Modes of Delivery in Services *

Elisabeth Christen
Johannes Kepler Universität Linz

Joseph Francois
Johannes Kepler Universität Linz and CEPR

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Abstract

By definition, services are a flow and not a stock. As a consequence, direct proximity and interaction between supplier and consumer is more important than is the case with goods, meaning FDI also plays a different mix of roles than in manufacturing sectors. In this paper we focus on the relative importance of direct cross-border trade and indirect sales through local establishments, developing and exploiting a data set that merges information from a number of sources on sector level U.S. inward and outward sales. Our results provide insight into sector-level variation in modes of entry (sales through foreign affiliate and cross-border sales), including the impact of standard measures of economic distance and relative stocks of human capital. We examine the determinants of entry modes and contrast services with manufacturing sectors to assess whether motives for affiliate activity are based on the same determinants. In contrasts with FDI in manufacturing, overseas multinational activity in services increases relative to direct exports the further away are host countries, the lower are investment barriers and the bigger are markets. Common language familiarities and manufacturing FDI foster affiliate activity additionally. The impact of factors like corporate tax rates and relative stocks of human capital on modes of service delivery varies across sectors, indicating the heterogeneous nature of services across sectors. For manufacturing sectors, the impact of the determinants of modes of entry significantly differ from our results found in service sectors, mainly with respect to distance. The evidence on interdependence across modes and the importance of local affiliates implies that the impact of policy in any one mode is likely to depend on the mix of domestic regulation and policy across modes.

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*We would like to thank Eddy Bekkers and the participants of ETSG and the first meeting of GIST for very helpful comments. Address for correspondence: Elisabeth Christen, Johannes Kepler University of Linz, Department of Economics, Altenbergerstr. 69, 4040 Linz, Austria. email: elisabeth.christen@jku.at

1 Introduction

Because by definition services are a flow and not a stock, direct proximity and interaction between user and supplier are more important for trade in services than for trade in goods (Hill, 1997). However, because of technical change, the proximity burden has progressively weakened in recent decades for some (but not all) service activities. This has led both to growth in services trade, and to a nascent empirical and theoretical literature on trade in services (Francois and Hoekman, 2009).

Proximity and jointness in production has important implications for the normative and positive aspects of trade and foreign investment in services. Bhagwati (1984) has emphasized the implications of a decline in the cost of distance, highlighting mechanisms through which services are "disembodied" or "splintered" from goods or people as "carriers." Trade in services may then expand as a result of the incentive to "splinter" the production chain geographically, not just in terms of tangible inputs but also services. The subsequent literature calls this process fragmentation. In both goods and service sectors, fragmentation can lead to basic changes in the structure and pattern of trade, as low-wage activities can be sliced away and outsourced (Francois, 1990; Baldwin and Robert-Nicoud, 2007). However, the significance of underlying proximity constraints for service transactions to be feasible means that "trade" may require a heavier dose of local presence of suppliers in the mix of cross-border and local supplied services than is the case with goods (Fillat-Castejón et al., 2008).[1] The local presence component of services trade may be foreign or domestic. In general, services provision will often have an element of jointness in production, in the sense that complementary inputs - including other services - are needed to allow effective exchange (trade) of a service to occur. This is recognized in the policy community, where the cross-border and local presence (or commercial establishment) components of international service transactions are referred to as modes of supply (Francois and Hoekman, 2009).

Motivated by the recent theoretical literature, there is a large body of empirical research testing different models of multinational activity, with an emphasis on goods trade and investment. In general, the empirical literature seems to find more support for horizontal FDI motives (Brainard, 1997; Carr et al., 2001; Bloningen et al., 2003), although some studies also find evidence for the

[1] Horn and Shy (1996) argue that once account is taken of the fact that many services are also bundled with goods, and that the associated services-input bundle is non-tradable in the sense it must be provided locally, in direct proximity to the consumer/buyer of the goods, the impact of liberalization of trade in goods can be limited because of differences in the prices/costs of the ancillary local services that make up the "product bundle".

vertically integrated multinational firm (Hanson et al., 2001). Due to data limitations, this literature is largely based on aggregate data[2]. The data issues are even more severe for services investment than for goods, placing even more constraints on scope for empirical analysis of services trade and FDI linkages. Indeed, because of data issues the recent literature along these lines uses FDI flows or stocks as a proxy for affiliate sales. For example, Grünfeld and Moxnes (2003) explore the determinants of services trade and foreign affiliate sales (they use FDI stocks as proxy for foreign affiliate sales) in a gravity model, finding that trade barriers and distance have a strong negative impact on exports and FDI (a proxy for foreign affiliate sales), while GDP and similar income levels have a significant positive impact. Kolstad and Villanger (2008) study the determinants of service FDI with panel analysis for the whole service sector and a small number of sub-sectors. They conclude that FDI in services tends to be more market seeking and find strong correlation between manufacturing FDI and FDI in producer services as well as an important impact of institutional quality and democracy on services FDI. Mirza and Nicoletti (2004) develop an extended gravity model and explore whether services trade differs from trade in goods, but they do not look at FDI and foreign affiliate sales. In addition, Kimura and Lee (2006) and Lennon (2008) explore the differences and complementarities between trade in goods and trade in services, whereby Lennon (2008) uses disaggregated data classified in four IMF BOPS sub-sectors. Fillat-Castejón et al. (2008) examine more service sectors, based on more detailed IMF BOPS categories and stressing long-run linkages, but again using FDI as a proxy for affiliate sales.

In this paper we depart from the recent literature in a number of substantive ways. First, we work directly with a panel of affiliate sales, rather than a FDI proxy. These data allow more sector detail than in the recent literature. With these data, we directly examine the relationship between cross-border sales and multinational affiliate sales as alternative modes of foreign market penetration. In addition, and again in contrast to the recent literature, we directly contrast observed patterns of services trade and affiliate sales with the corresponding patterns of cross-border and affiliate sales for manufacturing firms. We focus on the relative importance of direct cross-border trade and indirect sales through local establishments, developing and exploiting a data set that merges information from a number of sources on sector level U.S. inward and outward sales. Focusing on the U.S. as both a source and destination market provides insight into sector-level variation in modes of entry (foreign affiliate

[2]See for example Bloningen (2005) for a detailed literature review on FDI determinants.

sales and cross-border), including the impact of standard measures of economic distance and relative stocks of human capital. Our results highlight sector-level variation in modes of entry (sales through foreign affiliate and cross-border sales). In contrast with FDI in manufacturing, overseas multinational activity increases relative to direct exports the further away are host countries, the lower are investment barriers and the higher is manufacturing FDI. Common language familiarities and bigger markets foster affiliate activity additionally. The impact of factors like corporate tax rates and relative stocks of human capital on modes of service delivery varies across sectors, indicating the heterogeneous nature of services across sectors and suggesting that the core factors to emphasize in developing a full analytical picture for trade and FDI in services may vary in important ways from the relevant set of factors for goods. In addition, given evidence of interdependence across modes and the importance of local affiliates, the impact of policy in any one mode is likely to depend on the mix of domestic regulation and policy across modes.

We proceed in this paper as follows. In Section 2, we provide an overview of special characteristics of services and patterns of service trade and FDI. Section 3 gives a brief overview of related literature on determinants of entry modes. The next section, section 4, describes the data set in more detail and highlights the motives of becoming multinational. Bilateral data on foreign affiliate sales and unaffiliated and partly affiliated cross-border sales for services as well as manufacturing sectors come from the Bureau of Economic Analysis. We also work with the recent IIDE Trade in Services Database, which offers a panel of bilateral total trade flows by service sector from the 1990s to 2006. Taken together, these data allow us to recover affiliated (intra-firm) services trade by sector for several OECD source and destination markets. Trade data for total manufacturing and seven sub-sectors are drawn from the WITS database. Our estimation strategy and the estimation results for service sectors are discussed in Section 5. We apply a mixture of GLM models, three-stage least squares methods and seemingly unrelated equations to explore the relationship between cross-border and FDI based modes. By using shares of affiliate sales and cross-border sales in total foreign sales our estimates avoid the simultaneity problem between affiliate and cross-border activity. A contrasting study on determinants in manufacturing sectors is presented in Section 6. We offer a brief summary and concluding remarks in Section 7. The appendix provides all details on data and estimation results.

2 Patterns of services trade and FDI

The WTO distinguishes four different modes of supply[3], which have also been adopted for the General Agreement of Trade in Services (GATS):

- *Mode 1 - cross-border trade:* when suppliers of services in one country supply services to consumers in another country without either supplier or consumer moving into the territory of the other
- *Mode 2 - consumption abroad:* process by which a consumer resident in one country moves to another country to obtain a service
- *Mode 3 - commercial presence:* enterprises in an economy supply services internationally through the activities of their foreign affiliates abroad
- *Mode 4 - movement of natural persons:* process by which an individual moves to the country of the consumer in order to provide a service.

Multinationals are obviously important for Mode 3 trade. They are also important for Mode 4 (which includes movement of technical personnel), and Mode 1 (as MNEs also engage in direct exports). The significant role of multinational firms in trade in services is depicted in Table 1 and 2 and will be discussed more below. From Table 1 and 2 it is clear that local presence is an important dimension of trade in services. In recent years the majority of both U.S. international sales and purchases of services was through affiliates (see Figure 1). In contrast to the persistent deficit in goods trade, the United States runs surpluses in trade in services. Over the period 1999-2005, both U.S. cross-border exports and imports increased in all major service categories. The largest increase in cross-border exports and imports was in other private services, mainly reflecting increases in business, professional and technical services.[4] However, the majority of U.S. international services transactions was through foreign affiliate sales, which marked strong sales growth over the period 1999-2005 (Figure 1). The largest increase for sales by U.S. multinationals through their foreign affiliates was attributable to affiliates in finance and in-

[3]This typology for modes was developed by Sampson and Snape (1985) and was largely adopted as a framework for the GATS.

[4]Other private services include education, financial services, insurance, telecommunications, "business, professional and technical services" and "other services". "Business, professional and technical services " (BPT) consist of a variety of services, such as computer and information services, management and consulting services, research and development and testing services, operational leasing and "other BPT services" (for instance legal services, advertising services, accounting services and architectural, engineering and other technical services).

surance services and in "professional, scientific and technical services".[5] Sales by foreign multinationals through U.S. affiliates were largest in finance and professional, scientific and technical services, but have not experienced growth in insurance services. In PST services, the largest increase was attributable to affiliates in computer and information services, management and consulting services as well as in other PST services, including legal services, advertising services and architectural, engineering and other technical services.

