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Foreign Direct Investment, Source Country Heterogeneity and Management Practices

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Abstract: This paper examines whether and, if so, why source country heterogeneity exists in foreign direct investment (FDI). Using detailed data on all Swedish firms for the period from 1996 to 2009, we find statistical evidence that affiliate performance differs systematically across source countries. For instance, affiliates of US multinational enterprises (MNEs) are, on average, approximately three times more productive than affiliates headquartered in the Nordic countries. One possible explanation for these discrepancies is differences in organization practices across source countries. Using new firm-level data from the World Management Survey to estimate a global index of the quality of management practices for MNEs with headquarters in our source countries of interest, we find that source country heterogeneity in affiliate performance is highly correlated with differences in management practices.

JEL: F21, F23, L1, M1
Keywords: Multinational firms, FDI, Management practices, Firm performance

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1. Introduction

It is a stylized fact that multinational enterprises (MNEs) pay higher wages, have higher productivity, and perform more R&D than indigenous firms. In his seminal work, Dunning (1980) provided an early explanation for this pattern, arguing that MNEs possess unique knowledge of production methods, management practices, or technologies. With the ownership of such firm-specific assets, he argued, MNEs are able to maintain the sales, profits, and productivity levels that are required to cover the additional costs associated with foreign expansion. Firm-specific assets have also been integrated into more formal theories on foreign direct investment (FDI), such as the Knowledge-Capital Model (see Markusen, 2001), and more recent models with heterogeneous firms, in which firms select into different entry modes to serve a foreign market conditional on the quality of their firm-specific assets (see e.g., Helpman et al., 2004).

Dunning's original concept was inspired by British industry studies conducted in the 1950s, which revealed that US affiliates where more productive than indigenous British firms. US firms were superior to British firms, he argued, because production factors were better managed in US firms and because management practices constituted a firm-specific asset that could be transferred across borders (from the US to the UK) at little cost.

In this paper, we revisit the question whether source country-specific differences in productivity exist between foreign affiliates and, if so, what explains such differences. Using detailed Swedish firm-level data and information on foreign affiliates in Sweden headquartered in up to 20 source countries, we first establish that significant differences in productivity exist between foreign-owned firms in general and Swedish firms. We then show that this foreign productivity premium masks significant source country differences in productivity between foreign affiliates from different source countries. Using newly available data from research by Bloom et al. (the World Management Survey (WMS)), we find that the observed source country heterogeneity in productivity between foreign affiliates is largely explained by differences in source country MNEs' global management practices.

We proceed as follows: In the next section, we provide a simple theoretical framework that we use to discuss the identification of source country-specific differences in productivity. Ultimately, we are interested in determining whether there exists a pure source country productivity effect that stems from the institutional or economic conditions of the source country. In a setting in which foreign firms can enter the market through greenfield entry or acquisitions of indigenous firms, we demonstrate that productivity differences between source

countries can stem from both a selection effect generated by source country-specific entry barriers (owing to, e.g., geographical or cultural distance to the host country), which compel foreign firms that enter the country to have unusually high productivity, and a "pure" source country-specific effect (from, e.g., institutions) that affects productivity in foreign affiliates regardless of the location of the host country. From our oligopoly model, we also show that average differences in productivity between foreign affiliates and indigenous firms may arise through so-called "cherry-picking", by which foreign firms will have an incentive to purchase high-quality indigenous firms.

For this purpose, we first estimate average differences in productivity between foreign affiliates from various source countries and indigenous Swedish firms. To control for cherry-picking we also estimate how productivity changes after a foreign takeover and compare this takeover effect for different source countries. Section 3 presents the baseline estimates. We find significant source country-specific productivity differences, regardless of whether the estimates arise from cross-sectional variation or within-firm variation generated by ownership changes. Consistent with Dunning's original finding, we observe that affiliates of US MNEs have approximately 30% higher productivity than Swedish firms. Affiliates of Nordic MNEs and UK MNEs have a productivity premium of only approximately 10% relative to Swedish firms. Affiliates with France, Germany, Japan, or the Netherlands as a source country lie between these extremes. Regarding foreign acquisitions, we find smaller effects (as suggested by foreign "cherry-picking"), but the ranking across source countries remains the same. We obtain similar results when we compare foreign affiliates to Swedish local firms and Swedish MNEs and when we divide the estimates into manufacturing and service sectors. We also document significant additional source country heterogeneity in other firm outcomes.

Having established that significant productivity differences exist between foreign affiliates from different source countries, Section 4 aims to explain these source country differences and, in particular, to determine whether management practices can provide an explanation for these differences. In a series of important contributions, Nicholas Bloom, Raffaella Sadun, John Van Reenen and co-authors have studied how firms are organized and operated from a management perspective.[1] They have demonstrated that management

[1] See Bloom and Van Reenen (2007; 2010), Bloom et al. (2012a), Bloom et al. (2012b), Bloom et al. (2012c), and Bloom et al. (2014) for a summary of this research.

practices differ systematically across countries and that firm performance is positively related to firm management quality.[2]

To consider management quality, we first use the firm-level data on management practices in the WMS to estimate an index of the quality of management practices for the MNEs with headquarters in our source countries. By including host country and year fixed effects, as well as industry fixed effects, we can estimate average differences in global management practices for MNEs emanating from source countries with significant ownership in Sweden. As this global management index is, by construction, not influenced by source country barriers to investing in Sweden, we can use this index to estimate the effect of MNEs' source country-specific management practices on the performance of foreign affiliates in Sweden.

We find that the global management practices of source country MNEs are significantly correlated with the productivity of their foreign affiliates and that this variable robustly explains source country heterogeneity in affiliate performance. Further, this correlation remains statistically and quantitatively significant even after we include numerous controls for other source country characteristics that may account for source country-specific barriers or other institutions or economic outcomes in the source country that may affect foreign affiliates' productivity. For instance, our estimates reveal that a transfer of ownership from Luxembourg or Norway, which are revealed to have the lowest estimated MNE management practices, to the US, which has the highest estimated management practices, is associated with an increase in affiliate productivity of approximately 18% (in the case of Norway, explaining nearly the entire difference in average productivity between US and Norwegian affiliates). The positive relationship between the global management practices of source country MNEs and the productivity of foreign affiliates in Sweden is also robust to adding additional source countries, dividing the estimations into different sectors, or using the different sub-indexes of the WMS.

Our paper makes three contributions to the literature. First, the overwhelming empirical literature on MNEs and FDI examines the effects of FDI on performance in terms of employment, productivity, or wages by comparing national firms and foreign firms with all

[2] Evidence presented in Bloom et al. (2012c) indicates that management accounts for up to half of the total factor productivity gap between the US and other countries. They also demonstrate that US firms are managed more efficiently than firms from European countries and that this more efficient management is due to a higher level of competition in the US domestic market and better legal traditions in the US. Conditions in the home market of the investing firm can therefore influence the operations of a subsidiary and are hence a potentially important mechanism explaining cross-country differences in FDI outcomes.

different source countries combined into a single "foreign ownership" variable. While a few papers have followed Dunning's original work on source country heterogeneity, these studies only examine a limited number of source countries.[3] As our data allow us to identify the source country for each foreign-owned firm in Sweden, we obtain a much richer set of source countries than that used in previous studies. Thus, the first contribution of this paper is to document a high degree of source country heterogeneity in FDI outcomes.

Our next contribution is that we also examine the origin of source country heterogeneity in FDI in detail. By correlating the performance of foreign affiliates in Sweden with a large number of explanatory variables, ranging from geography to institutions in the source country, the results also indicate which types of source country characteristics that provide the greatest benefits for a host country.

In our empirical analysis, we find that the most important variable for affiliate performance is an index of global management practices, which we estimate for affiliates of MNEs headquartered in the identified source countries by using data from the WMS. We thus contribute to the growing field of the new empirical economics of management, which has demonstrated that a large share of cross-country and within-country productivity, as well as productivity gaps between firms, can be explained by differences in management practices. Thus far, this literature stream has put less emphasis on source country differences in the management practices of MNEs. An exception is Bloom et al. (2012d) who find that US multinationals obtain higher productivity from IT than non-US multinationals or domestic firms in Europe, since better (people) management practices in US firms enable them to better exploit IT. Our study thus goes beyond this US vs. non-US MNE comparison, documenting large productivity differences between foreign affiliates from numerous source countries, and that source country-specific variation in the management practices of MNEs explains up to one-third of this variation.

