to as traded activities.

Hong Kong, India, Singapore and Taiwan together.

Lipsey (2007) documents that by 2003, many of the MNE investments from Germany and elsewhere had started to extend beyond the automotive sector that dominated early investment flows into the region. Of the MNEs making investments between 2008 and 2018 for which the NACE Rev 2 4-digit code is available, just over one third are in manufacturing or wholesale industries. These are firms whose primary activity is below 3300 or between 4600 and 4700, and, for the purposes of this paper, are classified as being in traded industries. The other two thirds of investing parent firms have four-digit NACE codes equal to or above 3300, excluding 4531, and between 4600 and 4700, and are grouped together as non-traded industries. They include services sectors as well as utilities, construction, and retail activities.[11]

The primary activity is also available for the foreign-owned subsidiaries. Each subsidiary is classified as either producing traded products or non-traded products, using the same industry definition distinctions as for the MNE parent firms. Overall, 52% of the subsidiary firms produce a primary output that is traded. Figure 3 shows how subsidiaries producing traded output are relatively concentrated in Poland, Hungary, and the Czech Republic. Together with Slovenia and Slovakia, these are the countries that share a land border with Western Europe, and while around 50% of all foreign owned subsidiaries are in one of these five countries, 55% of subsidiaries producing traded output are in one of these five border countries.

[11]The four-digit code 4531 is wholesale trade of motor vehicle parts and accessories and is classed as traded for the purposes of this paper.

Table 1: MNE subsidiaries, by activity and location of parent

	Western EU	CEE EU	Outside EU	Total
Non-traded output	7,449	1,294	3,729	12,472
Traded output	9,344	793	3,203	13,340
Total	16,793	2,087	6,932	25,812

The frequency of having an EU-based MNE as a foreign parent and producing traded output is shown in Table 1 for the 25,812 subsidiary firms in the data. Having an EU-based parent is slightly more likely to mean the subsidiary's output is traded, but only if the MNE is based on one of the Western EU countries. These relative frequencies motivate the more formal analysis in Section 4.

For the subsidiaries that were foreign-owned by the end of 2017, it is possible to trace out the changes in their ownership history between 2007 and 2017.[12] Hence, the entry and expansion decisions in the 10 years after the financial crisis made by the multinational parents present in 2017 are observed. Combining data on changes in ownership with data on the year of incorporation further allows the international expansion decisions made by these MNEs to be divided into those that were greenfield investment and those that were via acquisition of existing firms.

The MNE subsidiaries are classified as the outcome of a greenfield investment if they satisfy two criteria: First, if they appear for the first time in the historical ORBIS data with a foreign owner and, second, if they were incorporated in the year in which it first appeared in the ORBIS data or in the previous year. Subsidiaries are classified as being the outcome of acquisitions if they appear in the historical data in years before they appear for the first time with a foreign owner and if the year of incorporation was at least two years before the new owner was recorded in the data. These criteria are not exclusive. That is, some firms were first a greenfield investment made by a foreign parent and were then acquired by a different foreign parent. These histories are available from 2008 onward. Thus the data of 25,812 subsidiaries consist of those that were already owned by their 2017 owner in 2007, and those that were not. Of the 15,068 firms that were not, some were the object of foreign greenfield investment between 2008 and 2017; some were acquired by their 2017 owner between 2008 and 2017; and, finally, some were a foreign greenfield investment after 2007 and were then acquired by a different foreign owner.[13]

These data show that 78% of investments are made via acquisition. Acquisitions are rela-

[12] Firms that became domestically owned in this time period, that is, those that were foreign-owned in 2007 but not in 2017, are not included in the sample

[13] Acquisitions include firms transitioning from domestic to foreign ownership and between foreign owners.

tively more frequent for firms making traded output, making up 83% of investments in these firms. MNEs based in Western European countries were more likely than other MNEs to enter via acquisition. MNEs based in other CEE EU countries were more likely than other MNEs to enter via greenfield investment.[14]

4 Subsidiary Output Tradability and MNE Location

4.1 Empirical Analysis

The previous sections motivate a descriptive analysis to distinguish whether the dominant MNE strategy in the CEE region is investing to overcome trade costs at country borders or investing to arbitrage input market prices. The analysis relies on the observation that both final goods and factor markets are more integrated within the EU than outside, allowing EU-based MNEs to export to or import from CEE countries at lower cost when output is tradable. Holding fixed the total number of investments in the region from MNEs based in different locations, the relative prevalence of subsidiaries producing tradable output among EU-based MNEs hence reveals whether investment is mainly a substitute or complement for trade.