Interestingly, in finance services the majority of sales of services is through foreign affiliates, rather than direct cross-border trade, although the availability of online financial services is rising rapidly. This prevailing role of foreign affiliate sales stresses the importance of location of production and proximity constraints regarding the supply of services through multinationals. Data on trade and foreign affiliate sales in insurance services reflect the effects of deregulation. Insurance services have experienced a tremendous increase in outward sales (sales by U.S. multinationals through foreign affiliates) and cross-border trade, while inward sales (sales by foreign multinationals through U.S. affiliates) decreased slightly over the period 1999-2005. However, the dominant role of supply through local establishments can also be seen in insurance services.

Regarding the share of unaffiliated and affiliated trade the dominant role of affiliated trade in business, professional and technical services is apparent. The share of affiliated trade for this sectoral category is much grater than the shares of affiliate trade for other service classes, which illustrates the importance of intra-firm trade in this service category. Trade within multinational companies (affiliate trade) accounted for 25.9 percent of U.S. exports of private services in 2005 and for 22 percent of U.S. imports of private services. In contrast, affiliated trade in business, professional and technical services accounted for 50.1 percent of total exports and for 69.6 percent of total imports in 2005. In addition, data on U.S. cross-border trade and commercial presence support a complementary relationship between local establishments and direct cross-border trade. For the industries included, trade flows and affiliate sales show a positive correlation in both directions, but the correlation is much stronger for outward activities and exports (67.71 percent) than for inward activities and imports (39.71 percent). Over the last decade, both cross-border exports and imports as well as foreign affiliate sales increased significantly and suggest a clear interdependence across modes. Depending on the mix of domestic regulations and FDI policies U.S. multinationals tend to supply foreign markets through local establishments and

[5]Data on foreign affiliate sales are collected separately by BEA, which explains different names. However, "professional, scientific and technical services" (PST) cover the same service industries as in "business, professional and technical services" and are comparable.

via cross-border trade. The determinants of entry modes (commercial presence versus cross-border trade) and patterns of service delivery will be examined more below.

3 Determinants of entry modes

Globalization in services has yielded a set of sectors dominated by multinational companies and high profile investments, as well as a governing institutional structure for service trade (the GATS) that emphasizes multiple delivery modes in the structure of trade negotiations and commitments. This in turn has given rise to emphasis in the empirical literature on the determinants and the relationship between trade and FDI in services. Analytically, the literature on FDI in services is largely guided by the body of empirical evidence and related theoretical literature on patterns of trade and FDI in goods. In some ways, the emphasis of the analytical literature is on factors that should apply to both goods and services sectors. However, given the greater role of proximity and coordination costs between provider and buyer, we can also expect important differences to emerge as the literature on services matures.

From a theoretical point of view, building on the OLI framework[6] two main sets of explanations are used with respect to the activities of multinational goods firms. According to the proximity-concentration hypotheses or horizontal FDI strategy, firms' decisions to become multinational are motivated by better access to foreign destination markets at the expense of production scale economies (Horstmann and Markusen, 1992; Brainard, 1993). An important element of access in this context is the ability of local plants to avoid transport costs, tariffs, and related costs following from operating with plants located outside the destination or target market. Hence, firms are faced with the decision of producing at home and exporting goods to foreign markets with variable distance costs or establishing a local plant in the host market that involves additional fixed costs. Firms establish affiliates abroad in order to move closer to customers and achieve gains from better market access and reduced trade costs. There may be an offsetting factor, where firms are producing specialized intermediate goods feeding into integrated production processes (like in the motor vehicle sector and its requirements for just in time delivery). In this case, distance then implies greater coordination costs, so that firms may be

[6]Dunning (1977, 1979) developed the eclectic paradigm of FDI, combining the reasons (advantages) for firm to act internationally and the modes of entry. In the theory of multinational firms, FDI is explained by three types of advantages: ownership, location and internalization advantages (OLI-framework).

more likely to invest in markets close to home. Indeed, FDI in a number of sectors (like transport equipment) reflects this second aspect of distance.

A second strand of the literature explains vertical expansion abroad motivated by factor proportion differences. This factor-proportions hypothesis (Helpman, 1984; Helpman and Krugman, 1985) explains the fragmentation of production as following from differences in factor endowments and resulting factor price differentials. Hence, firms outsource certain stages of production to foreign countries in order to gain from factor price differences and reduced overall production costs. An integrated approach of the two streams - the factor-proportions model and the proximity-concentration model - is the knowledge capital model (Markusen et al., 1996; Markusen, 1997, 2002). According to the knowledge-capital model, different types of firms, following different delivery strategies, can co-exist. Firms decide whether it is profitable to become vertically integrated, or horizontally integrated, or stay as a domestic firm producing solely in the home market and serving foreign markets through exports. Different driving forces for the decision of firms to become multinational - horizontal and vertical FDI motives - or to serve markets through exports therefore predict that firms will react differently to certain country characteristics such as market size, distance between markets and market structure depending on the delivery mode they have chosen.

More recently, the theoretical literature on multinational firms highlights heterogeneity with respect to important characteristics such as productivity (Melitz, 2003; Helpman et al., 2004). According to the model by Helpman et al. (2004), the decision of firms to become multinational depends on their productivity. Thus, setting up an affiliate in foreign countries only pays for the most productive firms. Firms with intermediate levels of productivity serve foreign markets through exports, while low-productivity firms produce only for the home market. It is important to note that the coexistence of firms operating through different modes of delivery is not limited to models of cost heterogeneity. Markusen (2002), for example, demonstrates that a mixture of MNEs and exporting firms can coexist under imperfect competition without heterogeneity, depending on relative endowments and trade costs.

For service firms, there are parallels to the proximity mechanisms stressed in the literature and outlined above for goods. Because of what we call the proximity burden, we can expect increased costs linked to the coordination between provider and customer as the distance increases from the firm to its customers. To the extent this holds true, increased distance may then provide increased incentive to engage in FDI instead of cross-border trade in services, much as

transport costs may encourage FDI in goods. Similarly, to the extent such FDI involves fixed costs, large markets offer a better opportunity to spread fixed costs linked to FDI, so that size may play a role in the balance between cross-border and establishment based trade. At the same time, the knowledge capital model implies that, for some sectors, the choice between local establishment and direct trade may also be linked to risk of appropriation of firm-specific assets like business models (where the risk is linked to skill levels and institutional features of the market). In addition, if service firms are selling locally with a mix of locally produced and home produced inputs, FDI restrictions are also likely to affect the relative patterns of affiliate and direct sales.

4 Data

For the purpose of this paper we work with a multi-sourced data set on sector level U.S. exports and imports. Bilateral data on foreign affiliate sales as well as unaffiliated and partly affiliated cross-border sales come from the Bureau of Economic Analysis. Cross-border transactions include both affiliated and unaffiliated transactions between U.S. companies and foreign residents. Affiliated cross-border trade indicates intra-firm trade within multinational companies and consists of trade between U.S. parent companies and their foreign affiliates and transactions between U.S. affiliates and their foreign parent groups. In order to describe Mode 3, commercial presence, we make use of U.S. Foreign Affiliates Trade Statistics (FATS) published by BEA, which illustrates the importance of services in affiliate activities. These data are drawn from benchmark and annual sample surveys of U.S. direct investment abroad and of foreign investment in the United States. By using the FATS data we gather information on sales of services by majority-owned foreign affiliates and on sales of majority-owned U.S. affiliates. One advantage of this data is that it has been classified by destination of sales through affiliates. However, data on sales through affiliates are published by primary industry of the affiliate and not by type of service which asks for reclassification. Our dataset on foreign affiliates sales finally covers 13 service sectors over the years 1997 to 2005. In addition, we also work with the recent IIDE Trade in Services Database, which offers a panel of bilateral total trade flows by sector from the 1990s to 2006. Taken together, these data allow us to recover affiliated (intra-firm) services trade by sector for several OECD source and destination markets. Data on foreign affiliate sales in manufacturing sectors are also taken from the BEA's publications. Additionally, trade data for total manufacturing and seven sub-sectors are drawn from the WITS database. The final dataset includes bilateral U.S. trade and foreign

affiliate sales for 10 partner countries in total. They include: Australia, Brazil, Canada, France, Germany, Japan, Mexico, The Netherlands, Switzerland and the United Kingdom. Detailed statistics on the data are offered in the appendix.

To identify the determinants of entry modes we use several explanatory variables suggested by the recent theoretical and empirical literature. The size of the host country markets are captured through GDP (measured in current U.S. dollars). According to previous literature, market size is expected to have a positive impact on services trade and foreign affiliate sales. GDP, income and population data are taken from the World Development Indicators database. In addition, we employ a similarity index for per capita income to proxy for skill and human capital differences. The similarity index ranges from 0 to 1, whereby a higher score means a higher degree of per-capita income similarity, implying a similar per capita stock of skills and human capital. The similarity index is used to help identify whether multinational activity is motivated by horizontal FDI strategies (trading partner are more similar) or vertical FDI strategies (trading partner are dissimilar in their factor endowments and factor prices). Hence, a positive coefficient on the similarity index can be interpreted in favor of horizontal FDI motives. In addition, per capita income inequalities can also be used to test for the convergence hypothesis (Markusen, 1995; Markusen and Venables, 1998) which suggests that multinational firms become more important relative to domestic firms the more similar are countries in size and endowments. Next, to reflect the proximity burden, we include geographic distance[7] between the United States and the respective partner countries as a proxy for transportation costs (variable distance costs). Hence, we expect a positive coefficient on geographic distance if local establishment sales and cross-border trade act as substitutes (supporting the horizontal FDI model), since variable distance cost make cross-border trade more expensive so that affiliates in the host country could pay for firms. A negative coefficient on distance indicates a complementary relationship between trade and foreign affiliate sales and supports the vertical FDI model. In order to capture some cultural influences we include a language dummy, which indicates if home and host country share a common language familiarity and generally share the same cultural heritage. Since a common language plays an important role in services trade we expect a positive coefficient on language, fostering the establishment of affiliates in the host market to a greater extent than cross-border trade. Geographic distance,

[7]Geographic distance is calculated following the great circle formula, which uses latitudes and longitudes of the relevant capital cities.

together with data on cultural familiarity are taken from Mayer and Zignago (2006)[8].