[3] Girma et al. (1999), for instance, investigate foreign ownership in the UK's manufacturing sector and examine whether productivity and wage differentials are related to the home country of the ultimate holding companies. This division is made for the US, Japan and others. The results reveal that US firms are the most productive and that they pay the highest wages. Conyon et al. (2002) instead distinguish between acquisitions in the UK by examining the acquirer's country of origin by using binary variables for firms from the US, the EU, and other foreign countries. They observe an increase in productivity across all types of foreign acquisitions, with the greatest increase observed for US firms, followed by EU firms, both being significantly larger than firms in other countries. Finally, Griffith and Simpson (2004) consider foreign-owned firms in the British manufacturing sector and expand the analysis further by including four different countries: the US, France, Germany, and Japan. They find that US firms have become increasingly more productive than domestic British firms and that US firms are the most productive among firms from the four countries. The other countries show no clear patterns.

2. Theoretical framework

In this section, we describe a simple oligopoly model that will serve as a useful tool for considering how the source country of ownership affects firm performance and how this ownership effect can be identified in the data. While the model highlights the ownership effects of entry by foreign firms in heterogeneous source countries (in a setting in which foreign firms enter the market through indigenous firm acquisition or greenfield entry), it is not a structural model.

2.1 Benchmark model

Consider an industry in a country labeled "Home" with *n* firms present. Let $S = \{h, 1, \dots, m, \dots, M\}$ be the set of *source* countries, where country *m* is the country where the owners of firm *i* reside. Let $s = h$ indicate an indigenous firm, and let $s = m$ indicate that a firm is foreign owned, where foreign owners can be located in countries $\{1, \dots, m, \dots, M\}$. For simplicity, suppose that each firm uses capital and labor with Cobb-Douglas technology

$$q_i = e^{A_{i_s}} K_i^{\alpha} L_i^{\beta} \tag{1}$$

In Equation (1), output is q_i, L_i is the amount of labor hired, and K_i is the amount of capital used. The parameter A_{i_s} captures firm-specific differences in productivity, where i_s indicates that firm *i* is headquartered in country *s*. We let $\mathbf{A} = \{A_{1_s}, A_{2_s}, \dots A_{i_s}, \dots, A_{n_s}\}$ be the vector of firm-specific assets in the market.[4]

In the empirical analysis, we will examine whether the source country affects firm performance, as measured by value added per employee. We will then assume that a firm's productivity A_{i_s} is the sum of an idiosyncratic component ϕ_i and a source country-specific component ϕ_s

[4] Firm-specific assets are central to our analysis, as they explain how heterogeneity across firms from different source countries can arise. Firm-specific assets are also central to the so-called OLI approach to explaining FDI (see Dunning, 1974, 1985, and 1988)). According to the OLI approach, FDI can be explained by multinational firms' access to Ownership advantages (O), Location advantages (L), and Internalization advantages (I). Firms consist of a collection of assets, which have a public good character within the firm: such assets can be used in multiple locations without decreasing their value. Firm-specific assets stem from knowledge concerning production methods, management practices, technologies, or the ownership of patents and brand names. Ownership of firm-specific assets gives a firm ownership advantages (O). A firm can then use ownership advantages to locate production abroad and to compete across national borders. Location advantages (L) pertain to where the firm will utilize of the services provided by these assets and therefore explain where a firm chooses to locate. Finally, internalization advantages (I) refer to whether firm-specific assets should be retained within the firm or whether the services of these assets can be used by other firms in the host country through, for instance, licensing agreements. While the OLI framework is not a formal theory, it has inspired recent theoretical contributions on FDI and MNEs (see Neary, 2009 for a discussion).

$$A_{i_s} = \phi_i + \phi_s. \quad (2)$$

We assume that ϕ_i has been drawn from some distribution $G(\phi_i)$ and that it is taken as given by the firm. We further assume that ϕ_i is known by all firms but unknown to the econometrician, who only has information on the distribution $G(\phi_i)$.

Cost minimization implies that the cost function associated with the technology in (1) is

$$C_i(w, r, A_{i_s}, q_i) = \phi(w, r) q_i^{\frac{1}{\alpha+\beta}} e^{-A_{i_s}}, \quad (3)$$

where $\phi(w, r) = \xi(\alpha, \beta) r^{\frac{\alpha}{\alpha+\beta}} w^{\frac{\beta}{\alpha+\beta}}$ is a function of the cost shares α and β, the wage rate *w*, and the rent to capital *r*, (all of which we assume to be exogenous). It follows that the marginal cost is $dC_i/dq_i = c_i$, or

$$c_i(q_i, A_{i_s}) = \frac{1}{\alpha+\beta} \phi(w, r) q_i^{-(\frac{\alpha+\beta-1}{\alpha+\beta})} e^{-A_{i_s}} \quad (4)$$

Suppose that firms compete a la Cournot in selling homogenous goods (we discuss other oligopoly models below). The inverse demand is $P(Q)$, where $Q = \sum_{i=1}^{n} q_i$ is the aggregate output, and we assume that the aggregate demand is concave $P'(Q) < 0$ and $P''(Q) \leq 0$. Firms in the industry have profits

$$\pi_i = [P(Q) - c_i(q_i, A_{i_s})] q_i - F_{i_s}, \quad (5)$$

where F_{i_s} is the entry cost into the industry for firm *i* with headquarters in country *s*. The first-order conditions defining the Nash-equilibrium $\mathbf{q}^*(\mathbf{A}) = (q_i^*(\mathbf{A}), q_{-i}^*(\mathbf{A}))$ are $\frac{\partial \pi_i}{\partial q_i}(q_i^*, q_{-i}^*) = 0$, where $\mathbf{A}$ is, again, the vector of firm-specific assets in the market. The first-order conditions take the following form

$$\frac{\partial \pi_i}{\partial q_i} = P(Q^*) - c_i(q_i^*, A_{i_s}) - P'(Q^*) = 0, \forall i. \quad (6)$$

Assuming that the stability conditions for the Nash-equilibrium $\mathbf{q}^*(\mathbf{A}) = (q_i^*(\mathbf{A}), q_{-i}^*(\mathbf{A}))$ are fulfilled, we can use (5) and (6) to derive optimal profits $\pi_i^*(\mathbf{A}) = \left[P(Q^*(\mathbf{A})) - c_i\left(q_i^*(\mathbf{A}), A_{i_s}\right)\right]q_i^*(\mathbf{A}) - F_{i_s}$, where the total output is $Q^*(\mathbf{A}) = \sum_{i=1}^{n} q_i^*(\mathbf{A})$ and the marginal cost $c_i\left(q_i^*(\mathbf{A}), A_{i_s}\right)$ is given by (4). Assuming, for simplicity, a linear demand, $P(Q) = a - Q$, it is straightforward to show that the following Lemma holds:

Lemma 1 *Holding the number of firms constant, firm i's profit is increasing in its own productivity* $\frac{d\pi_i^*(\mathbf{A})}{dA_{i_s}} > 0$ *but decreasing in the productivity of its rivals,* $\frac{d\pi_i^*(\mathbf{A})}{dA_{j_s}} < 0,\ i \neq j$.

To close the model, firms—both foreign and domestic—will enter the market by exploiting profit opportunities. Firms may then enter an industry by purchasing existing firms or establishing new plants, and existing firms may merge if doing so is profitable. A complete analysis of this process is outside the scope of this paper. As our interest lies in identifying source country-specific differences in productivity, ϕ_s, we will instead use the model to highlight specific problems that arise when we attempt to identify these source country-specific differences in productivity.

2.2 Econometric model

In the empirical analysis, we will estimate how labor productivity depends on a firm's source country. Without intermediate inputs, we can write value added per employee as

$$\frac{VA_i^*}{L_i^*} = \frac{P(Q^*)q_i^*}{L_i^*}, \tag{7}$$

where we have omitted the asset vector **A** and where Shephard's Lemma $\partial C_i\left(A_{i_s}, q_i^*\right)/\partial w = L_i^*$ gives the demand for labor. If we substitute (1) and (2) into (7) and if we rewrite and take logs, we obtain

$$\log\left(\frac{VA_i^*}{L_i^*}\right) = P(Q^*) + \alpha \log\left(\frac{K_i^*}{L_i^*}\right) + (\alpha + \beta - 1)\log(L_i^*) + \phi_s + \phi_i. \tag{8}$$

Equation (8) can be used to estimate how source country differences affect productivity, where ϕ_i is the error term and ϕ_s captures the influence of the source country on productivity. Identifying ϕ_s is associated with at least two challenges, as described below.