Let j be a subsidiary of MNE i located in CEE country c. The subsidiary's output can be either traded, $T_{ij} = 1$, or non-traded, $T_{ij} = 0$, where tradability is defined as being in a manufacturing or wholesale activity rather than in a services, retail, utilities, or construction activity.[15] EU_i indicates whether MNE i is headquartered in one of the EU countries rather than being outside the EU. The following equation evaluates whether an EU-based MNE investment is more or less likely than an investment made by an MNE based outside the EU to have been made in a subsidiary producing a tradable output.

$$T_{ij} = \alpha + \beta EU_i + c_j + y_j + \epsilon_{ij} \tag{1}$$

where c_j is a vector of host country fixed effects, and y_j are investment year fixed effects.[16]

The coefficient of interest is β, and, in particular, its sign. A subsidiary producing a non-tradable output reflects an MNE investment strategy designed to overcome the fact that the host market cannot be served via exports from production locations outside the host country.

[14] More detail about the subsidiary firms is available in Thomas and Bernard (2019)

[15] The data contain the industry code for all subisidiaries and it is possible to categorize output into intermediate or final goods. Note that trade to overcome trade costs at borders is associated with trade in final goods and trade to exploit factor cost differences is associated with trade in intermediate goods. However, the approach here relies on the sign of the correlation between tradability of output related to having an EU MNE parent, so a coarser output categorization, into tradable or not, enables a more straightforward analysis.

[16] The year fixed effect for all investments made in 2007 or before is constrained to be a constant because the data do not contain the investment year for these subsidiaries.

Tradable goods, on the other hand, can be exported to the host country, but the costs of doing so are higher for MNEs based outside the EU. Hence, if investments in the region tended to be for the purposes of coping with country borders—an aggregation strategy—we would expect non-EU based MNEs to be relatively more likely than EU-based MNEs to have subsidiaries producing tradable goods. This is because EU-based MNEs have a less costly substitute way of serving these markets via exports from their nearby operations. Under this investment strategy, β is predicted to be negative.

An investment strategy based on arbitraging factor costs across country borders relies on the ability to export subsidiary output from the host country providing intermediate inputs to stages of production located elsewhere. Since EU-based MNEs are more likely to have existing operations in the EU, the trade costs associated with exporting from the host country are higher for non-EU-based MNEs. For EU-based MNEs then, trade, in intermediates, is a stronger complement to investment. Under this investment strategy, β is predicted to be positive, consistent with EU-based MNEs finding it lower cost to invest in the CEE region to access factor markets.

This logic can be extended by examining the difference in relative propensity to have subsidiaries producing tradable output for MNEs based in the west and the east of the EU region. If the β coefficient is negative, consistent with an aggregation strategy, we might expect the coefficient to be particularly negative for Eastern European MNEs whose geography means even lower costs to exporting to other CEE countries. If the β coefficient is positive, this relationship is predicted to be present only for Western EU-based MNEs, where there is a factor cost differential, since factor costs are more similar within the CEE region. To investigate these differences, the EU indicator in equation (1) is replaced with indicators for being a subsidiary of an Western-EU MNE or an Eastern-EU MNE. The omitted category remains all MNEs based outside the EU.

$$T_{ij} = \alpha + \beta_1 WEU_i + \beta_2 EEU_i + c_j + y_j + \epsilon_{ij} \tag{2}$$

If β in equation (1) is negative, we expect both β_1 and β_2 to be negative and β_2 to be larger in magnitude. If β_1 in equation (1) is positive, we expect β_1 to be positive and significantly larger than β_2, and β_2 could even be negative, since arbitrage opportunities based on labor cost differences are, on average, larger for MNEs investing from outside the EU (for example, from the US or Asia) than for MNEs from within the CEE region.