All determinants of affiliate activity described so far, such as market size, geographic distance to trade partners, and to a lesser extent economic development and education levels, are beyond the influence of trade policy. Nevertheless, economic and trade policies are used to influence the activities of multinational firms through various channels (Blomström and Kokko, 2003), and so these need to be accounted for in the economic analysis. To capture the impact of FDI and trade policies on multinational activity we include several indices designed to quantify the underlying trade and investment climate of host and source markets. We include the measures of the OECD's FDI Regulatory Restrictiveness Index[9]. The index captures deviations from national treatment in order to identify discrimination against foreign investment and is measured on a 0-to-1 scale, with 0 representing full openness and 1 prohibition. Hence, we expect a negative coefficient on the FDI regulatory restrictiveness index. The advantage of the OECD's FDI restrictiveness index is that it displays sector-specific levels of restrictiveness and covers important main sectors and several sub-sectors. In addition, we make use of the Heritage Foundation index of economic freedom which comprises 10 components of economic freedom, such as trade freedom and investment freedom as well as an averaged overall score. The indices are scaled from 0 to 100, with 100 indicating the highest level of freedom. Hence, we expect a positive coefficient on this variable. The Heritage Foundation index does not account for sectoral freedom differences and is therefore only used for sensitivity analysis. In addition to indices displaying the investment and trade climate, we include the destination-market corporate income tax rate for obvious reasons regarding location decisions according to tax rate advantages. Central and sub-central corporate income tax rates are taken from the OECD's tax database[10] and KPMG's Corporate and Indirect tax rate Survey 2007[11]. The establishment of local affiliates should be preferred towards cross-border trade the lower is the corporate tax rate in the destination market relative to the home market, since affiliate profits are taxed at the foreign tax rate while cross-border trade profits are taxed at the home-market rate. Additionally, we introduce dummy variables for member countries of the European Union and NAFTA to capture the effects of integrated markets and free trade agreements. Furthermore, to address the discussion on fragmentation

[8] http://www.cepii.com/anglaisgraph/bdd/distances.htm
[9] http://www.oecd.org/dataoecd/1/40/40476272.pdf
[10] http://www.oecd.org/ctp/taxdatabase
[11] http://www.kpmg.com/SiteCollectionDocuments/2007CorporateandIndirectTaxRateSurvey.pdf

and the increased importance of traded services in the fragmentation process we include manufacturing FDI[12] in our empirical analysis. This allows us to study the role of services as inputs in the manufacturing process and accounts for indirect exports of services. Thus, we expect a positive relationship between manufacturing FDI and affiliate activity. In addition, given the linkage between manufacturing and services trade, both FDI streams are influenced by investment regulation and policies across modes which needs to be considered in the actual policy environment.

5 Simultaneity across modes

Because of the need to consider different modes of supply, the availability of services and the relationship between different modes, international service transactions are more complex to analyze than goods transactions. Apart from this it makes little sense to speak generically about 'the service sector' since different service sectors have different properties and require different modes of supply. In order to give a better understanding of the interactions between various modes we study the linkages between cross-border trade and local sales of services through affiliates at a sectoral level - distinguishing between 13 major service categories. Our empirical results therefore provide insight into sector-level variation in modes of entry (foreign affiliate sales and cross-border). We employ a mixture of GLM models, three-stage least squares methods and seemingly unrelated equations to explore the relationship between cross-border and FDI based modes. In order to avoid simultaneity problems between affiliate activity and cross-border trade we use shares of affiliate sales and cross-border sales in total foreign sales as dependent variables. Distinguishing between inward and outward activities our empirical analysis is based on the following two shares first introduced by Brainard (1993, 1997):

- *Outward affiliate sales share:* Share of outward affiliate sales in total outward sales
- *Inward affiliate sales share:* Share of inward affiliate sales in total inward sales

In order to examine the impact and importance of various determinants and motives of different entry modes we focus on the set of explanatory variables introduced above. The advantage of our panel set of data at sectoral level is

[12] Data on manufacturing FDI are taken from the Bureau of Economic Analysis and comprise FDI in the United States and U.S. direct investment positions abroad.

threefold. It allows us to study the allocation of multinational activity across countries, across time and also between sectors. We perform different empirical specifications to analyze the determinants of entry modes in services trade. We begin by estimating the outward and inward side, using standard specifications. Subsequently, we account for the relationship between total sales and the share of affiliate sales by estimating the entry mode equations jointly using seemingly unrelated regression specification.

5.1 Preliminaries

Before we turn to the relationship between trade across the border and producing abroad, we discuss the basic gravity type patterns for levels of cross-border and affiliate sales. In its original formulation, the gravity model originally predicted bilateral trade flows as a function of distance between any two countries and their size. The approach has been widely applied in international trade literature. Recently, the original model specification (Tinbergen, 1962) has been augmented by the inclusion of additional variables which are thought to effect trade flows, such as dummy variables for language familiarities, trade barriers or historical linkages between the countries. In addition, better controls have been introduced for country-specific factors in the standard model of bilateral flows (Baldwin and Taglioni, 2006; Feenstra, 2002). Since trade flows between countries change over time, the empirical estimation of gravity models is increasingly conducted using panel data specifications which is also used in this paper. To assess the gravity type patterns of direct cross-border trade and affiliate sales we use an augmented standard gravity model, which can be written as

$$lnTrade_{it}^{j} = \alpha_0 + \beta_{\mathbf{1}}\mathbf{X_{it}} + \beta_{\mathbf{2}}\mathbf{X_i} + \beta_{\mathbf{3}}\mathbf{X_{ij}} + \varepsilon_{it}^{j}, \tag{1}$$

where i, t and j index countries, time and service sectors. The dependent variable $Trade_{it}^{j}$ represents either direct cross-border trade volumes (exports or imports) or affiliate sales (outward or inward affiliate sales). While vector $\mathbf{X_{it}}$ represents time-varying explanatory variables for country i (GDP, similarity index, tax rates, freedom indices, etc.), vector $\mathbf{X_i}$ comprises time invariant explanatory variables for country i (distance, common language). Vector $\mathbf{X_{ij}}$ displays sector-varying explanatory variables for country i, like the FDI restrictiveness index. Concerning the interpretation of the results it is important to note that the gravity equations for outward flows and inward flows differ. While the outward gravity equation depicts how characteristics of the host markets effect the volume of trade flows, given that the home market is the United States, the inward equations display how characteristics of the source country

influence the volume of trade, given that the destination market is the United States. We apply a system of simultaneous system estimations, in which exports and affiliate sales are treated as endogenous. Table (4) reports the patterns for levels of outward affiliate sales and cross-border exports, applying three-stage least squares (3SLS) methods. As hypothesized before, increased distance between suppliers and consumers makes exports less attractive and leads to more affiliate activity, while exports decrease with increasing variable distance cost. The coefficient of the restrictiveness index has the predicted negative sign. Affiliate activity decreases the higher are FDI flow restrictions and U.S. multinationals serve foreign markets through exports if discriminatory barriers are high. Moreover, the United States tend to export more the bigger are host markets. Interestingly, the impact of the endogenous variables affiliate sales and exports are both positive, indicating a complementary relationship between cross-border exports and commercial presence. In addition, our results suggest a positive relationship between manufacturing FDI and affiliate sales for some service sectors. Moreover, a common language just seems to be important for some service sectors, like telecommunication, finance, insurance and R&D services. The other gravity variables such as the corporate tax rate or the similarity index vary across sectors, indicating the heterogenous nature of services.

Turning to the inward gravity equations we consider that patterns of cross-border imports and affiliate sales depict the characteristics of the home market. Table (5) reports the gravity estimation results applying 3SLS estimation procedures. We find a consistent negative impact of the distance variable on imports, indicating that imports decrease with increasing variable distance cost. The impact of distance on affiliate sales is ambiguous and varies by sector. Common language familiarities seem to have an important impact on inward affiliate sales and imports to the United States. Moreover, our gravity pattern suggest that inward affiliate sales increase the bigger is the home market (except for insurance and financial services), indicating that bigger home markets tend to import more to the United States. However, no clear conlusion can be drawn from the restrictiveness index. Again, the coefficient on manufacturing FDI supports linkages between investment in manufacturing and service sectors.
The basic gravity type patterns of cross-border and affiliate sales highlight the importance of factors like distance, market size, manufacturing FDI and discriminatory barriers for affiliate sales. Since direct cross-border trade and affiliates sales may act as alternative modes of foreign market penetration, we examine the impact of distance, FDI restrictions, language familiarity, skill

and human capital differences, FDI in manufacturing and additional factors in determining the motive of overseas production relative to direct cross-border sales.

5.2 Outward Shares

Given that the United States is always the home market, outward shares analyze how characteristics of the destination markets determine the choice between exporting and affiliate sales. The baseline econometric model can be written as

$$OUTSH_{it}^{j} = \alpha_0 + \beta_1 \mathbf{X_{it}} + \beta_2 \mathbf{X_i} + \beta_3 \mathbf{X_{ij}} + \upsilon_{it}^{j}, \tag{2}$$

where i, t and j index countries, time and service sectors. While vector $\mathbf{X_{it}}$ represents time-varying explanatory variables for country i (GDP, similarity index, tax rates, freedom indices, etc.), vector $\mathbf{X_i}$ comprises time invariant explanatory variables for country i (distance, common language). Vector $\mathbf{X_{ij}}$ displays sector-varying explanatory variables for country i, like the FDI restrictiveness index. υ_{it}^{j} represents the respective error term. As proposed by Papke and Wooldridge (1996) we use GLM-based estimators as preferred econometric approach. As a measure of robustness of the results we also use the share of exports in total outward sales as dependent variable. Table (6) reports the results using OUTSH, the share of outward affiliates sales in total outward sales, as dependent variable applying GLM estimation approaches. We find a very consistent positive impact of distance on the likelihood of U.S. firms to establish affiliates in foreign countries across all service categories. The results suggest that proximity between consumers and suppliers of services is still needed or desired, so that multinational activity relative to exports increases the further away are destination markets. The impact of FDI restrictions on the share of outward affiliate sales is mainly negative, indicating that discriminatory barriers have a strong interfering aspect on affiliate sales. The coefficient of the common language variable shows generally the expected sign, although our results support sector level differences. In addition, regarding characteristics between the United States as the home market and various destination markets the coefficients on the similarity index show up differences between sectors. While we stated above that vertical FDI mainly takes place between countries which are dissimilar in their factor endowments and horizontal FDI takes place between similar countries, the results are ambiguous and once again point out that services differ across sectors.