2.2.1 **Barriers to greenfield entry**

Domestic firms likely have lower entry costs than foreign firms, as domestic firms have greater knowledge of the domestic market. This is the "foreign liability effect" (Dunning, 1980 and Beugelsdijk et al., 2013), which suggests that foreign firms will need to have unusually high draws on their idiosyncratic productivity ϕ_i to enter the domestic market. To illustrate this effect, suppose that entry costs are

$$F_{i_s} = F_i + F_s = \begin{cases} F_i, if\ s = h \\ F_i + \Delta_m, if\ s = m, \end{cases} \quad (9)$$

In Equation (9), the term $\Delta_m > 0$ captures the foreign liability effect. Let $\underline{A}_h = \tilde{\phi}_{i_h} + \phi_h$ be the lowest productivity associated with entry by a domestic firm, and let $\underline{A}_m = \tilde{\phi}_{i_m} + \phi_m$ be the lowest productivity associated with entry by a foreign firm headquartered in country *m*. Then

$$\pi_i^*(\underline{A}_h) = F, \qquad \pi_i^*(\underline{A}_m) = F + \Delta_m. \quad (10)$$

If $\Delta_m > 0$, it follows from Lemma 1 that $\underline{A}_m = \tilde{\phi}_{i_m} + \phi_m > \underline{A}_h = \tilde{\phi}_{i_h} + \phi_h$, i.e., foreign firms need a higher minimum productivity to enter the market. This selection effect is a potential problem for identifying source country-specific productivity differences: if the "entry hurdle", Δ_m, in (9) and hence the implied cut-off $\tilde{\phi}_{i_m}$ are correlated with the source country-specific productivity ϕ_m, we cannot identify whether foreign source country productivity ϕ_m differs from domestic source country productivity ϕ_h when estimating (8).

To address this problem, we will try to measure ϕ_s directly by using data on management practices from the WMS. Firms may have different abilities to adopt best management practices, or they may have obtained innovations or found ways to motivate staff in ways that rivals are unable to copy. Research by Bloom, Sadun, Van Reenen and co-authors has shown that these abilities differ systematically across source countries. To control for the foreign liability effect, or the hurdle effect, we will also control for other source country factors that may influence the ease of entry to isolate the impact of source country-generated management practices.

2.2.2 **Acquisition entry and "cherry-picking"**

A large share of FDI occurs through foreign acquisitions of domestic firms rather than through greenfield entry. In an oligopoly, entry by acquisition may then generate so-called "cherry-picking": foreign firms tend to purchase the "best" domestic firms—in our framework, domestic firms with high productivity, A_{i_h}. This cherry-picking creates an upward bias in our estimates of the effect of foreign ownership on productivity in (8) and may also bias comparisons between foreign owners (to the extent that "cherry-picking" occurs differently among source countries).

To illustrate, let us follow the approach in Neary (2007) and examine bilateral, "myopic" merger incentives for foreign takeovers.[5] To see how "cherry-picking" can arise, define $v_i = \pi_i^*(\mathbf{A})$ as the reservation price for a domestic firm (for simplicity, we call it firm *i*), where, again, $\pi_i^*(\mathbf{A})$ indicates that firms are in possession of assets A_{i_s} in the initial equilibrium with an asset vector $\mathbf{A} = (A_{1_s}, A_{2_s}, \dots, A_{n_s})$. The value of a foreign firm *j* with its headquarters in country *m* of purchasing domestic firm *i* is then $v_{ji} = \pi_j^*(\mathbf{A}^{ji}) - \pi_j^*(\mathbf{A}) - T_{jm}$, where T_{j_m} is the transaction cost and $\pi_j^*(\mathbf{A}^{ji})$ is the profit of firm *j*, when—in addition to its assets A_{j_m}—it also possesses firm *i*'s assets A_{i_h}, i.e., $\mathbf{A}^{ji} = (A_{1_s}, \dots, 0, \dots, A_{j_m} + A_{i_h}, \dots, A_{n_s})$, where the zero entry indicates that firm *i* sold its assets. To purchase firm *i*, firm *j* thus needs to have a willingness to pay v_{ji} that exceeds v_i, i.e., $v_{ji} > v_i$. The standard Salant, Switzer, and Reynolds (1983) result implies that a foreign acquisition will not be profitable at low asset quality (when $A_{i_h}$is low). Essentially, at low asset quality, the increase in profit for the acquirer from its increased market power will not exceed the profit that it would earn if it did *not* make the acquisition. However, note that Lemma 1 implies that a foreign firm's valuation tends to increase more rapidly than the reservation price when the target's assets increase in quality, since

$$\frac{d(v_{ji}-v_i)}{dA_{i_h}} = \underbrace{\frac{d\pi_j^*(\mathbf{A}^{ij})}{dA_{i_h}}}_{(+)} - \underbrace{\frac{d\pi_j^*(\mathbf{A})}{dA_{i_h}}}_{(+)} - \underbrace{\frac{\pi_j^*(\mathbf{A})}{dA_{i_h}}}_{-}. \tag{11}$$

[5] A more complicated strategy is to use an endogenous merger approach in which fewer assumptions are made in determining which firms are potential buyers and sellers. As our goal is merely to illustrate the mechanisms, we use the simple "exogenous" mergers approach. For endogenous mergers, see e.g., Norbäck and Persson (2007), Horn and Persson (2001), and Jehiel and Modovano (2000).

The two first terms show that higher productivity increases the possessor's profit, (the possessor's profit increases irrespective of the identity of the owner of $A_{i_{\not h}}$). Thus, their sum is ambiguous, and the sign depends on details such as how the concentration effect influences the sensitivity of the profits of the possessor to increasing productivity, whether synergies arise between firm *j*'s and firm *i*'s assets, and so on. However, from Lemma 1, we have that $\frac{\pi_j^*(\mathbf{A})}{dA_{i_{\not h}}} < 0$, and hence, the negative externality faced by firm *j* from a higher quality of firm *i*'s assets (when firm *i* does not sell to firm *j*) creates an additional incentive for firm *j* to purchase firm *i*. If the latter effect is substantial, while the former is netted out or small, $\frac{d(v_{ji}-v_i)}{dA_{i_{\not h}}} > 0$, "cherry-picking" will arise. Domestic targets will then tend to be firms with high-quality assets, i.e., firms with a high $A_{i_{\not h}}$. Productivity differences between domestic and foreign firms in a cross-sectional analysis such as (9) may then stem from foreign firms purchasing the "best" indigenous firms.

To address "cherry-picking", we use a panel analysis and replace ϕ_i in (8) with $\phi_i + \varepsilon_i$, where ϕ_i is now a fixed effect and ϵ_i is a standard iid error term.

$$\log\left(\frac{VA_i^*}{L_i^*}\right) = P(Q^*) + \alpha \log\left(\frac{K_i^*}{L_i^*}\right) + (\alpha + \beta - 1)\log(L_i^*) + \tilde{\phi}_s + \phi_i + \varepsilon_i. \qquad (12)$$

With a firm-specific effect, ϕ_i, estimates of $\tilde{\phi}_s$ will reveal the effect on productivity when an acquisition changes the source country of ownership, where $\tilde{\phi}_s = \phi_{\not h}$ holds before the acquisition and $\tilde{\phi}_s = \phi_m + \phi_{\not h}$ after a foreign acquisition. We can then infer source country-specific differences in productivity between different home countries by comparing *different* foreign source countries with one another, provided that source countries do not differ in their propensity to cherry pick. This assumption may not hold, however, if foreign firms face different transactions costs in acquisitions, T_{jm}, creating a "hurdle effect" similar to that observed in greenfield entry.

While the panel estimates from (12) should enable us to identify the source country-specific effect ϕ_m, foreign acquisitions also create an additional potential econometric problem. Estimates of $\tilde{\phi}_m$ in (12) can be upward biased if an acquisition implies a reduction in the number of firms in the market, which will increase the product market price $P(Q^*)$ in (12) under standard assumptions. However, if this market power effect is *similar* between foreign acquisitions, it may vanish when we compare acquisitions from different source

countries. Thus, even if the effect of a foreign acquisition on the productivity of the target firm is potentially upward biased, we can eliminate or limit this upward bias if we compare the effect of foreign acquisitions on domestic firms among foreign source countries.