4.2 Results

The results from estimating equations (1) and (2) are given in Table 2. The first two columns of the table show that β is positive. The subsidiaries of EU-based MNEs are relatively more likely to be producing tradable output. Since tradability is complementary to an arbitrage strategy, this finding suggests MNE strategy in the CEE region tends to be exploiting residual barriers to cross-country integration.

The second two columns provide evidence that supports this inference. The factor cost arbitrage opportunity is largest for those MNEs with operations in Western Europe. The estimates from equation (2) are that β_1 is positive and β_2 is negative. MNEs from within the CEE region, in contrast to those from Western-EU countries, are relatively less likely to have subsidiaries producing non-tradable output in the region. This is consistent with these MNEs finding it relatively low cost to export to the host country from existing production facilities elsewhere. That is, trade is a closer substitute for local investment for these MNEs.

Table 2: Tradable subsidiary output, by MNE home location

	(1) Tradable	(2) Tradable	(3) Tradable	(4) Tradable
EU-based MNE	0.067***	0.065***		
	(0.007)	(0.007)		
Western EU-based MNE			0.083***	0.081***
			(0.007)	(0.007)
Eastern EU-based MNE			-0.060***	-0.062***
			(0.013)	(0.013)
Constant	0.468***	0.470***	0.468***	0.469***
	(0.006)	(0.006)	(0.006)	(0.006)
Observations	25812	25812	25812	25812
Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.020	0.022	0.025	0.027

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The coefficients in column 2 show that 47% of the subsidiaries of MNEs based outside the EU are producing output that can be traded. For MNEs based in the EU, it is 53%. Column 4 shows that this difference is due to the subsidiaries of MNEs from Western-EU countries being particularly likely to produce tradable output, at 55% versus 41% for the subsidiaries of Eastern-EU MNEs.

5 Further Evidence Consistent with Arbitrage Strategies

The results in the previous section show that MNEs based in Western-EU countries appear to be more able to adopt a strategy of investing in the CEE region in order to arbitrage factor costs. This section provides a description of other characteristics of MNE activity in the region that offer some support to this inference.

5.1 Recent investments

The data provide more detail on MNE investments in the region made between 2007 and 2018. Referring to these subsidiaries as investment flows, compared to the stock of investments already present in 2007, permits a comparison of recent versus old. Ghemawat (2003) notes that the most obvious indicator of the extent of cross-border integration of labor markets is wage convergence. Figure 1 shows us that real incomes have been increasing in the CEE region up to around 2008. With wage convergence across the EU, an arbitrage investment strategy for MNEs in Western-EU countries begins to look less appealing. In contrast, increasing real incomes in the CEE region has no such clear implication for relative trade costs or the ability to substitute investment for exports.

Given that β in equation (1) is positive, consistent with Western EU-country MNEs engaging in factor cost arbitrage, wage convergence in the EU suggests the relative prevalence of these MNEs' subsidiaries producing tradable output will be lower in more recent years. That is, the interaction term between being an EU MNE, relative to a non-EU MNE, or a Western-EU country MNE, relative to all other MNEs, and making a newer investment is expected to be negative. This is evaluated in equations (3) and (4), which include interaction terms with the recency of investment in equations (1) and (2), respectively.

$$T_{ij} = \alpha + \beta EU_i * recent_j + c_j + y_j + \epsilon_{ij} \tag{3}$$

$$T_{ij} = \alpha + \beta_1 WEU_i * recent_j + \beta_2 EEU_i * recent_j + c_j + y_j + \epsilon_{ij} \tag{4}$$

The results from estimating equations (3) and (4) are given in Table 3.[17] Columns 1 and 2 show that the relative propensity for EU-based MNEs to invest to produce tradable output has been lower since 2007. That is, the share of subsidiaries producing tradable output has become more similar for EU- and non-EU-based MNEs in more recent years. Columns 3 and 4 confirm that this pattern is due to changes in the activities made by MNEs based in Western-EU

[17] Note that columns 2 and 4 include year fixed effects, so the indicator for recency is omitted in these specifications.

countries.