In a first step, we estimated equation (2) alone using GLM specifications. In a second step, we also test for linkages between total outward sales (affiliate

sales+cross border sales) and the outward affiliate sales share. Consequently, we estimate both influencing variables jointly using the seemingly unrelated regression (SUR) procedure. Since both variables - total sales and FDI intensity - are influenced by the same determinants, the residuals of both single equations might contain some information of omitted variables. By imposing a joint variance covariance structure SUR takes contemporaneous correlations into account. Table (7) reports results from the baseline equation using SUR estimation. Applying SUR supports the results found in the base equation and related literature. Again, our results show a consistent strong impact of distance, discriminatory barriers and language familiarities on total sales and affiliate sales. Moreover, the coefficient on manufacturing FDI supports the previous findings in related literature that manufacturing FDI is intertwined with trade in services, since services are used as inputs in the manufacturing process.

5.3 Inward Shares

Turning to imports and foreign multinational activity in the United States it is important to note that equation regarding the inward share is not equivalent to the equation depicting the outward share. In particular, while the outward equation explains how characteristics of the host markets determine the choice between exporting and local presence abroad, given that the home market is the United States, the inward equation displays how characteristics of the source country influence the mode of entry, given that the destination market is the United States. The baseline econometric model can be written as

$$INSH_{it}^{j} = \alpha_0 + \beta_{\mathbf{1}}\mathbf{X_{it}} + \beta_{\mathbf{2}}\mathbf{X_i} + \beta_{\mathbf{3}}\mathbf{X_{ij}} + \psi_{it}^{j}, \tag{3}$$

where i, t and j index countries, time and service sectors. While vector $\mathbf{X_{it}}$ represents time-varying explanatory variables for country i (GDP, similarity index, tax rates, freedom indices, etc.), vector $\mathbf{X_i}$ comprises time invariant explanatory variables for country i (distance, common language). Vector $\mathbf{X_{ij}}$ displays sector-varying explanatory variables for country i, like the FDI restrictiveness index. ψ_{it}^{j} represents the respective error term. Similar to the outward equation we apply GLM estimation procedures and use the share of imports as alternative in order to check for the robustness of the results. Estimates on the share of inward affiliate sales in total inward sales are reported in Table (8). The impact of distance on the share of inward affiliate sales is ambiguous and varies by sector. While some sectors, such as financial, information, business and R&D

services, show a significant positive effect, the FDI intensity decreases with increasing distance in other sectors, like computer, education and legal services. We find a consistent positive impact of the language dummy, indicating the enhancing impact of a common cultural heritage on affiliate sales. Moreover, it seems that bigger markets and manufacturing FDI offer a better opportunity to undertake FDI in services in the United States. The impact of the restrictiveness index on affiliate sales remains ambiguous. In the same way, our results on the impact of tax rate differences as well as the similarity index do not allow a clear interpretation of the results.
Going one step further we reestimate the base equation (3) together with total inward sales (affiliate sales+cross border sales) in a SUR system to account for linkages between total inward sales and the inward affiliate sales share. The results on the SUR estimation are presented in Table (9). We find similar results as in the baseline estimation, indicating the importance of distance, FDI restrictions, manufacturing FDI and language familiarities for affiliate activity.

6 Comparison to the manufacturing sectors

Fragmentation of production processes in order to increase efficiency and profits has accelerated in manufacturing sectors over the last decade. Technological changes as well as trade and investment liberalization foster this fragmentation process, which is characterized by increasing complexity and international orientation. Since services are increasingly used in manufacturing processes - as intermediate inputs but also as stand-alone production components - the intertwined linkage between services trade and manufacturing is apparent. Including manufacturing FDI in our regressions, we find a positive effect of manufacturing FDI on affiliate activity for some service sectors in inward and outward sales. Our results support the results on manufacturing and services linkages previously found in the economic literature (Francois and Woerz, 2007; Gage and Lesher, 2005). Going one step further, we aim at identifying whether motives for investing abroad are similar between manufacturing and service sectors. Although there exists a growing literature analyzing the determinants of FDI empirically, mainly based on aggregate data, but there also some studies focusing on the determinants of services FDI, little attention is paid to the issue of contrasting manufacturing and service sectors. Riedl (2008) contrasts the dynamic patterns of manufacturing and service FDI in transition countries using the data from the WIIW database on Foreign Direct Investment. She finds that investment in services adjust much faster to its desired level than manufacturing FDI.

Our analysis here addresses the open question by examining the motives for going abroad in total manufacturing, as well as seven sub-sectors. By applying the same econometric specifications we will then compare our results on the determinants in manufacturing sectors to our results on the motives for affiliate activity in service sectors, which are discussed in section 5. Accordingly to the unique characteristics of services, which require the proximity between supplier and consumer, we find a consistent positive impact of distance on inward and outward affiliate sales. In contrast, we expect manufacturing FDI to take place between countries located next to each other, in order to guarantee proximity to large markets and to exploit agglomeration advantages. Moreover, manufacturing services are likely to be affected by efficiency motives, rather than market-seeking motives hypothesized for FDI in service sectors.

In order to examine the motives for affiliate activity in manufacturing sectors we perform similar estimation procedures as discussed above. Hence, we use the share of outward affiliate sales in total outward sales and the share of inward affiliate sales in total inward sales and apply GLM specifications. The estimation results for the outward affiliate sales share in manufacturing sectors based on equation (2) are presented in Table (10). Table (10) shows the reversed impact of distance on affiliate activity and cross-border trade in manufacturing services. In contrast to our results found in service sectors, affiliate sales decrease the further away are host countries, while direct exports increase with distance. These results are consistent across all manufacturing sectors with significant impacts of the distance variable, except for the food sub-sector. In the case of market size, proxied by GDP, we observe a significant positive impact on affiliate activity of the proximity to large markets hypothesis. Our results support the idea and also previous findings, that manufacturing FDI is positively and significantly affected by market size. To test whether manufacturing FDI is driven by horizontal FDI motives or vertical FDI motives, we find a consistent negative impact on manufacturing FDI. Thus, we find evidence in favor of vertical FDI motives for manufacturing sectors. Furthermore, the estimation results for the share of outward affiliate sales in manufacturing sectors suggest a positive impact of language familiarity on affiliate activity, indicating that a common language heritage fosters affiliate activity significantly in 5 out of 8 manufacturing sectors. The impact of FDI restrictions shows the predicted negative sign, except for the computer sector. However, manufacturing sectors are relatively less restricted. Using the Heritage Foundation index instead, we find a significantly positive impact of the investment climate on affiliate sales.

Turning to the inward side it is important to note that specifications regarding the inward shares are not equivalent to the specification for the outward shares. The inward shares display the characteristics of the home market, given that the United Sates is the destination market. Table (11) reports the estimation results, based on equation (3) applying GLM specifications. The estimation results for the inward share shows similar decisive motives for affiliate activities, as found for the outward share. Looking at the distance variable, the importance of proximity to host countries is apparent. Thus, affiliate activity decreases the further away are the United States as host market. Moreover, affiliate activity is more likely the larger is the market size of the home country. Moreover, we find a strong negative impact of FDI restrictions in the respective home country on foreign direct investment in the United States. Again, we use the Heritage Foundation index and the coefficient on the investment freedom index of the home market suggests that a less restricted investment climate allows more affiliate activity in the United States.

7 Conclusions

In this paper we have focused on the relationship between direct cross-border trade and indirect sales through affiliates as alternative modes of services delivery. Recent empirical analysis are based on aggregate data and use FDI as a proxy for affiliate activity. In contrast, we directly work with a panel of affiliate sales which allows for sector-level variation in modes of entry. In addition, and again in contrast to recent literature, we contrast observed patterns in services trade and affiliate sales with the corresponding patterns of cross-border and affiliate sales in manufacturing firms. The importance of proximity between supplier and consumer, what we call the proximity burden, appears fairly robust in explaining the increased affiliate activity relative to cross-border sales the further away are destination markets. We find that overseas multinational activity in services increases relative to direct exports the further away are host countries, the lower are investment barriers and the higher is manufacturing FDI. Common language familiarities and bigger markets foster affiliate activity additionally. The impact of factors like corporate tax rates and relative stocks of human capital on modes of service delivery varies across sectors, indicating the heterogeneous nature of services and suggesting that the core factors to emphasize in developing a full analytical picture for trade and FDI in services may vary in important ways from the relevant set of factors for goods. For manufacturing firms, the impact of the key factors significantly differs from our

results found in service sectors, mainly with respect to distance. The share of total manufacturing sales accounted for by affiliate sales decreases with distance, indicating that FDI in services varies in many respects from the relevant set of factors in goods. In general, our results suggest that market size plays an important role in order to spread fixed costs linked to the establishment of a local presence in services sectors as well as manufacturing sectors.

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A Appendix

Table 1: Sales through Affiliates

Sales of services		
to foreign persons by U.S. MNCs through their foreign affiliates		
All countries	1999	2005
Total private services	353,207	528,481
Education	n.a.	n.a.
Financial services	31,641	42,912
Insurance services	52,855	94,438
Telecommunications	n.a.	21,483
Professional, scientific and technical services	63,898	95,412
Computer and information services	14,708	n.a.
Management and consulting services	n.a.	12,405
Research and development	n.a.	3,600
Architectural, engineering and other technical services	11,939	12,059
Legal services	821	2,402
Advertising	n.a.	10,080
to U.S. persons by foreign MNCs through their U.S. affiliates		
All countries	1999	2005
Total private services	293,485	389,030
Education	355	403
Financial services	15,318	24,916
Insurance services	78,479	77,168
Telecommunications	13,095	n.a.
Professional, scientific and technical services	15,421	48,590
Computer and information services	4,022	8,815
Management and consulting services	585	2,079
Research and development	658	882
Architectural, engineering and other technical services	3,880	6,175
Legal services	21	n.a.
Advertising	5,219	20,327

n.a. Not available.
Professional, scientific and technical services are comparable to business, professional and technical services.
All data are in millions of US Dollars.