2.2.3 Other oligopoly models

To highlight results, we have used a Cournot model with homogenous products. It is however straightforward to extend the analysis to other forms of oligopoly interaction. Suppose for instance that firms produce differentiated products and compete in prices, with variable profits $\pi_i = \left[p_i - c_i\left(q_i, A_{i_s}\right)\right] q_i(p_i, p_{-i})$, where p_i is the price of firm i, p_{-i} is the price of its rivals and $q_i(p_i, p_{-i})$ is the demand facing firm i with $\frac{\partial q_i}{\partial p_i} < 0$ and $\frac{\partial q_i}{\partial p_{-i}} > 0$. Then, the Nash-equilibrium in prices is given from $\frac{\partial \pi_i(p_i^*, p_{-i}^*)}{\partial p_i} = 0$. Write the Nash-equilibrium as $\mathbf{p}^*(\mathbf{A}) = (p_i^*(\mathbf{A}), p_{-i}^*(\mathbf{A}))$ and note that $\pi_i(\mathbf{A}) = \left[p_i^* - c_i\left(q_i(\mathbf{p}^*(\mathbf{A})), A_{i_s}\right)\right] q_i(\mathbf{p}^*(\mathbf{A}))$. In most oligopoly models, including Bertrand competition, one can then show that Lemma 1 applies. Under Bertrand competition, labor productivity is $\left(\frac{VA_i^*}{L_i^*}\right) = \frac{p_i^* q_i(\mathbf{p}^*)}{L_i^*}$. If we substitute (1) and (2) into the former expression, rewrite and take logs, we obtain

$$\log\left(\frac{VA_i^*}{L_i^*}\right) = p_i^* + \alpha \log\left(\frac{K_i^*}{L_i^*}\right) + (\alpha + \beta - 1)\log(L_i^*) + A_{i_s}. \quad (13)$$

Note that estimating (13) is then synonymous to estimating equation (12).

3. Empirical analysis

3.1 Data

To examine if source country productivity differences are present, we will use detailed data from a very extensive and detailed database from Statistics Sweden (SCB). The database comprises firm, plant and individual data, linked together with unique identification numbers. The analysis covers the period 1997 to 2009 and is based on all firms with at least 10 employees.

Firm-level data are taken from several register-based data sets in Statistics Sweden that cover the entire private sector. First, the financial statistics contain detailed firm-level information on all Swedish firms in the private sector. Examples of variables are value added,

capital stock (book value), number of employees, total wages, ownership status, profits, sales, and industry affiliation. Second, the Regional Labor Market Statistics (RAMS) includes plant-level data on all firms. The RAMS adds firm information on the composition of the labor force with respect to educational level and demographics.[6]

In order to examine the role of the nationality of the foreign owned firms, we have matched our firm-level data with data from the Swedish Agency for Economic and Regional Growth (Tillväxtanalys).[7] These data contain information about the nationality of foreign multinational firms operating in Sweden. The data from the Swedish Agency for Economic and Regional Growth allows us to distinguish between the nationalities (source countries) of owners of foreign owned firms that control firms in Sweden. The main owner's place of origin defines the nationality. The Agency uses definitions of nationality of firms that are in accordance with definitions in similar data from the OECD and Eurostat.

A firm is finally classified as a foreign-owned MNE if more than 50 percent of the equity is foreign-owned.[8] A foreign acquisition is defined as a firm that switches from being Swedish owned to being foreign owned. All firms except those that experience more than two ownership changes during the time period we study are included in the analysis. Furthermore, we only study acquisitions of firms where we have yearly information before and after the acquisition. We can relax these restrictions without qualitatively changing our results.

3.2 Descriptive statistics

This section presents descriptive evidence on source country differences. We begin by documenting the evolution and importance of foreign ownership in Sweden and then present evidence on differences between Swedish-owned firms and foreign firms from different countries.

Employment in foreign-owned firms

Figure 1 depicts the evolution of the total number of employees in Sweden in firms with at least 10 employees and the total number of employees in Swedish-owned firms. The difference between the two curves constitutes the number of employees in foreign-owned firms in Sweden. A number of observations emerge from Figure 1.

[6] Plant-level data are aggregated at the firm level.
[7] Detailed information regarding the data on nationality of firms can be found in Tillväxtanalys 2011.
[8] Statistics Sweden uses the internationally common 50 percent cut-off in defining foreign ownership. Other studies on FDI do typically not find lower cut-off values to matter for the results (see e.g. Huttunen, 2007 and Barbosa and Louri, 2002).

--Figure 1 about here--

Total employment varies substantially over the 1996-2009 period. Sweden experienced its greatest economic crisis in the post-war period during the early 1990s, when Swedish companies lost their competitiveness in the world market while the Swedish state became very highly leveraged. During the recovery over the two following decades, total employment increased steadily until the IT crisis at the turn of the millennium. As the economy again recovered, total employment increased until circa 2008 at the outbreak of the financial crisis.[9]

Foreign firms were crucial in this process, as employment increased much more in foreign-owned firms than in Swedish-owned firms; in 1996, foreign subsidiaries accounted for less than one-fifth of total employment; by 2009, however, foreign firms represent nearly one-third of total employment in firms with at least 10 employees. More than 80% of the new jobs were created in foreign-owned firms.[10] These trends can also be seen in Table 1, which reports the total number of firms in Sweden, the total number of Swedish-owned firms, and the total number of foreign-owned firms during the 1996-2009 period. During this period, the number of foreign-owned firms more than doubled, while the corresponding increase in the number of Swedish-owned firms was only 35%.

--Table 1 about here—

Foreign acquisitions

Foreign acquisitions were also clearly important. The last column in Table 1 reports annual figures on the number of foreign acquisitions in Sweden during the 1997-2009 period. Table 1 shows that a large share of the increase in foreign ownership occurred through foreign acquisitions, including foreign acquisitions of large Swedish MNEs, such as car producers Volvo and SAAB Automobile. The number of acquisitions varies significantly over the

[9] The Swedish economy was reformed in fundamental ways in response to the recession that followed in the beginning of the 1990s. Reforms included shifting to a flexible exchange rate regime, cutting public spending, implementing major privatization and widespread market deregulation, reforming the budget system, and increasing Central Bank autonomy with a fixed inflation target.

[10] Major explanations for this increase in foreign ownership include improvements in the business climate through the reformation of the Swedish economy. Examples of reforms are deregulated capital and foreign exchange markets in the late 1980s and reduced barriers to foreign ownership. The large currency crisis in 1992 also reduced the cost of Swedish assets and the cost of locating production in Sweden.

period considered, with an average of 352 acquisitions of Swedish-owned firms with at least 10 employees per year.

Different source countries

Then, from what countries does the foreign ownership in Sweden primarily originate? In Table 2, we report the share of employment in foreign-owned Swedish firms with owners from twelve countries. The selection of countries is based on the countries with the largest number of firms located in Sweden. Therefore, apart from China, these countries dominate foreign ownership in the Swedish business sector.[11] The figures in Table 2 are presented as annual averages for three separate periods—1996-2000, 2001-2005, and 2006-2009—as well as for the entire 1996-2009 period.

--Table 2 about here--

Regardless of the period considered, US firms dominate, and approximately 20% of all workers are employed in a foreign firm with a US parent company. Firms from large European countries such as the UK, Germany, and France together employ approximately 28% of Swedish workers in foreign-owned firms. Firms from the Nordic countries represent a similar share of foreign employment in Sweden to that of the larger European countries. While the Nordic countries are much smaller, they are geographically closer to Sweden. From the discussion above, firms from countries closer to Sweden are likely to face lower entry costs, which can explain their large presence in Sweden. Somewhat surprisingly, approximately 4% of all employees in foreign firms during the 2006-2009 period have owners headquartered in Luxembourg. A potential explanation for this result is that locating the head office in Luxembourg entails tax advantages.

The last column in Table 2 reports the average number of affiliates emanating from different source countries during the considered period. Consistent with the employment shares, US firms have the largest number of subsidiaries, followed by Norway and Germany.