Table 3: Tradable subsidiary output, by MNE home location, Recent Investments.

	(1) Tradable	(2) Tradable	(3) Tradable	(4) Tradable
EU-based MNE	0.085***	0.085***		
	(0.011)	(0.011)		
Recent investment	0.007		0.007	
	(0.012)		(0.012)	
Recent investment by EU-based MNE	-0.031**	-0.034**		
	(0.014)	(0.014)		
Western EU-based MNE			0.104***	0.104***
			(0.011)	(0.011)
Recent investment by West.EU-based MNE			-0.036**	-0.039***
			(0.014)	(0.014)
Eastern EU-based MNE			-0.057***	-0.058***
			(0.019)	(0.019)
Recent investment by East.EU-based MNE			-0.005	-0.005
			(0.025)	(0.025)
Constant	0.463***	0.469***	0.463***	0.469***
	(0.010)	(0.006)	(0.009)	(0.006)
Observations	25812	25812	25812	25812
Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.020	0.022	0.026	0.028

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.2 Investments in Border Countries

The countries in the CEE region vary in distance to the higher-income consumer markets in Western Europe. This subsection explores whether location within the CEE region affects the relative appeal of a country as a source of factor inputs. Equation (5) extends equation (1) to include an interaction term for investment j being in CEE country that borders Western Europe, and host country fixed effects are excluded. Some of the specifications include GDP per capita in 2018 in the relevant host country because factor cost variation is expected to have an independent effect on the relative appeal of host countries. Equation (6) includes analogous interactions in equation (2).

$$T_{ij} = \alpha + \beta EU_i * B_j + GDPpc_c + y_j + \epsilon_{ij} \tag{5}$$

$$T_{ij} = \alpha + \beta_1 WEU_i * B_j + \beta_2 EEU_i * B_j + GDPpc_c + y_j + \epsilon_{ij} \quad (6)$$

The results from estimating (5) and (6) are given in Table 4. Columns 1 and 2 show that all subsidiaries in countries that border Western Europe are 13 to 14 percentage points more likely to be producing tradable output. The coefficients also reveal that within MNE group, MNE subsidiaries are more likely to produce tradable output in the countries that border Western Europe.

Within border countries, 59% of EU-based MNE subsidiaries are producing tradable output, which is significantly more than the 57% of non-EU-based MNEs producing tradable output. This difference is more pronounced in CEE countries that do not border Western Europe. The estimated coefficient for the indicator of having an EU-MNE as a parent in a non-border country is 11%. This suggests EU-based MNEs' relative propensity to invest to produce output that can be traded extends beyond the border countries into the rest of the CEE region.

The linear combinations of the estimated coefficients in columns 3 and 4 are slightly harder to interpret but are still revealing. For both MNEs based in Western Europe and those from outside the EU, more of the investments in border countries are producing output that can be traded. Also, within border countries, MNEs based in Western Europe are significantly more likely to have subsidiaries producing tradable output. The same is true, and the difference more pronounced, in CEE countries that do not border Western Europe. The estimates for MNEs based in the CEE show that these MNEs' subsidiares are even less likely to produce tradable output in border countries than in other CEE countries.[18]

5.3 Mode of Entry

Looking now at the choice of entry mode for the investments made between 2007 and 2018, the data reveal whether each new investment was the acquisition of an existing firm or a greenfield investment.

The international business and economics literatures have studied how the choice of entry mode relates to parent firm and host country characteristics.[19] Several important studies relate this decision to the technological capabilities of the parent firm (see the references in Slangen and Hennart (2007), and also Nocke and Yeaple (2007)). Others relate the decision to the MNE's knowledge of the host country, building on the work of Caves (1996). MNEs with

[18]The linear coefficients for border countries are 0.59, 0.37, and 0.54, for Western EU MNEs, Eastern EU MNEs, and MNEs based outside the EU, respectively. For non-border countries, the linear coefficients are 0.53, 0.41, and 0.41.