Table 2: U.S. Cross-border Trade

	Cross-border trade - Exports		Cross-border trade - Imports	
All countries	1999	2005	1999	2005
Total private services	265,106	367,813	183,034	281,607
unaffiliated	203,081	272,724	147,137	219,688
affiliated	62,025	95,088	35,897	61,920
Education	9,616	14,076	1,808	3,962
unaffiliated	9,616	14,076	1,808	3,962
affiliated	n.a.	n.a.	n.a.	n.a.
Financial services	17,410	7,787	9,418	12,620
unaffiliated	13,410	7,787	3,418	6,720
affiliated	4,000	n.a.	6,000	5,900
Insurance services	3,053	7,787	9,389	28,540
unaffiliated	3,053	7,787	9,389	28,540
affiliated	n.a.	n.a.	n.a.	n.a.
Telecommunications	4,549	5,231	6,602	4,527
unaffiliated	4,549	5,231	6,602	4,527
affiliated	n.a.	n.a.	n.a.	n.a.
BPT	53,517	83,990	27,635	48,765
unaffiliated	27,700	41,874	8,588	14,824
affiliated	25,817	42,116	19,047	33,941
Computer&information services	6,643	9,782	4,494	9,048
unaffiliated	5,443	7,482	1,494	2,748
affiliated	1,200	2,300	3,000	6,300
Management&consulting services	n.a.	6,864	n.a.	6,070
unaffiliated	1,832	2,564	842	1,870
affiliated	n.a.	4,300	n.a.	4,200
Research&development	n.a.	10,191	n.a.	6,744
unaffiliated	994	1,291	749	2,244
affiliated	n.a.	8,900	n.a.	4,500
AET	n.a.	n.a.	n.a.	n.a.
unaffiliated	2,620	3,430	19	181
affiliated	n.a.	n.a.	n.a.	n.a.
Legal services	n.a.	n.a.	n.a.	n.a.
unaffiliated	2,465	4,274	742	897
affiliated	n.a.	n.a.	n.a.	n.a.
Advertising	n.a.	n.a.	n.a.	n.a.
unaffiliated	481	574	881	982
affiliated	n.a.	n.a.	n.a.	n.a.

n.a. Not available.
BPT - Business, professional and technical services.
AET - Architectural, engineering and other technical services.
All data are in millions of US Dollars.

Figure 1: U.S. International sales and purchases of services of Private Services, 1987-2005

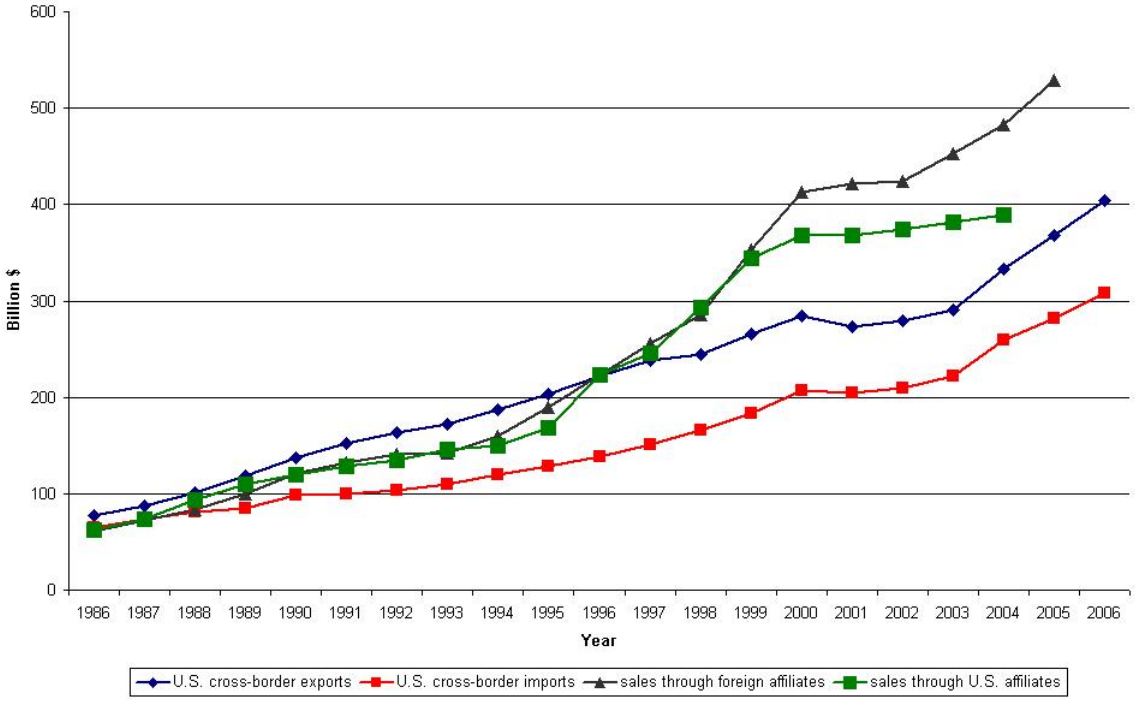

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Outsh	559	0.7044478	0.2575423	0	0.9938525
Insh	538	0.4262909	0.3845714	0	0.9986651
Manufacturing outsh	456	0.5316677	0.444042	0	0.9987003
Manufacturing insh	415	0.4685912	0.4496828	0	0.9997787
Log distance	1590	8.577451	0.854291	6.306995	9.680893
Log GDP	1590	6.871722	0.8164167	5.522241	8.448654
Language	1590	0.4	0.4900521	0	1
Similarity index	1590	0.6186601	0.3077173	0	0.9991627
Restrictiveness Index	1300	0.1218231	0.1034626	0.011	0.56
Log outward manufacturing FDI	1270	9.864045	0.6884036	8.138272	11.33833
Log inward manufacturing FDI	1446	9.993362	1.554714	4.624973	11.35117
Corporate tax rate	1558	35.35746	7.122973	21.3	57.5
EU Dummy	1590	0.4	0.4900521	0	1
NAFTA Dummy	1590	0.2	0.4001258	0	1
Log outward affiliate sales	647	6.192992	1.735329	0	10.10316
Log inward affiliate sales	492	5.183279	2.707609	0	10.31088
Log exports	1407	5.291403	1.551603	1.098612	9.671997
Log imports	1346	4.275433	1.874804	0	9.192685
Log total outward sales	559	6.770904	1.316524	3.78419	10.29008
Log total inward sales	538	5.379661	2.322071	0	10.31454

Table 4: Regression results: 3SLS outward sales

	(1) exports	(2) affiliate sales	(1) exports	(2) affiliate sales	(1) exports	(2) affiliate sales	(1) exports	(2) affiliate sales	(1) exports	(2) affiliate sales
	Log Distance		Language		Restrictiveness Index		Log affiliate sales		Log FDI Manufacturing	
Education	-0.598***	0.734***	-0.083	-0.494*	3.243**	-13.093***	0.043			0.829***
	(-9.413)	(4.382)	(-0.491)	(-1.803)	(2.228)	(-6.704)	(0.501)			(6.049)
Telecommunication	-0.334***	0.520***	0.716***	0.646**	0.766	-2.792***	0.292***			0.533***
	(-5.826)	(6.388)	(3.042)	(2.030)	(1.367)	(-4.614)	(3.309)			(3.510)
Insurance	-0.436***	-0.061	0.596**	1.624***	0.490	-5.510***	0.358***			0.043
	(-6.755)	(-0.683)	(2.128)	(5.969)	(0.425)	(-5.589)	(2.776)			(0.426)
Financial services	-0.165***	0.339***	-0.183	1.635***	0.847	-4.383***	0.462***			0.062
	(-3.223)	(4.793)	(-0.635)	(6.873)	(0.807)	(-3.900)	(4.596)			(0.380)
Computer&Information	-0.203**	0.342***	-0.186	0.056	3.846	-4.176	0.251**			0.414**
	(-2.493)	(3.210)	(-0.419)	(0.0952)	(1.287)	(-0.896)	(2.044)			(2.187)
Computer	-0.648***	0.285	0.668	-0.674	-5.516**	-3.623	0.379**			0.767
	(-2.841)	(0.400)	(1.115)	(-0.525)	(-2.539)	(-0.479)	(2.074)			(1.569)
Information	-0.350	1.258**	0.651	1.702	-1.323	4.097	0.326			-0.276
	(-1.514)	(2.184)	(0.937)	(1.187)	(-0.594)	(0.977)	(0.963)			(-0.660)
Operational leasing	-0.135	0.210	0.130	-0.320	1.754	0.528	0.727***			0.791***
	(-1.061)	(1.257)	(0.561)	(-0.907)	(0.869)	(0.207)	(5.550)			(2.890)
Business services	-0.202***	0.266***	0.125	-0.021	2.466**	-2.858*	0.647***			0.273
	(-3.002)	(2.578)	(0.602)	(-0.0776)	(2.093)	(-1.923)	(4.852)			(1.616)
Legal services	-0.332***	0.091	0.151	0.147	-1.071	-3.074***	0.119*			0.159
	(-6.700)	(0.959)	(1.324)	(0.668)	(-1.463)	(-3.073)	(1.917)			(1.036)
Consulting	-0.289***	0.337***	0.548***	-0.275	-3.452***	1.956	0.391***			0.520***
	(-6.251)	(4.644)	(4.118)	(-1.440)	(-3.949)	(1.609)	(5.283)			(4.866)
Advertising	-0.709***	0.569***	-0.175	-0.201	3.429***	-5.386***	0.311***			0.805***
	(-15.01)	(5.777)	(-1.195)	(-0.973)	(3.358)	(-4.454)	(4.236)			(7.178)
R&D	-0.431***	0.455***	-0.551***	0.988***	4.335***	-5.737***	0.664***			-0.089
	(-8.088)	(5.095)	(-3.265)	(4.052)	(3.907)	(-4.405)	(7.556)			(-0.598)
	Log GDP		Similarity Index		Corporate tax		Log exports		Constant	
Education	0.910***	-1.921***	-0.083	0.983	0.020	-0.016	1.593***		2.876***	-3.952***
	(6.674)	(-5.288)	(-0.143)	(1.304)	(1.058)	(-0.587)	(5.294)		(8.152)	(-3.406)
Telecommunication	0.361***	0.052	0.252	-0.814**	0.002	-0.021	0.409*		Observations	
	(2.852)	(0.289)	(0.898)	(-2.308)	(0.106)	(-0.963)	(1.876)		554	554
Insurance	0.680***	1.360***	1.139***	-1.803***	-0.069***	0.055***	0.289**		R-squared	
	(2.983)	(6.296)	(3.421)	(-5.535)	(-6.423)	(3.762)	(2.173)		0.930	0.926
Financial services	0.371***	0.221	0.713*	-1.670***	-0.039***	0.044**	0.882***			
	(3.140)	(1.261)	(1.774)	(-3.818)	(-3.816)	(2.284)	(3.384)			
Computer&Information	0.034	-0.073	0.646**	-0.311	0.047	-0.079*	1.393***			
	(0.204)	(-0.350)	(2.211)	(-0.574)	(1.566)	(-1.649)	(2.968)			
Computer	0.729***	-0.116	2.155	-5.255***	-0.033*	0.004	0.997**			
	(3.816)	(-0.172)	(1.421)	(-3.773)	(-1.653)	(0.0688)	(2.093)			
Information	0.315*	-0.612	1.058	-1.224	0.001	0.048	0.919			
	(1.874)	(-1.509)	(0.917)	(-0.596)	(0.0397)	(0.879)	(1.332)			
Operational leasing	0.398**	-0.289	-1.594***	1.783***	-0.089***	0.011	0.287			
	(2.484)	(-1.407)	(-2.674)	(3.006)	(-3.938)	(0.259)	(1.077)			
Business services	0.270**	-0.032	-0.962***	1.657***	-0.020*	0.012	0.846***			
	(1.981)	(-0.174)	(-2.878)	(6.457)	(-1.823)	(0.658)	(3.686)			
Legal services	0.652***	2.536***	1.690**	-6.720***	-0.023	-0.152***	-0.338			
	(3.781)	(10.31)	(2.502)	(-10.25)	(-1.558)	(-8.703)	(-1.371)			
Consulting	-0.029	0.199*	0.510***	0.643***	0.032***	-0.060***	0.617***			
	(-0.339)	(1.935)	(2.713)	(2.800)	(3.255)	(-4.848)	(5.637)			
Advertising	0.821***	-0.214	0.164	-2.012***	-0.045***	-0.029*	0.605***			
	(8.178)	(-1.382)	(0.374)	(-3.418)	(-4.323)	(-1.953)	(5.615)			
R&D	0.304***	0.137	0.101	1.384*	-0.020	0.015	0.845***			
	(2.691)	(0.790)	(0.213)	(1.816)	(-1.588)	(0.814)	(7.125)			