Source country differences in performance

Let us now examine source country differences in affiliate performance. The first column in Tables 3 compares the average labor productivity in foreign firms with owners from selected countries with Swedish firms of different types (China now being omitted).

[11] China's miniscule share of the total employment in foreign-owned firms in Sweden indicates that despite the strong growth and development of the Chinese economy, Chinese ownership in Sweden has not expanded.

Regardless of the country of origin, foreign subsidiaries have a higher average productivity than Swedish firms. Moreover, US firms have the largest difference: the average difference in labor productivity between a US-owned firm and a Swedish-owned firm is 260,000 SEK. Norwegian firms have the smallest average difference; their labor productivity merely exceeds that of Swedish firms by 70,000 SEK. This pattern is consistent with the discussion in Section 2.2.1 regarding the higher barriers to entry for far-distant US firms than closer Nordic firms, which force US firms that enter Sweden to be more productive on average than their Nordic rivals (which, in turn, must be more productive than indigenous Swedish firms facing the lowest barriers). However, as also noted in that section, such source country-specific differences can also mirror specific institutions in the source countries: for instance, the large and competitive home market in the US is likely to foster highly productive firms, of which some will invest abroad.

--Table 3 about here--

It is a well-known stylized fact that MNEs should be more productive, on average, than local firms. Comparing affiliates of Swedish multinational firms in Sweden with Swedish local (non-multinational) firms provides evidence of the higher productivity of MNEs relative to local firms. Swedish MNEs have a labor productivity exceeding that of Swedish local firms by 160,000 SEK. Swedish parent also have higher labor productivity than foreign affiliates from several other countries, possibly reflecting that headquarters services compose a larger share of activities for Swedish MNEs than for foreign affiliates.

Finally, Table 3 examines how source country ownership affects affiliate size in terms of the number of employees, average wages in the affiliates, and the share of workers with university education. Figure 2 shows that all these measures are highly correlated with affiliate productivity. Beginning at the top left in Figure 2, source country labor productivity is highly correlated with number of employees.[12] Swedish parent MNEs are somewhat an outlier in terms of the number of employees, but this result should again not be surprising, as Sweden is the home country of these firms. Finally, Figure 2 indicates that source country productivity is highly correlated with the mean wage and skill share of firms from the same source country.

[12] Under mild assumptions, this correlation can also be shown to hold by using the factor demand for labor in Section 2, which increases with source country labor productivity.

--Figure 2 about here—

3.3 Estimating source country differences in productivity

We now turn to the regression analysis. We first empirically estimate the "ownership" Equation (8) in Section 2.1 as follows:

$$\log\left(\frac{VA_{it}^{*}}{L_{it}^{*}}\right) = \delta + \sum_m \gamma_m D_{imt} + \varphi \log\left(\frac{K_{it}^{*}}{L_{it}^{*}}\right) + \psi \log(L_{it}^{*}) + \vartheta Share\_skilled + \mu_{\not{m}t} + \varepsilon_{it} \quad (14)$$

In Equation (14), we control for product market prices $P(Q^{*})$ by adding industry, year, and combined industry-year fixed effects. We also control for a firm's capital intensity and size in terms of employment in logs. The share of skilled workers, defined as the percentage share of employees with a higher education, is added as an additional control. [13] The dummy variable D_{imt} contains information on the ownership of firm *i* at time *t*, where D_{imt} = 1 holds if the firm is owned by a firm headquartered in a foreign country *m* and D_{imt} = 0 holds if firm *i* has a Swedish owner. Swedish ownership is then our base category and is captured by the intercept δ; hence, the estimated coefficient $\hat{\gamma}_m$ indicates the average percentage difference in labor productivity between a foreign-owned firm with controlling owners located in country *m* and a Swedish-owned firm, in a given industry-year pair. As in Section 3.2, we let country m be represented by Denmark, Finland, France, Germany, Japan, Luxembourg, Netherlands, Norway, Switzerland, UK, and the US. While these countries dominate foreign ownership in Sweden, as a robustness check, we will also include additional countries in our analysis.

The foreign firms that are used to estimate Equation (14) are subsidiaries that were established before 1996, established as start-ups or greenfields during the given time period, or established through acquisitions of Swedish firms. As noted in Section 2.2, differences in labor productivity between foreign-owned firms and Swedish-owned firms might arise because foreign firms tend to acquire ("cherry-pick") high-quality Swedish firms. To control for "cherry-picking" and unobservable firm characteristics, we estimate the acquisition Equation (12) from Section 2.2 as follows:

[13] We have thus added skilled labor as an input in the production function (1). Formally, we should then take the log of the share of skilled labor. However, as many firms, often smaller firms, may have a zero skill share, we do not include the log of the skill share. However, we also estimated (14) with the skill share in logs and did not observe qualitative changes in the results.

$$\log\left(\frac{VA_{it}^{*}}{L_{it}^{*}}\right) = \delta + \sum_m \gamma_m D_{imt} + \varphi \log\left(\frac{K_{it}^{*}}{L_{it}^{*}}\right) + \psi \log(L_{it}^{*}) + \vartheta Share\_skilled + \mu_t + \phi_i + \varepsilon_{it}. \quad (15)$$

In Equation (15), we include a firm fixed effect ϕ_i to control for unobserved heterogeneity in productivity and estimate the equation on all Swedish firms that become acquired. Firms that change ownership may, however, already before the takeover be developing differently from firms that are not acquired.[14] Our approach to this problem is to address the issue of potentially omitted variables that may be related to the likelihood of being a takeover target. For this purpose, we exploit the fact that all acquisitions do not occur during the same time period. Using the "staggered" nature of the data, we can compare estimates from the full sample of firms to estimates obtained when we drop all firms that are never takeover targets from the sample. As identification in both cases comes from within-firm variation, the difference between the two approaches lies in the choice of the control group.[15] If takeover targets as a group have different observable and unobservable characteristics from other firms, using the target sample would provide a better estimate of the actual takeover effect, provided that the characteristics are not time varying.

Thus, in our main specification, Equation (15) is estimated on the sample of Swedish firms that are acquired at some point from 1996 to 2009 by a foreign firm headquartered in country *m*.[16] This implies that identification of the effect of foreign ownership then stems from the variation over time within firms. In this "difference-in-difference" approach, the estimated coefficient $\hat{\gamma}_m$ shows the average difference change in labor productivity that occurs in a Swedish firm after the change to foreign ownership from source country *m*.

In Section 2.2, we also noted that the effects on the performance of the target firm from a foreign acquisition can be inflated by market power effects. With one fewer firm in the market, the remaining firms can raise prices, which can inflate labor productivity. In Equation (15), we thus control for this market power effect by comparing different foreign acquisitions and by assuming that the market power effects are similar between acquisitions from different

[14] In other words, the concern is that the "parallel trends" assumption is violated or, more technically, that acquisitions are correlated with the error term.
[15] See Stevenson and Wolfers (2006) for a detailed discussion of such a "staggered" difference-in-difference approach.
[16] As a comparison, we also estimated Equation (15) on the sample of all firms (not only on target firms). This estimation provided qualitatively identical results, which are available upon request.

source countries. We also distinguish between Swedish local firms and Swedish parent MNEs in Equations (14) and (15) and between the manufacturing and the service sector.

Finally, note that we cannot claim that our estimates of source country-specific effects on productivity are causal. To identify causal effects, we would need to randomly allocate ownership and to then measure the effects. Specification (15) is the best approximation of a causal effect, as it allows us to compare the same firm when it is Swedish owned and when it is foreign owned.

4. Source country heterogeneity in affiliate productivity

In this section, we present statistical evidence on cross-country differences in productivity among foreign affiliates headquartered in different source countries. In the next section, we examine the sources of these differences.

4.1 Foreign ownership

As a point of reference, we begin Table 4 with a version of Equation (14) in which we omit firm controls and in which only estimate a single foreign ownership dummy. Column (1) then indicates that in a given industry-year, foreign-owned firms have approximately 18% higher labor productivity than Swedish-owned firms. This estimate is also statistically significant at the 1% level and is approximately half the size of the foreign productivity premium emerging from Table 3.