[19]Slangen and Hennart (2007) review this work and find the most often-used perspectives are transaction cost/internalization theory, the organizational-learning perspective, information economics, the theory of the growth of the firm, industrial organization, as well as institutional theory.

Table 4: Tradable subsidiary output, by MNE home location, in border countries.

	(1) tradable	(2) tradable	(3) tradable	(4) tradable
EU-based MNE	0.107***	0.108***		
	(0.010)	(0.010)		
On border	0.130***	0.142***	0.130***	0.132***
	(0.012)	(0.013)	(0.012)	(0.013)
On border by EU-based MNE	-0.083***	-0.085***		
	(0.014)	(0.014)		
Western EU-based MNE			0.124***	0.124***
			(0.010)	(0.010)
On border by West.EU-based MNE			-0.080***	-0.080***
			(0.014)	(0.014)
Eastern EU-based MNE			-0.007	-0.007
			(0.016)	(0.017)
On border by East.EU-based MNE			-0.169***	-0.169***
			(0.025)	(0.025)
GPD per capita in 2018		-0.002**		-0.000
		(0.001)		(0.001)
Constant	0.405***	0.428***	0.405***	0.409***
	(0.008)	(0.013)	(0.008)	(0.013)
Observations	25812	25812	25812	25812
Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.013	0.013	0.021	0.021

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

sophisticated technologies and knowledge of the country are typically found to be more likely to enter via greenfield investment. In the CEE context, MNEs based nearby, in other CEE countries, are likely to be less productive than MNEs based outside the EU, on average, but more knowledgeable about CEE countries. The empirical predictions arising from prior theories about whether MNEs from different regions differ in their propensity to enter via greenfield investment are, hence, ambiguous in this setting.

Theories related to how entry mode varies with the tradability of the subsidiary output is relatively limited, but the data show that acquisitions were far more frequent that greenfield investments during these years in each of the 10 CEE countries. In several case studies of firms making acquisitions in Poland, Gorynia et al. (2007) discussed how the parent firms attached high importance to acquiring valuable assets of the local company, such as brand names, distribution networks and market shares, as well as speed to market. Local brand names and market shares are valuable only if the parent firm is investing in order to serve the local market. That is, under an aggregation strategy. Hence, greenfield investment might be considered more likely, in general, when the subsidiary will produce tradable output.

Equation (7) extends equation (1) to examine the relationship between being a greenfield MNE investment and producing tradable output. Equation (8) does the same for equation (2). The probability an investment is in a tradable activity is:

$$T_{ij} = \alpha + \beta EU_i * G_j + c_j + y_j + \epsilon_{ij}, \tag{7}$$

$$T_{ij} = \alpha + \beta WEU_i * G_j + \beta EEU_i * G_j + c_j + y_j + \epsilon_{ij}. \tag{8}$$

G_j is an indicator for whether j is a greenfield investment. These regressions once again include host country fixed effects, and all specifications include fixed effects for the year the investment was made.

The results from estimating equations (7) and (8) on the sample of MNE investments since 2007 are given in Table 5. Columns 1 and 2 show that greenfield investments are 11% more likely to be producing non-tradable output. This finding runs counter to the case study findings from Poland in Gorynia et al. (2007) where acquisitions were viewed as an effective way to acquire assets valuable when selling in local markets. The interaction term in these columns shows that the propensity to enter via greenfield when producing tradable output does not differ for MNEs based within or outside the EU.

Columns 3 and 4 confirm that there is no difference in entry mode when producing a tradable output for Western-EU-based MNEs and MNEs based outside the EU. However, MNEs based

within the CEE region are slightly less likely to enter via greenfield investment when producing a tradable output. This is consistent with these MNEs placing more value on the production-related assets available for acquisition. One reason mentioned in the literature why acquisition is a preferred mode is that speed to market is much faster. It is possible that this characteristic is appealing for all MNEs looking to produce tradable output in the CEE region. Another insight is that among MNEs investing via acquisition, those from outside the EU are more likely that Western-EU based MNEs to be acquiring subsidiaries that produce non-tradable output. It is plausible that these MNEs prefer to acquire local assets for serving local markets because they have relatively limited knowledge of these markets.