Estimations based on equation (1). Dependent variables are log of exports and log of outward affiliate sales.
Estimation method: 3SLS. z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 5: Regression results: 3SLS inward sales

	(1) imports	(2) affiliate sales	(1) imports	(2) affiliate sales	(1) imports	(2) affiliate sales	(1) imports	(2) affiliate sales	(1) imports	(2) affiliate sales
	Log Distance		Language		Restrictiveness Index		Log imports		Log FDI Manufacturing	
Education	0.659*	1.378*	-0.573	-0.310	-5.519*	1.311		-0.874**		-0.876
	(1.868)	(1.662)	(-1.321)	(-0.355)	(-1.765)	(0.171)		(-2.026)		(-1.102)
Telecommunication	-0.516***	-0.985***	1.295***	2.194***	-1.417	-5.792***		-0.927**		-0.189
	(-4.045)	(-5.603)	(4.046)	(3.791)	(-1.527)	(-4.958)		(-2.491)		(-0.851)
Insurance	-0.458**	0.621	0.101	0.399	2.895	10.340**		0.153		0.897***
	(-2.084)	(1.527)	(0.383)	(0.795)	(1.056)	(2.284)		(1.130)		(2.726)
Financial services	-0.252	1.230***	1.056***	0.536	-7.021***	13.845***		0.668		-0.373
	(-1.284)	(3.079)	(3.853)	(0.684)	(-3.024)	(3.634)		(1.606)		(-1.261)
Computer&Information	-2.878***	-5.431***	-0.186	0.665	27.937***	54.996***		-1.534***		-0.022
	(-7.477)	(-5.143)	(-0.274)	(0.548)	(3.859)	(3.443)		(-2.605)		(-0.0163)
Computer	-2.453	-2.193	1.774**	0.693	-19.008	-30.859*		-0.491		0.587
	(-1.429)	(-0.760)	(2.443)	(0.287)	(-0.697)	(-1.660)		(-0.393)		(0.414)
Information	-0.262	-1.464	-0.133	1.754**	-8.342***	21.998		1.079**		0.601
	(-1.059)	(-1.450)	(-0.231)	(1.979)	(-2.692)	(1.229)		(2.225)		(0.689)
Operational leasing	-0.794***	5.976***	-2.411***	9.665***	10.140	23.515		-1.761*		-5.963***
	(-3.665)	(3.030)	(-2.962)	(4.637)	(1.564)	(1.177)		(-1.772)		(-2.859)
Business services	-0.434***	-1.180***	1.306***	2.558***	-0.544	-2.493		-1.531***		1.417***
	(-6.226)	(-5.077)	(8.594)	(3.491)	(-0.496)	(-1.165)		(-3.155)		(6.186)
Legal services	-0.546	-10.163	-8.619	-202.843	0.000	0.000		-15.218		12.109
	(-0.259)	(-0.223)	(-0.0564)	(-0.315)	()	()		(-0.235)		(0.250)
Consulting	-0.449***	0.099	1.332***	0.861	-3.857**	-9.423***		-0.291		0.754***
	(-3.364)	(0.360)	(6.744)	(1.623)	(-2.452)	(-3.200)		(-0.986)		(3.128)
Advertising	-0.663***	-2.035***	0.334	-1.375	-12.268***	-13.297*		-0.411		1.971***
	(-4.560)	(-3.697)	(1.131)	(-1.362)	(-4.822)	(-1.910)		(-0.814)		(3.922)
R&D	-0.550***	0.986	1.425***	2.338***	-6.152***	19.420***		-0.146		-1.040**
	(-3.870)	(1.470)	(7.203)	(4.895)	(-3.164)	(3.374)		(-0.486)		(-2.247)
	Log GDP		Similarity Index		Corporate tax		Log affiliate sales		Constant	
Education	-0.152	0.835	2.053	-0.352	-0.075***	-0.047	-0.569***		3.632***	0.348
	(-0.275)	(0.794)	(1.273)	(-0.0940)	(-4.376)	(-0.979)	(-4.040)		(5.067)	(0.141)
Telecommunication	0.875***	2.386***	-1.304*	-1.553	0.033	0.103**	-0.240**		Observations	
	(3.626)	(6.601)	(-1.748)	(-1.068)	(1.321)	(2.437)	(-2.098)		396	396
Insurance	1.245***	-1.183***	-0.712	-2.015	-0.118***	0.037	0.260**		R-squared	
	(6.925)	(-4.805)	(-0.909)	(-1.559)	(-9.070)	(1.503)	(2.303)		0.919	0.921
Financial services	0.646***	-0.800***	0.020	-0.520	-0.053***	0.045	0.239*			
	(4.501)	(-2.871)	(0.0280)	(-0.433)	(-4.236)	(1.635)	(1.931)			
Computer&Information	6.518***	13.759***	-5.193**	-11.115	-0.564***	-1.167***	-0.317***			
	(5.252)	(3.238)	(-2.281)	(-1.319)	(-4.039)	(-3.835)	(-2.656)			
Computer	3.378	2.184	-6.014	-1.367	0.065	0.094	-0.516			
	(1.254)	(0.549)	(-1.617)	(-0.161)	(0.597)	(0.506)	(-0.499)			
Information	0.154	0.477	-1.242	12.812***	0.013	-0.185***	0.260**			
	(0.498)	(0.709)	(-0.548)	(4.180)	(0.336)	(-4.247)	(2.045)			
Operational leasing	0.864	0.746	-1.186	0.105	-0.068	0.315**	0.557***			
	(1.561)	(0.635)	(-0.566)	(0.0286)	(-0.934)	(2.402)	(3.915)			
Business services	0.702***	1.627***	1.284**	1.147	-0.008	-0.046**	0.040			
	(6.691)	(4.789)	(2.313)	(1.104)	(-0.814)	(-2.556)	(0.923)			
Legal services	2.470	44.116	-2.626	-82.744	-0.065	-0.865	0.312			
	(0.142)	(0.267)	(-0.130)	(-0.262)	(-0.0641)	(-0.167)	(0.156)			
Consulting	0.719***	-0.149	-0.208	0.289	-0.032**	-0.077***	0.006			
	(4.084)	(-0.405)	(-0.252)	(0.202)	(-2.350)	(-3.207)	(0.0942)			
Advertising	0.881***	2.578***	1.028	-9.291***	0.018	-0.185***	-0.115			
	(2.717)	(4.703)	(0.749)	(-4.648)	(0.611)	(-3.943)	(-1.423)			
R&D	0.785***	0.764*	1.966***	0.177	-0.046***	-0.026	-0.116**			
	(5.065)	(1.954)	(2.644)	(0.118)	(-3.728)	(-0.945)	(-2.023)			

Estimations based on equation (1). Dependent variable is log of imports and log of inward affiliate sales.
Estimation method: 3SLS. z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 6: Regression results: outward affiliate sales share

	Log Distance	Language	Restrictiveness Index	Log FDI Manufacturing
Education	0.597***	-0.531	-8.399***	0.993***
	(4.642)	(-1.619)	(-4.458)	(7.296)
Telecommunication	0.696***	0.118	-2.347***	0.477***
	(9.538)	(0.282)	(-2.928)	(2.861)
Insurance	0.352***	0.454**	-3.961***	0.416***
	(4.720)	(2.016)	(-4.495)	(3.383)
Financial services	0.463***	1.564***	-3.566***	0.160
	(6.981)	(10.10)	(-4.358)	(1.452)
Computer&Information	0.438***	-0.313	-0.528	0.767***
	(5.123)	(-0.776)	(-0.152)	(5.559)
Computer	0.637	-0.350	-0.901	0.822***
	(1.257)	(-0.412)	(-0.191)	(2.597)
Information	1.461***	1.709***	5.773***	-0.162
	(10.44)	(4.627)	(3.493)	(-1.239)
Operational leasing	0.440***	0.101	0.393	0.269*
	(3.610)	(0.385)	(0.205)	(1.857)
Business services	0.410***	-0.166	-1.755*	0.377***
	(4.753)	(-1.017)	(-1.840)	(3.621)
Legal services	0.262**	0.002	2.263	0.092
	(2.549)	(0.00852)	(1.642)	(0.503)
Consulting	0.475***	-0.517***	4.158***	0.574***
	(6.633)	(-2.748)	(3.200)	(4.338)
Advertising	0.858***	-0.197	-5.629***	0.913***
	(12.30)	(-0.878)	(-5.007)	(7.376)
R&D	0.584***	0.763***	-4.412***	0.134
	(5.191)	(3.279)	(-3.292)	(0.826)
	Log GDP	Similarity Index	Corporate tax	Constant
Education	-1.337***	1.748**	-0.002	-6.811***
	(-6.674)	(2.230)	(-0.0822)	(-5.028)
Telecommunication	-0.196	-0.232	-0.015	Observations
	(-1.096)	(-0.244)	(-0.496)	559
Insurance	0.140	-2.151***	0.077***	
	(1.156)	(-6.021)	(4.976)	
Financial services	0.127	-1.519***	0.057***	
	(1.066)	(-4.403)	(2.734)	
Computer&Information	-0.182	0.090	-0.052*	
	(-1.187)	(0.586)	(-1.899)	
Computer	-0.350	-5.159***	0.020	
	(-0.934)	(-6.013)	(0.560)	
Information	-0.740***	-1.116	0.056**	
	(-5.184)	(-1.001)	(2.436)	
Operational leasing	-0.536***	2.308***	0.111***	
	(-4.485)	(6.028)	(4.033)	
Business services	-0.164**	1.733***	0.021**	
	(-2.345)	(9.872)	(2.272)	
Legal services	1.499***	-5.631***	-0.128***	
	(5.423)	(-6.181)	(-3.661)	
Consulting	0.129	0.347	-0.059***	
	(0.948)	(1.360)	(-3.715)	
Advertising	-0.600***	-1.856***	-0.015	
	(-4.498)	(-3.041)	(-1.330)	
R&D	-0.049	1.329**	0.020	
	(-0.433)	(1.994)	(0.996)	