--Table 4 about here--

In Specification (2), we divide the effect of foreign ownership into a number of different source countries specified in Equation (14). These estimates (all highly significant) reveal considerable source country heterogeneity: at the top end, we again find that US firms have approximately 30% higher labor productivity on average than Swedish firms; at the bottom, we find that firms headquartered in the Nordic countries have only an approximately 10% higher productivity premium than Swedish firms.

Specification (3) provides the results of estimating Equation (14) with firm controls. We find that adding firm controls reduces the estimated source country differences in productivity. However, the ranking is not affected. This result is further illustrated in the top panel of Figure 3 (Panel I), which depicts the point estimates $\hat{\gamma}_m$ together with their 95%

confidence intervals. When the affiliates are ranked according to source country productivity, US affiliates are followed by Swiss, French, and Japanese affiliates, which are in turn followed by affiliates from Germany, Holland, and Luxembourg. UK affiliates have a productivity differential from Swedish firms that is similar to that of Nordic firms and thus are at the bottom of the distribution.

--Figure 3 about here--

Figure 3 (Panel I) and Table 4 thus indicate that significant differences in productivity exist between source countries. Table A1 in the Appendix tests this hypothesis statistically by using Wald tests of the equality of the estimated source country coefficients, i.e., tests of whether $\hat{\gamma}_{m_j} = \hat{\gamma}_{m_k}$. The top panel in Table A1 in Appendix reveals that US affiliates have a significantly higher productivity than affiliates from all other source countries. Further, Swiss affiliates have significantly higher productivity than affiliates from most other source countries, while Danish affiliates have lower average productivity than most other source countries.

To further explore how foreign ownership depends on the source country, we divide our sample into manufacturing and service sectors. The results are qualitatively similar, although we tend to obtain estimates that are more significant for the service sector (see columns 4 and 5 in Table 4).

Next, we compare foreign-owned firms with non-multinational Swedish firms, i.e., "local firms", and with multinational Swedish firms. We first estimate Equation (14) for Swedish local firms and foreign affiliates and then for Swedish parent firms (the home components of Swedish MNEs) and foreign affiliates. Column 6 reports the estimates with Swedish local firms as the reference, while column 7 provides the estimates with Swedish MNEs as the reference.[17] The results are clear: the significant differences in performance between foreign firms and Swedish firms are predominately attributable to differences between foreign-owned firms and Swedish local firms. While we find that US affiliates have

[17] Our theoretical framework does not distinguish between domestic local firms and domestic MNEs. It is straightforward, however, to also include a foreign investment decision for domestic firms. Including this variable would generate the same type of hurdle effect for domestic MNEs, which would also render these firms more productive than purely local firms. However, a complication arises because Sweden is the headquarters country for Swedish MNEs. As headquarters activities might differ from affiliate activities (headquarters activities may include R&D, marketing, and sales, for instance), we need to be careful in making a comparison with foreign firms. In this respect, comparing foreign affiliates to Swedish local firms is the closest practical approximation of the theoretical discussion above.

a statistically significant productivity premium relative to Swedish MNEs, Swedish parent MNEs exhibit a statically significant productivity premium relative to affiliates from most other source countries. However, if we compare relative performance measures across source countries, the results for the two control groups of Swedish firms are very similar. This similarity is revealed by comparing the two upper panels (Panel I and II) in Figure 4. Wald tests in Table A1 also reveal that we obtain nearly identical results for relative source country performance, regardless of which control group we use.

In summary, our results thus far regarding heterogeneity across different foreign owners of Swedish affiliates reveal stable source country differences. Moreover, these source country differences are robust to the use of different comparison groups, namely, to a comparison of performance between foreign-owned firms and Swedish MNEs or Swedish local firms.

--Figure 4 about here--

4.2 Foreign acquisitions

We now continue to examine how source country origin affects firm performance in foreign acquisitions of Swedish-owned firms. Table 5 reports the results of estimating Equation (15) on Swedish firms that become acquired at some point during the 1996-2009 period. In column 1, we again first report the unconditional effect on productivity of a change from Swedish to foreign ownership, without accounting for the nationality of the foreign buyer. The point estimate, which is significant at the 5% level, reveals that when a firm transitions from Swedish to foreign ownership (irrespective of the source country), this ownership change is associated with an increase in productivity of approximately 2.2%. This acquisition effect is considerably smaller than the effect of foreign ownership in Table 4, which suggests that ”cherry-picking” (i.e., foreign firms purchasing high-performing Swedish firms) might explain some of the performance difference between foreign and Swedish firms observed in Table 4.

--Table 5 about here--

In column 2, we divide foreign ownership by source countries. Again, we find estimated coefficients that are smaller than those presented in column 2 in Table 4.

Acquisitions from most source countries do not increase productivity after the ownership change, with the notable exceptions of US and Dutch acquisitions. Adding firm controls when estimating Equation (15) yields a larger estimated productivity increase following a US takeover. Dividing the sample into manufacturing and services again yields differences that are more significant (columns 4 and 5). Finally, dividing Swedish acquired firms into local firms and MNEs, we find that labor productivity significantly increases by approximately 10% after a US takeover of a local firm, while this effect is not significant when the target is a Swedish MNE.

Comparing the estimates for different foreign source countries again reveals interesting source country differences. Such differences are illustrated in the lower panels of Figure 4 (Panel III and IV), while the Appendix provides Wald tests on the differences between the different source country estimates. These Wald tests, based on specification 3 in Table 5, indicate that US acquisitions generate a significantly larger increase in productivity than acquisitions from e.g., Luxembourg, Norway, and the UK. In Table 5, we also find that foreign acquisition from Luxembourg even significantly decreases firm productivity in the service sector. This result is somewhat remarkable, as only US and Japanese affiliates have higher average productivity than affiliates from Luxembourg when we compare the effect of ownership on productivity (see Table 4). This may suggest that firms locate their headquarters in Luxembourg to gain tax advantages, which provide an advantage when acquirers bid for high-quality Swedish target firms.

4.3 Other performance measures

We conclude this section with Table 6, which reports results for other selected performance measures. Columns 1-3 present cross-sectional differences, and columns 4-6 report estimates from acquisition regressions. Focusing on acquisitions, we find that a shift from Swedish to US ownership increases employment in a Swedish firm by approximately 11%, on average, while the average wage increases by approximately 9%. Acquisitions by firms headquartered in several other countries are also estimated to significantly increase the average wage, but the estimated effects are smaller than the wage increase associated with a change to US ownership. We also find that the US wage premium is significant in all source country comparisons except in that for France. No effects are found when we analyze the impact on the share of skilled employees (column 5).

--Table 6 about here--

This section has presented strong evidence on cross-country differences in productivity among foreign affiliates headquartered in different source countries. We find that the source country of a foreign firm has a significant impact on its productivity even after we control for various firm controls and industry and time effects, divide the sample into different industries or firm types, or control for different types of foreign entry. Our results indicate that certain countries perform better as owners than others, measured in terms of labor productivity, mean wages, skill share, and employment. For instance, affiliates of US firms tend be more productive and tend to pay higher wages than those from most other source countries.

5. Why do source country differences in performance arise? The role of management practices

What does then explain the differences in performance across affiliates of different source countries? Section 2 suggested that source country differences in productivity may be due to either a selection effect arising from, for example, the geographical or cultural proximity of the source country to Sweden or a "pure" source country productivity effect arising from source country-specific institutions. To measure the latter source country influence on productivity, we will first estimate a global index of management practices for MNEs headquartered in different source countries by using recent data on management practices available from Bloom, Sadun, Van Reenen and co-authors (http://worldmanagementsurvey.org). We will then examine whether source country variation in MNEs' management practices can provide an explanation for the observed differences in the productivity of foreign affiliates in Sweden across source countries.

Our analysis is based on the following version of Equation (14):

$$\log\left(\frac{VA_{it}^{*}}{L_{it}^{*}}\right) = \delta + \beta Management_{m} + \varphi \log\left(\frac{K_{it}^{*}}{L_{it}^{*}}\right) + \psi \log(L_{it}^{*}) + \vartheta Share\_skilled + \boldsymbol{\theta}'\boldsymbol{X}_{mt} + \mu_{ht} + \varepsilon_{it} \quad (16)$$

In Equation (16), the variable $Management_m$ measures time-invariant source country management practices estimated across all host countries in which MNEs from the various source countries with significant ownership in Sweden are active. We describe this

variable in detail below. Note that we do not include Swedish firms in Equation (16); rather, *only* foreign affiliates are included. We include only foreign affiliates because we aim to explain the source country differences in productivity between foreign firms that we documented in the previous section. Because of this focus, all of the variation in the variable of interest, namely, management practices, will originate from foreign countries.