Table 5: Tradable subsidiary output, by MNE home location, by Entry Mode.

	(1) Tradable	(2) Tradable	(3) Tradable	(4) Tradable
EU-based MNE	0.059***	0.055***		
	(0.011)	(0.011)		
Greenfield investment	-0.114***	-0.114***	-0.116***	-0.116***
	(0.016)	(0.016)	(0.016)	(0.016)
Greenfield by EU-based MNE	-0.023	-0.022		
	(0.019)	(0.019)		
Western EU-based MNE			0.066***	0.062***
			(0.011)	(0.011)
Greenfield by West.EU-based MNE			-0.006	-0.004
			(0.020)	(0.020)
Eastern EU-based MNE			-0.019	-0.020
			(0.022)	(0.022)
Greenfield by East.EU-based MNE			-0.070**	-0.071**
			(0.034)	(0.034)
Constant	0.508***	0.511***	0.509***	0.511***
	(0.009)	(0.009)	(0.009)	(0.009)
Observations	15068	15068	15068	15068
Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.030	0.033	0.033	0.036

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.4 MNE Diversification

The final descriptive analysis investigates how supply chains are fragmented within MNEs. If MNEs are locating stages of production in different countries to take advantage of factor cost differences at national borders, they are likely to perform different activities in each country.

The variable S_{ij} indicates whether the subsidiary and the parent are producing the same output. Including this term in equations (1) and (2) gives:

$$T_{ij} = \alpha + \beta EU_i * S_{ij} + c_j + y_j + \epsilon_{ij}, \tag{9}$$

$$T_{ij} = \alpha + \beta WEU_i * S_{ij} + \beta EEU_i * S_{ij} + c_j + y_j + \epsilon_{ij}, \tag{10}$$

Negative estimates of the β coefficients on the variables interacting the same-output indicator with the MNE being from a particular location shows that these MNEs tend to produce different outputs in the subsidiary. This is consistent with their fragmenting the value chain within the MNE and across country borders. MNEs have an incentive to do this when stages of production vary in factor intensity and relative factor costs differ across countries as long as intermediate outputs can be traded.

The estimated coefficients from equations (9) and (10) are given in Table 6.[20] Columns 1 and 2 clearly show that the EU-based MNEs' relative propensity to have subsidiaries in the region that produce tradable output—the main finding in Table 2—is present only when the subsidiary output is different from the output of the parent company. This suggests these MNEs are able to locate stages of production in different countries to take advantage of comparative advantage. Exploiting country differences in this way is an arbitrage opportunity that exists only because factor markets are imperfectly integrated. The positive ceofficient on the same-industry indicator shows that MNEs based outside the EU are actually more likely to have subsidiaries producing the MNE's main output for tradable activities.[21]

Columns 3 and 4 shows that this evidence consistent with value chain fragmentation exists for MNEs whose subsidiaries produced tradable output for both MNEs based in Western and Eastern EU countries. Both interaction terms in these specifications have large negative coefficients.[22] If subsidiaries are producing the same output as their parent firms, this output is much less likely to be tradable than is case for non-EU-based MNEs.

[20] The results are qualitatively similar when S_{ij} is defined as the headquarters and subsidiary being in the same two-digit primary activity rather than in the same four-digit primary activity.

[21] A large related literature examines how the internal structure of MNEs reflects differences in resources and activities of the constituent parts of the organization (see Ghoshal and Nohria (1989) and related papers). It is likely that variation in structures across subsidiaries within an MNE reflect how different subsidiaries further the MNEs international strategy.

[22] The linear coefficients for subsidiaries producing the same output as their parent are 0.45, 0.37, and 0.53, for Western EU MNEs, Eastern EU MNEs, and MNEs based outside the EU, respectively. For subsidiaries producing different output, the linear coefficients are 0.55, 0.42, and 0.52.

Table 6: Tradable subsidiary output, by MNE home location, Same Output.