Estimations based on equation (2). Dependent variable is share of outward affiliate sales in total outward sales.
Estimation method: GLM model. Robust z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 7: Regression results: SUR outward sales

	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales
	Log Distance		Language		Restrictiveness Index		Log FDI Manufacturing	
Education	-0.466***	0.567***	0.487**	-0.608**	-1.025	-9.903***	-0.221**	1.048***
	(-7.025)	(5.703)	(2.541)	(-2.120)	(-0.831)	(-5.366)	(-2.357)	(7.472)
Telecommunication	0.019	0.718***	1.380***	0.011	-3.023***	-2.527***	0.170*	0.510***
	(0.326)	(8.262)	(6.679)	(0.0357)	(-6.533)	(-3.647)	(1.809)	(3.614)
Insurance	-0.508***	0.338***	2.028***	0.497**	-6.490***	-4.355***	-0.404***	0.293***
	(-9.692)	(4.314)	(13.90)	(2.273)	(-8.650)	(-3.876)	(-5.364)	(2.599)
Financial services	0.007	0.459***	1.795***	1.555***	-5.995***	-3.440***	0.069	0.121
	(0.127)	(5.783)	(11.85)	(6.860)	(-7.771)	(-2.978)	(0.907)	(1.060)
Computer&Information	-0.049	0.427***	-0.112	-0.299	1.543	-0.490	0.238**	0.736***
	(-0.610)	(3.573)	(-0.265)	(-0.469)	(0.543)	(-0.115)	(2.263)	(4.683)
Computer	-0.907*	0.472	0.162	-0.666	-16.024***	-1.841	0.780**	0.917*
	(-1.745)	(0.607)	(0.173)	(-0.473)	(-3.150)	(-0.242)	(2.292)	(1.799)
Information	0.535	1.482**	2.471***	1.700	-0.230	6.031	-0.403	-0.171
	(1.179)	(2.183)	(2.748)	(1.262)	(-0.0701)	(1.229)	(-1.264)	(-0.358)
Operational leasing	-0.092	0.410**	-0.292	-0.041	0.228	-0.091	0.577***	0.321*
	(-0.724)	(2.144)	(-1.106)	(-0.103)	(0.118)	(-0.0316)	(4.907)	(1.820)
Business services	-0.133*	0.415***	0.481**	-0.152	-3.644***	-1.654	0.215**	0.369**
	(-1.739)	(3.633)	(2.355)	(-0.497)	(-3.244)	(-0.983)	(2.090)	(2.396)
Legal services	-0.351***	0.472***	-0.050	0.227	-1.955***	-0.630	0.034	-0.070
	(-5.916)	(5.323)	(-0.292)	(0.889)	(-2.730)	(-0.587)	(0.321)	(-0.442)
Consulting	-0.070	0.490***	0.493***	-0.662***	-3.191***	4.255***	0.184**	0.609***
	(-1.333)	(6.218)	(3.605)	(-3.233)	(-3.611)	(3.215)	(2.360)	(5.222)
Advertising	-0.117**	0.892***	0.056	-0.338	-6.174***	-5.373***	0.450***	0.923***
	(-2.193)	(11.15)	(0.350)	(-1.421)	(-6.752)	(-3.924)	(5.370)	(7.360)
R&D	-0.231***	0.611***	1.156***	0.827***	-4.542***	-4.894***	-0.477***	0.111
	(-3.903)	(6.907)	(6.168)	(2.944)	(-4.535)	(-3.263)	(-4.202)	(0.651)
	Log GDP		Similarity Index		Corporate tax		Constant	
Education	0.632***	-1.428***	1.465***	1.714**	0.059***	0.010	4.043***	-6.765***
	(4.622)	(-6.976)	(2.825)	(2.207)	(3.432)	(0.375)	(4.880)	(-5.453)
Telecommunication	0.275**	-0.175	-0.717***	-0.836**	-0.009	-0.018	Observations	
	(2.206)	(-0.935)	(-2.630)	(-2.050)	(-0.536)	(-0.729)	554	554
Insurance	1.777***	0.307**	-1.395***	-2.244***	0.018*	0.086***	R-squared	
	(21.16)	(2.444)	(-5.690)	(-6.113)	(1.771)	(5.533)	0.928	0.894
Financial services	0.743***	0.171	-1.471***	-1.462***	-0.027***	0.058***		
	(9.079)	(1.391)	(-4.369)	(-2.899)	(-2.672)	(3.752)		
Computer&Information	0.018	-0.099	0.915***	0.079	0.007	-0.057		
	(0.113)	(-0.413)	(3.710)	(0.213)	(0.217)	(-1.248)		
Computer	1.140***	-0.203	-3.812***	-5.125***	-0.050	0.007		
	(2.831)	(-0.336)	(-3.559)	(-3.195)	(-1.328)	(0.119)		
Information	-0.061	-0.739*	0.133	-1.288	0.034	0.056		
	(-0.208)	(-1.687)	(0.0969)	(-0.626)	(0.795)	(0.866)		
Operational leasing	-0.074	-0.540**	1.209***	2.270***	-0.061***	0.107***		
	(-0.507)	(-2.457)	(2.760)	(3.459)	(-2.601)	(3.018)		
Business services	0.553***	-0.158	0.975***	1.728***	-0.025**	0.019		
	(5.137)	(-0.982)	(4.959)	(5.870)	(-1.980)	(1.042)		
Legal services	1.087***	1.500***	-0.594	-7.523***	-0.073***	-0.094***		
	(8.325)	(7.668)	(-1.235)	(-10.45)	(-6.461)	(-5.608)		
Consulting	0.289***	0.131	1.142***	0.285	-0.042***	-0.068***		
	(3.650)	(1.101)	(7.373)	(1.230)	(-4.411)	(-4.745)		
Advertising	0.476***	-0.647***	-2.298***	-2.026***	-0.062***	-0.010		
	(5.485)	(-4.976)	(-5.043)	(-2.969)	(-5.909)	(-0.650)		
R&D	0.948***	-0.032	2.489***	1.239	-0.014	0.018		
	(8.997)	(-0.203)	(4.439)	(1.476)	(-1.044)	(0.879)		

Estimations based on equation (2). Dependent variables are log of total outward sales and share of outward affiliate sales.
Estimation method: SUR. z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 8: Regression results: inward affiliate sales share

	Log Distance	Language	Restrictiveness Index	Log FDI Manufacturing
Education	-1.256***	-1.504	12.787	-1.817***
	(-4.905)	(-1.060)	(1.380)	(-3.872)
Telecommunication	-0.124	0.578	-4.070***	0.401
	(-0.753)	(1.332)	(-3.399)	(1.561)
Insurance	0.722	-0.093	9.766*	1.461**
	(1.082)	(-0.140)	(1.724)	(2.340)
Financial services	2.337***	0.700**	29.463***	-0.097
	(5.762)	(2.131)	(6.287)	(-0.358)
Computer&Information	-1.919*	1.586	28.921	-3.025***
	(-1.738)	(0.993)	(1.372)	(-2.606)
Computer	-2.086*	-2.028	6.445	-0.429
	(-1.868)	(-1.609)	(0.960)	(-0.643)
Information	1.397***	3.758***	-20.109*	-0.548
	(3.488)	(2.983)	(-1.813)	(-0.986)
Operational leasing	1.269*	4.566***	-11.441*	0.260
	(1.814)	(5.656)	(-1.776)	(0.504)
Business services	0.275*	0.114	-0.608	1.109***
	(1.881)	(0.321)	(-0.227)	(4.506)
Legal services	-12.533*	21.323***	-138.826	2.233
	(-1.765)	(6.463)	(-1.438)	(1.514)
Consulting	0.075	-0.502	4.846	0.864***
	(0.367)	(-1.129)	(1.340)	(3.035)
Advertising	-0.093	2.665***	13.276**	0.818***
	(-0.330)	(3.847)	(2.402)	(2.723)
R&D	2.259***	1.914***	31.238***	-0.835*
	(3.520)	(3.924)	(6.273)	(-1.668)

	Log GDP	Similarity Index	Corporate tax	Constant
Education	5.495***	-7.255**	0.116***	-12.951***
	(5.898)	(-2.267)	(3.535)	(-3.746)
Telecommunication	0.992***	-1.681	0.132***	Observations
	(3.115)	(-0.977)	(2.732)	538
Insurance	-1.910***	-0.047	0.167***	
	(-6.142)	(-0.0253)	(4.209)	
Financial services	-1.463***	0.359	0.088***	
	(-6.365)	(0.447)	(5.417)	
Computer&Information	14.362***	-23.408***	-0.876**	
	(2.739)	(-2.605)	(-2.135)	
Computer	6.245***	4.064	-0.356***	
	(9.186)	(1.273)	(-6.876)	
Information	0.383	13.134***	-0.142***	
	(0.721)	(4.220)	(-4.952)	
Operational leasing	-0.651	1.039	0.123*	
	(-1.241)	(0.594)	(1.894)	
Business services	-0.355	1.831	0.015	
	(-1.524)	(1.379)	(0.666)	
Legal services	10.155	-14.208**	0.336	
	(1.212)	(-2.259)	(0.709)	
Consulting	0.646	0.604	-0.067**	
	(1.623)	(0.283)	(-2.002)	
Advertising	1.373***	-3.113	-0.139***	
	(2.743)	(-0.790)	(-2.953)	
R&D	-0.398	0.419	0.063**	
	(-0.836)	(0.328)	(1.996)	