Management practices by MNEs from different countries may, of course, be correlated with other source country characteristics that affect their foreign investments. We therefore include a vector $\boldsymbol{X}_{mt}$ in Equation (16), which contains other source country-specific variables. In addition to other source country-specific factors affecting the productivity of foreign affiliates, these variables should control for source country-specific barriers to investing in Sweden.

In our default specification, we include geographical distance from the source country to Sweden. Our distance variable, *Distance,* measures the distance between the source country and Sweden and is based on the CEPII distance measure, which is a population-weighted measure that accounts for internal distances and population dispersion.[18] We also include *Business Freedom* and *Freedom to Trade* from the Heritage Foundation, as well as *Rule of Law* from the Worldwide Governance Indicators (WGI) developed by Kaufman et al. (1999) and supplied by the World Bank. In the robustness section, we include numerous other source country characteristic variables such as legal institutions, economic freedom, human capital, and cultural differences. Table A5 in the Appendix provides a descriptive overview of all the included variables.

5.1 Estimating source country-specific management practices

We use data from the WMS to estimate our source country management variable, $Management_m$. The WMS data originate from several different surveys; the 2004 survey is used in Bloom and Van Reenen (2007), the 2006 survey is used in Bloom and van Reenen (2010), and finally, the combined 2004-2010 survey is described in Bloom et al. (2012a).

The WMS is based on randomly drawn samples of mid-size firms, employing between 100 and 5000 workers in multiple industries in 20 different countries. The survey is an interview-based evaluation tool that consists of 18 questions regarding management practices. The answers to each question are rated on a scale from 1 ("worst practice") to 5 ("best practice"). The WMS data cover both national and multinational firms. Multinational firms include both foreign affiliates and "parent firms", that is, the part of the MNEs located in the

[18] Further information on CEPII's distance measure is found in Mayer and Zignago (2006).

source country. Interviews were conducted with mid-level managers in manufacturing plants, retail stores, hospitals, and schools, who have an overview of the management practices but who remain involved in the day-to-day work. We will focus on the *manufacturing* data, as these data are the most comprehensive.

The manufacturing data include over 9,000 firm-year observations in 20 host countries. Approximately 2,400 of these observations involve foreign affiliates, which have ownership spread across 52 different source countries. We will focus on the source country affiliation, which is more relevant for the present analysis than host country affiliation. The reason for this focus is that source country affiliation is the same connection that is used in the Swedish dataset, i.e., multinational affiliates from different source countries found in a foreign host country. Therefore, we use the source country variable to assign the country of interest rather than the host country variable, as used in the Bloom et al. studies. The use of this source country affiliation also provides us with a much richer country spectrum to work with compared to host country affiliation (52 countries instead of 20 countries). The remainder of the observations, when domestic multinationals are excluded, belong to local domestic firms. In all, approximately 4800 firm-year observations pertain to local domestic firms and are included in the country-specific management sample. Overall, our dataset contains more than 7000 firm-year observations for the period between 2000 and 2009.

The reason for not including the domestic MNEs is that the survey only samples firms with between 100 and 5000 employees. These domestic MNEs would be too small relative to the overall population of MNEs headquartered in these 20 countries. Including such firms would create a potential bias in measured management practices for these domestic MNEs. However, as foreign affiliates are, on average, much smaller than their "parent firm" in the source country, this selection problem will be much less severe if we examine the management practices of the foreign affiliates of MNEs headquartered in the various source countries.

The WMS data can also be disaggregated into three different areas: *Monitoring, Targets,* and *Incentives*. *Monitoring* focuses on how well companies observe internal activities and how well they use this information for continuous improvement. *Targets* investigates whether the company establishes the correct targets, tracks the correct outcome, and takes correct action if the targets and outcomes are inconsistent. Finally, *Incentives* considers whether an organization promotes and rewards its employees based on performance and prioritized hiring while attempting to retain its best workers. These sub-indices are of interest because they indicate that management styles can vary within each country and

because certain countries might score high in some measurement areas but low in others. The *overall* management index is an average of the three sub-indices.

To extract source country differences in management practices among MNEs from different source countries, we estimate the following model, which estimates the average difference in management practices between the foreign affiliates of MNEs headquartered in *the US, UK, France, Germany, Netherlands, Norway, Denmark, Finland, Luxembourg, Japan, and Switzerland*:

$$Management_{imt} = \alpha + \sum_{m \in M} \delta_m D_{imt} + \mu_{mt} + \varepsilon_{imt}, \quad (17)$$

where *i* indexes firms, *t* indexes years, and *m* indexes the country where the owners of firm *i* reside. The dependent variable $Management_{imt}$ is the overall management index. The control group in Equation (17) consists of MNEs and local firms from other countries.[19] In our preferred specification, we use combined time and country fixed effects. We then control for all variation in management practices that is common to every investigated host country in the BVR data in each survey year while excluding domestic multinationals. This procedure isolates the quality of management practices in the foreign operations of MNEs that stems from the institutions or economic conditions in the source country *m*, which improves the MNEs' management practices globally. We label these estimates $\hat{\delta}_m$, "*Management1*".[20]

We also estimate Equation (17), without the combined time and country fixed effects, $\mu_{tm,}$. In this specification, the estimated coefficients $\tilde{\delta}_{jm}$ capture the influence of the source country—as well as management practices potentially acquired in the host countries—on the management practices of MNEs. We label this variable *Management2*. For robustness, we also estimate alternative specifications with and without fixed effects and domestic multinationals. Column 1 in Table 7 reports the results from estimating Equation (17) with pairwise time- and host-country fixed effects, labelled "*Management1*". The baseline for the estimated management index is the constant. The country-specific estimates are then added to the constant, leaving firms headquartered in the US with the highest ranking, with an estimated coefficient of $\hat{\delta}_j = 0.505$. From this estimation, we obtain a management index of

[19] See Section 3.2 above for details concerning the choice of countries. We will also present results where additional countries are included in the analysis.

[20] This method also removes the time variation in the management index for each country. The removal of such variation is preferred, as the dataset primarily consists of data from cross-sectional surveys conducted at different points in time rather than data with a panel structure; hence, the number of observations across countries and years varies.

3.536 for the US. US MNEs are then followed by MNEs from France, Japan, Switzerland, and Germany. MNEs headquartered in the Nordic countries and in Luxembourg are at the bottom of the distribution. As reported in the remaining columns in Table 7, the ranking of multinationals from different countries does not appear to be particularly sensitive to how source country-specific management is estimated: the US remains at the top and the Nordic countries at the bottom.[21]

--Table 7 about here--

Finding that US MNEs score highest on the estimated management index and that the Nordic countries and Luxembourg score among the lowest hints at a correlation between the estimated source county MNE management index and our estimated average difference in labor productivity between MNEs from different source countries in Table 4. This correlation is also illustrated in Figure 5a, in which we plot estimated country coefficients for manufacturing firms from column 4 in Table 4 against the estimated source country *Management1* indices. The upper panel reveals a strong correlation between the average percentage difference in productivity in the manufacturing sector between foreign affiliates and Swedish firms and the estimated average management index for MNEs from the examined source countries.[22] MNEs from source countries with a higher management index also have a higher average difference in labor productivity vis-à-vis Swedish firms.

In the lower panel, Figure 5b, we depict the correlation when we also include additional countries as a robustness check. The additionally selected countries are found in both the Swedish firm data and the WMS data set, although they are not as common in the data as the original countries. The additional countries are Australia, Austria, Belgium, Canada, India, Ireland, Italy, Singapore, and Spain. We find that the fit is slightly worse when we include the additional countries but that the correlation remains highly positive.

--Figure 5 about here--

[21] Table A4 in the Appendix presents an additional estimation of the management index. This specification also includes the management index of local firms and domestic MNEs for the selected countries: the US, Sweden, Germany, the UK, and France. Again, the ranking of MNE source countries, which is our outcome of interest, is not affected by this alternative specification.

[22] The estimated Person correlation coefficient is 0.64.

5.2 Results

Table 8 presents results from estimating Equation (16), in which the source country management variable $Management_m$ is included. The table reports results for which the management index is calculated in a number of different ways. *Management1* is the preferred measure, as described above.