	(1) Tradable	(2) Tradable	(3) Tradable	(4) Tradable
EU-based MNE	0.024**	0.021*		
	(0.011)	(0.011)		
Same output as parent	0.098***	0.099***	0.099***	0.100***
	(0.025)	(0.025)	(0.025)	(0.025)
Same output as parent and EU-based MNE	-0.195***	-0.199***		
	(0.030)	(0.030)		
Western EU-based MNE			0.033***	0.030***
			(0.011)	(0.011)
Same output as parent and West. EU-based MNE			-0.195***	-0.199***
			(0.030)	(0.030)
Eastern EU-based MNE			-0.102***	-0.102***
			(0.022)	(0.022)
Same output as parent and East.EU-based MNE			-0.140***	-0.146***
			(0.050)	(0.050)
Constant	0.520***	0.522***	0.520***	0.522***
	(0.010)	(0.010)	(0.010)	(0.010)
Observations	13482	13482	13482	13482
Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.017	0.020	0.020	0.024

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6 Discussion and Conclusion

The analysis in this paper compares MNE investment strategies in the CEE region for MNEs based within and outside the EU. The objective is to use the variation in the activity of the subsidiaries and in the home base of the MNE to infer the predominant motive for investing in the region, distinguishing between motives based on overcoming differences at country borders and motives based on exploiting these differences (Ghemawat (2003)).

The central logic of the approach is based on the fact that investment is an alternative way to access local consumers rather than accessing them via exports, but exports from a country enable MNEs to fragment their supply chains by investing to locate stages of production in low-wage countries. This fact is combined with the observation that the degree of substitutability or complementarity between investment and trade is heightened for MNEs with existing production facilities in nearby countries, which lowers the trade costs associated with either motive for international expansion whenever output is tradable.

Data on the stock of investments and also on the flow of investment in the decade since the financial crises suggest that MNEs invest in the CEE primarily to access factor markets. EU-based MNEs are more likely than non-EU based MNEs to make investments in subsidiaries that produce traded output—in a manufacturing or wholesale trade activity. The difference is particularly stark for MNEs based in a Western EU country, where labor costs tend to be much higher than in the CEE region. This is consistent with trade and investment being particularly complementary for the EU-based MNEs that comprise the majority of MNEs with subsidiaries in the region.

Several further descriptive analyses offer some further insight into how MNEs invest to access CEE factor markets. Producing tradable output is relatively more prevalent in countries that border Western Europe, where trade costs with the rest of the EU are lower. In addition, the output produced by these Western European MNE subsidiaries is more often a different stage of production than the activities of the parent company, consistent with these MNEs fragmenting their value chains.

A natural next step would be to examine the global subsidiaries of the MNEs investing in the CEE region and map out the locations of the entire value chain for MNEs from different home countries. The hypothesized characterisation of the strategies adopted by manufacturing MNEs from outside the EU relates to the export platform strategy described in Hanson et al. (2001) and Ekholm et al. (2007). These firms appear to be adopting a regional strategy, and it would be interesting to investigate whether their subsidiaries' activities in the region, when considered together, replicate the set of activities undertaken in other global regions.

The findings in this paper align with descriptions elsewhere of how the German manufacturing sector made increased use of trade integration with Eastern Europe by importing a larger share of inputs in the years up to 2007 (Dustmann et al. (2014)).[23] The results shown here are consistent with the idea that MNEs in Western EU as a whole, and not just in Germany, have adopted similar international strategies in the CEE region. While the empirical analysis in the paper is purely descriptive, evaluating data on MNE activities in the CEE region from the perspective set out in Ghemawat (2003) and subsequent work therefore helps explain the motives behind the huge inflow of FDI into the region in recent decades.

[23] A New York Times article on March 16, 2015 commented: "The former communist countries that joined the European Union in 2004 and 2007 have become the extended production line of German industry, no longer just supplying raw material and components but assembling cars and some industrial machinery."

References

Alessandrini, S. (2000). The eu foreign direct investments in central and eastern europe. A. Giuffre, Milano.

Antràs, P. and S. R. Yeaple (2014). Multinational firms and the structure of international trade. In Handbook of International Economics, Volume 4, pp. 55–130. Elsevier.

Bartlett, C. A. and S. Ghoshal (2002). Managing across borders: The transnational solution. Harvard Business Press.