Estimations based on equation (3). Dependent variable is share of inward affiliate sales in total inward sales.
Estimation method: GLM model. Robust z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 9: Regression results: SUR inward sales

	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales	(1) total sales	(2) affiliate sales
	Log Distance		Language		Restrictiveness Index		Log FDI Manufacturing	
Education	0.851	1.390	0.452	0.368	-1.027	17.248**	-0.123	-3.083***
	(1.491)	(1.386)	(0.764)	(0.354)	(-0.220)	(2.106)	(-0.300)	(-4.283)
Telecommunication	-0.238**	-0.615***	1.145***	0.560	-1.606**	-6.690***	0.022	-0.308
	(-2.201)	(-3.237)	(3.428)	(0.955)	(-2.054)	(-4.869)	(0.147)	(-1.182)
Insurance	0.670**	0.361	0.667**	-0.264	11.823***	1.011	0.804***	1.037***
	(2.469)	(0.757)	(2.032)	(-0.457)	(4.379)	(0.213)	(3.592)	(2.637)
Financial services	1.235***	1.256***	1.521***	0.097	11.112***	15.771***	-0.197	-0.329
	(4.848)	(2.805)	(4.987)	(0.180)	(4.319)	(3.488)	(-1.035)	(-0.985)
Computer&Information	-2.890***	-2.789***	0.354	0.167	28.574***	32.362*	-0.862	-3.913***
	(-4.843)	(-2.659)	(0.428)	(0.115)	(2.751)	(1.773)	(-1.302)	(-3.363)
Computer	-2.584*	0.479	0.595	-1.276	-14.598	-19.489	0.609	-0.393
	(-1.858)	(0.196)	(0.549)	(-0.670)	(-1.234)	(-0.937)	(0.774)	(-0.284)
Information	-1.494**	-1.234	2.049***	1.860*	7.427	19.626	0.930	0.621
	(-2.202)	(-1.035)	(3.543)	(1.830)	(0.612)	(0.921)	(1.578)	(0.600)
Operational leasing	2.730***	1.088	5.888***	4.589***	-3.568	-22.265*	-2.371***	-0.408
	(4.420)	(1.002)	(8.650)	(3.835)	(-0.475)	(-1.688)	(-4.692)	(-0.459)
Business services	-0.404***	-0.212	0.663***	-1.030***	-0.542	-4.930**	0.631***	0.553***
	(-4.757)	(-1.422)	(3.526)	(-3.117)	(-0.384)	(-1.990)	(5.764)	(2.873)
Legal services	-0.682	1.215	-15.383	-43.034	0.000	0.000	0.770	0.010
	(-0.331)	(0.335)	(-0.167)	(-0.266)	()	()	(0.259)	(0.00194)
Consulting	-0.190	0.703**	0.837***	-0.808*	-2.982	-5.259	0.640***	0.376
	(-1.143)	(2.411)	(3.481)	(-1.912)	(-1.568)	(-1.574)	(4.485)	(1.498)
Advertising	-1.450***	-1.890***	-1.638***	-2.748***	-9.452**	-3.899	1.474***	2.483***
	(-3.879)	(-2.877)	(-2.877)	(-2.747)	(-2.150)	(-0.504)	(4.543)	(4.354)
R&D	-0.713**	2.881***	0.989***	1.988***	-2.922	35.781***	0.232	-2.151***
	(-2.315)	(5.321)	(3.069)	(3.510)	(-1.094)	(7.623)	(1.028)	(-5.419)
	Log GDP		Similarity Index		Corporate tax		Constant	
Education	-0.163	2.801**	2.604	-6.786	-0.058***	0.106***	0.629	-1.576
	(-0.249)	(2.435)	(1.100)	(-1.631)	(-2.589)	(2.716)	(0.417)	(-0.593)
Telecommunication	0.961***	1.406***	-1.244	-1.244	0.024	0.054	Observations	
	(4.536)	(3.774)	(-1.248)	(-0.710)	(0.849)	(1.095)	396	396
Insurance	-0.901***	-1.937***	-1.802**	-1.042	0.011	0.120***	R-squared	
	(-5.766)	(-7.051)	(-2.033)	(-0.669)	(0.699)	(4.447)	0.933	0.816
Financial services	-0.378**	-0.993***	-0.398	-0.475	0.006	0.063**		
	(-2.422)	(-3.624)	(-0.483)	(-0.328)	(0.398)	(2.343)		
Computer&Information	9.260***	16.380***	-10.859**	-24.885***	-0.689***	-1.100***		
	(3.205)	(3.226)	(-2.029)	(-2.646)	(-3.297)	(-2.995)		
Computer	2.641	0.100	-1.843	3.429	0.044	0.001		
	(1.066)	(0.0229)	(-0.357)	(0.378)	(0.376)	(0.00633)		
Information	0.733	0.469	9.419***	12.851***	-0.154***	-0.186***		
	(1.605)	(0.585)	(4.927)	(3.825)	(-5.752)	(-3.956)		
Operational leasing	-0.365	-1.165	1.284	2.487	0.176**	0.149		
	(-0.563)	(-1.024)	(0.527)	(0.580)	(2.202)	(1.055)		
Business services	0.773***	0.120	-0.673	-0.406	-0.036***	-0.040*		
	(6.498)	(0.574)	(-0.982)	(-0.337)	(-2.994)	(-1.867)		
Legal services	3.065	2.964	-5.302	-3.669	-0.042	0.403		
	(0.241)	(0.133)	(-0.511)	(-0.201)	(-0.0572)	(0.312)		
Consulting	0.111	-0.878**	-0.003	0.252	-0.049***	-0.039		
	(0.491)	(-2.213)	(-0.00339)	(0.146)	(-3.185)	(-1.436)		
Advertising	2.034***	1.604***	-7.876***	-12.009***	-0.138***	-0.241***		
	(7.148)	(3.208)	(-6.450)	(-5.596)	(-4.684)	(-4.656)		
R&D	0.807***	-0.328	3.617***	-2.664*	-0.028*	0.038		
	(4.413)	(-1.022)	(4.074)	(-1.707)	(-1.855)	(1.430)		

Estimations based on equation (3). Dependent variables are log of total inward sales and share of inward affiliate sales.
Estimation method: SUR. z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 10: Regression results: Manufacturing outward affiliate sales share

	Log Distance	Language	Restrictiveness Index
Total manufacturing	-0.023	2.008***	-11.951***
	(-0.179)	(3.271)	(-2.800)
Food	1.780***	9.818***	-42.050***
	(5.351)	(4.669)	(-4.013)
Chemicals	0.202	0.917	-8.113
	(0.938)	(1.327)	(-1.503)
Metals	-0.528***	1.841***	-20.468***
	(-2.800)	(2.894)	(-4.239)
Machinery	0.198	3.752***	-21.231***
	(1.001)	(3.863)	(-2.871)
Computer	-1.632**	-0.220	19.886**
	(-2.548)	(-0.360)	(2.201)
Electrical equipment	-0.877***	-1.305*	8.778
	(-2.970)	(-1.723)	(1.451)
Transport equipment	-1.295***	2.381***	14.849
	(-3.892)	(2.804)	(1.499)
	Log GDP	Similarity Index	Corporate tax
Total manufacturing	0.785***	-6.528***	-0.045
	(3.537)	(-3.793)	(-1.292)
Food	-6.052***	6.563*	0.414***
	(-4.948)	(1.686)	(4.156)
Chemicals	2.237***	-16.982***	-0.215***
	(4.067)	(-5.885)	(-3.507)
Metals	0.276	-2.666	0.024
	(0.664)	(-0.951)	(0.575)
Machinery	0.095	-4.945*	-0.032
	(0.175)	(-1.684)	(-0.610)
Computer	2.133***	2.570	-0.121*
	(4.114)	(0.712)	(-1.866)
Electrical equipment	1.027	-0.500	-0.144
	(1.536)	(-0.163)	(-1.535)
Transport equipment	2.974***	-14.957***	-0.142
	(3.897)	(-4.564)	(-1.603)
Constant	3.810**		
	(2.465)		
Observations	456		

Estimations based on equation (2). Dependent variable is share of outward affiliate sales in total outward sales.
Estimation method: GLM model. Robust z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.

Table 11: Regression results: Manufacturing inward affiliate sales share

	Log Distance	Language	Restrictiveness Index
Total manufacturing	0.221***	-0.035	-13.106***
	(3.249)	(-0.163)	(-2.908)
Food	-3.732***	-4.077**	-10.285
	(-2.649)	(-2.428)	(-1.101)
Chemicals	-0.391	-2.015***	-14.577***
	(-1.612)	(-3.653)	(-2.886)
Metals	-2.215*	2.792***	-54.963**
	(-1.808)	(6.757)	(-2.474)
Machinery	-0.514**	0.447	-28.125***
	(-2.494)	(0.388)	(-4.007)
Computer	-0.585*	-1.453*	-16.037
	(-1.806)	(-1.665)	(-1.527)
Electrical equipment	0.210	0.041	-12.212***
	(0.429)	(0.0391)	(-2.586)
Transport equipment	-0.806***	-0.035	-32.116***
	(-2.711)	(-0.0483)	(-4.740)
	Log GDP	Similarity Index	Corporate tax
Total manufacturing	-0.316	0.437	-0.048***
	(-0.940)	(0.446)	(-3.253)
Food	2.243*	12.982**	-0.029
	(1.782)	(2.309)	(-0.452)
Chemicals	-0.063	3.719**	-0.071**
	(-0.152)	(2.338)	(-1.984)
Metals	1.911*	-2.874	0.058
	(1.895)	(-1.153)	(1.388)
Machinery	-0.772	6.856*	0.021
	(-1.231)	(1.714)	(0.416)
Computer	0.553	-2.734	-0.005
	(0.647)	(-0.725)	(-0.0680)
Electrical equipment	0.164	-0.141	-0.299**
	(0.272)	(-0.0423)	(-2.423)
Transport equipment	2.686***	-19.486***	-0.035
	(4.936)	(-3.895)	(-0.734)
Constant	6.214*		
	(1.824)		
Observations	415		

Estimations based on equation (3). Dependent variable is share of inward affiliate sales in total inward sales.
Estimation method: GLM model. Robust z statistics in parentheses.
*, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level respectively.