Bevan, A. A. and S. Estrin (2004). The determinants of foreign direct investment into european transition economies. Journal of Comparative Economics 32(4), 775–787.

Blonigen, B. A. (2001). In search of substitution between foreign production and exports. Journal of international economics 53(1), 81–104.

Broner, F., T. Didier, A. Erce, and S. Schmuckler (2013). Gross capital flows: Dynamics and crises. Journal of Monetary Economics 60(1).

Buckley, P. J. and M. Casson (1976). A long-run theory of the multinational enterprise. In The future of the multinational enterprise, pp. 32–65. Springer.

Caliendo, L. and F. Parro (2015). Estimates of the trade and welfare effects of nafta. The Review of Economic Studies 82(1), 1–44.

Carstensen, K. and F. Toubal (2004). Foreign direct investment in central and eastern european countries: a dynamic panel analysis. Journal of Comparative Economics 32(1), 3–22.

Caves, R. E. (1996). Multinational enterprise and economic analysis. Cambridge university press.

Curran, L. and S. Zignago (2011). Intermediate products and the regionalization of trade. Multinational business review.

Damijan, J., Č. Kostevc, and M. Rojec (2015). Growing lemons or cherries? pre and post-acquisition performance of foreign-acquired firms in new eu member states. The world economy 38(4), 751–772.

Dustmann, C., B. Fitzenberger, U. Schönberg, and A. Spitz-Oener (2014). From sick man of europe to economic superstar: Germany's resurgent economy. Journal of Economic Perspectives 28(1), 167–88.

Ekholm, K., R. Forslid, and J. R. Markusen (2007). Export-platform foreign direct investment. Journal of the European Economic Association 5(4), 776–795.

Fontagné, L. (1999). Foreign direct investment and international trade: Complements or substitutes: Sont-ils complémentaires ou substituables?

Ghemawat, P. (2003). Semiglobalization and international business strategy. Journal of international business studies 34(2), 138–152.

Ghemawat, P. (2007). Redefining global strategy: Crossing borders in a world where differences still matter. Harvard Business Press.

Ghoshal, S. and N. Nohria (1989). Internal differentiation within multinational corporations. Strategic management journal 10(4), 323–337.

Gorynia, M., J. Nowak, and R. Wolniak (2007). Poland and its investment development path. Eastern European Economics 45(2), 52–74.

Hanson, G. H., R. J. Mataloni, M. J. Slaughter, R. Z. Lawrence, and J. Levinsohn (2001). Expansion strategies of us multinational firms [with comments and discussion]. In Brookings Trade Forum, pp. 245–294.

Hoftijzer, M. and L. Gortazar (2018). Skills and Europe's Labor Market: How Technological Change and Other Drivers of Skill Demand and Supply are Shaping Europe's Labor Market. World Bank.

IMF (2018). World economic outlook database. Washington DC: International Monetary Fund.

Klimek, A. (2011). Greenfield foreign direct investment versus cross-border mergers and acquisitions: the evidence of multinational firms from emerging countries. Eastern European Economics 49(6), 60–73.

Krugman, P., R. N. Cooper, and T. Srinivasan (1995). Growing world trade: causes and consequences. Brookings papers on economic activity 1995(1), 327–377.

Lipsey, R. E. (2007). Measuring the impacts of fdi in central and eastern europe. Foreign Direct Investment in Europe: A Changing Landscape, 37.

Martínez, V., M. Bengoa, and B. Sánchez-Robles (2012). Foreign direct investment and trade: Complements or substitutes? empirical evidence for the european union.

Nocke, V. and S. Yeaple (2007). Cross-border mergers and acquisitions vs. greenfield foreign direct investment: The role of firm heterogeneity. Journal of International Economics 72(2), 336–365.

Slangen, A. and J.-F. Hennart (2007). Greenfield or acquisition entry: A review of the empirical foreign establishment mode literature. Journal of international management 13(4), 403–429.

Thomas, C. and A. B. Bernard (2019). Multinational firms' market entry and expansion, with evidence from eastern europe.

UNCTAD (2013). World investment report 2013: Global value chains: Investment and trade for development. UN.