Column 1 in Table 8 reports the unconditional effect of management practices on the productivity of foreign affiliates when we control for only pairwise industry and time-specific effects. Specification 2 adds firm controls, as discussed above.

--Table 8 about here--

Regardless of which controls are used, columns 1-2 indicate that source country-specific management practices have a positive and statistically significant effect on the productivity of foreign affiliates in Sweden. The positive correlation between source country-specific productivity and source country management practices, as illustrated in Figure 5, is thus statistically significant even after we control for a variety of firm controls and even after we include pairwise industry and year fixed effects.

In column 3 in Table 8, we add source country-specific controls. Somewhat surprisingly, we do not observe a statistically significant effect of geographical distance from the source country to Sweden. Only the source country's *Rule of Law* has a statistically significant effect on the productivity of foreign affiliates in Sweden. This result suggests that better legal institutions foster higher quality firm-specific assets in general, which increases affiliates' productivity. However, source country management remains statistically significant even when we control for these other source country variables.

Using our preferred specification 3 in Table 8, which includes firm and source country controls, we find that a one-unit change in the management index is associated with a $0.353 * 100\% \approx 35\%$ increase in labor productivity. If we use the information in Table 7 and compare identical foreign affiliates where one is from the US and another is from Luxembourg, we would predict that the US affiliate should have a productivity advantage of $0.5 * 0.353 * 100\% \approx 18\%$. This figure is only slightly larger than the 11% average difference in productivity between affiliates found in Table 4, column 3. The same result also applies to a comparison between US-owned affiliates and Norwegian-owned affiliates , where we find that the same 18% productivity advantage from better management practices arises

even when we control for the Norway's geographical proximity to Sweden and the similarity between this difference in productivity and the 14% productivity gap between US and Norwegian firms shown in Table 4. This finding indicates that source country-specific management practices explain a large share of the differences in country specific productivity that we estimated in the previous section.

Studying the other specifications in Table 8, in which source country management is estimated in alternative ways, reveals that the relationship between the management practices of source country MNEs and the productivity of affiliates in Sweden is not dependent on our approach to estimating the source country management index (columns 4-9).

These results indicate that differences in management practises of MNEs are important for explaining differences in productivity between foreign affiliates. In the next section, we examine the robustness of these results in more detail.

5.3 Robustness

Additional countries

As mentioned above in the discussion regarding Figure 5b, the particular countries that are included in the analysis might be important. To explore this possibility, we now extend the number of source countries in the regression analysis. Extending the number of source countries is feasible in this section because we do not need to estimate average differences between affiliates from each source country and Swedish firms, as in Section 4. The additional countries are Australia, Austria, Belgium, Canada, India, Ireland, Italy, Singapore, and Spain. The results from the extended source country sample are presented in Table 9.

--Table 9 about her--

We re-estimate specifications 1-6 in Table 8 on the extended sample. When comparing the estimated coefficients for *Management1* and *Management2* in specifications 1-6 in Table 9 with the corresponding specifications 1-6 in Table 8, we find that the results are not affected by the inclusion of additional source countries. Indeed, the estimated coefficients are very similar. The somewhat modest increase in the number of observations, from 8,464 to 9,111, again reflects the fact that most foreign affiliates in Sweden are headquartered in the original 11 source countries.

Sub-indices

In Table 10, we use the same specification as in Table 8, column 3, but we disaggregate the effect of *Management1* into its sub-indices: *Monitoring, Targets* and *Incentives*. Beginning with *Monitoring*, which indicates how well firms observe internal activities and how well they use this information to make improvements, we find that monitoring is positively and significantly related to labor productivity.

The same result holds for the other two sub-indices. Column 2 reports the results for the incentive variable, *Targets*, which indicates whether a firm "sets the right targets, tracks the right outcome, and takes the right action". Finally, in column 3, we present the results for *Incentives*, which measures whether an organization promotes and rewards its employees based on performance and prioritized hiring while retaining its best workers.

--Table 10 about here--

Additional source country characteristics

We now continue to examine whether other characteristics of the country of origin influence the productivity of the foreign-owned MNEs and whether these variables affect the basic results presented thus far. To do so, we focus on a number of additional source country characteristics related to openness, trade, legal structure, and human capital. To conserve space, we focus on the impact of our estimated *Management1* index (from column 3 in Table 8) on labor productivity. The results are presented in Table 11.

--Table 11 about here--

We first consider the impact of globalization. If foreign ownership results from more internationally integrated countries or more productive economies, then foreign ownership might influence the relationship between the quality of management and labor productivity. To further account for this effect, we sequentially add variables related to economic integration. These variables are *Trade openness* from the Penn data set, *FDI inflow* (net inflows as a percentage of GDP) from the World Development Indicators (WDI), and *Freedom to trade internationally* from the Fraser Institute. As Table 11 shows, none of these controls affect the positive relationship between the management quality index and labor productivity (see columns 1-3). We find that only the freedom to trade variable has a positive and significant estimated coefficient. This result indicates that the degree of international

integration, as measured by freedom to trade in the source country where the parent company is located, is positively related to the labor productivity of the affiliates located in Sweden.

Next, we consider country characteristics related to the legal structure of the country of origin of the foreign MNEs. These variables are *Legal Structure and Secure Property Rights* from the Fraser Institute (column 4) and *Property rights* collected from the Heritage Foundation (column 5). Adding these two variables has no impact on the estimated coefficient for management. We also find that only source country property rights are significantly related to labor productivity. This result suggests that secure source country property rights generate firm-specific assets that are also transferred to affiliates located in Sweden.

We also add variables from the Heritage Foundation associated with business freedom and corruption. We find that *Financial freedom* and *Investment freedom* in the country of origin of the foreign multinationals (columns 6 and 7) have no effect on the labor productivity of the Swedish affiliates, and we obtain similar results for the variable *Freedom from corruption* (column 8). Again, our baseline results regarding the association between the management quality index and labor productivity remain intact. Thus, this relationship is not affected by adding controls related to business freedom and corruption.

Another potentially important source country-specific characteristic is human capital accumulation. Columns 9 and 10 in Table 11 report the influence of the average number of years of education for males and females separately (collected from the Quality of Government Institute (QOG) at the University of Gothenburg). The results reveal no impact of the education levels in an MNE's country of origin and, again, no influence on the basic relationship between management quality and productivity.

In columns 11 and 12, we also include source country GDP per capita and the size of the source country measured by its population, both from Penn. We then find that larger source countries are associated with significantly higher affiliate labor productivity. We find no significant effect of the GDP per capita of the source country on affiliate productivity. However, adding GDP per capita as a source country control renders the *Management1* index for source country MNEs non-significant. This result is not particularly surprising: if the management practices of MNEs from different source countries increase the productivity of their Swedish affiliates, the same management practices will also increase the productivity of the parts of these firms located in the source country. In the Appendix, we examine the correlation between our measure of management practices and GDP per capita (see Tables A3a-A3e). Somewhat surprisingly, we find that source country management practices are negatively correlated with GDP per capita (Table A3a). However, if we exclude Luxembourg

and Norway (a tax haven and an oil rich country, respectively, and countries with high GDP per capita and low management), we find a large and positive correlation between source country management and GDP per capita (Table A3d).

Our final approach to analyzing the influence of other source country characteristics is to add two variables associated with cultural differences compared to Sweden. These variables originate from the World Value Survey database. One is the traditional vs. secular variable, which captures the contrasts between societies in which religion is important and those in which it is not, and the other is a survival vs. self-expression variable, which is associated with the transition from industrial to post-industrial societies. These two variables explain more than 70% of the cross-cultural variance on scores of more specific values according to the World Values Surveys. The results are presented in columns 13 and 14 in Table 11. Once again, we find that our basic results regarding a positive relationship between management practices and productivity remain unchanged.

Entire economy

Finally, in Table 12, we estimate our management-productivity regressions on the entire economy, instead of only on the manufacturing sector. The first two columns compare the impact of analyzing 11 vs. 20 countries. These columns can be compared to column 3 in Tables 8 and 9 separately. We find that the estimated coefficient on the management variable is stronger when only the manufacturing sector is studied. This result applies to both the 11- and the 20-country specifications. However, the larger sample size when both sectors are included increases the efficiency of our estimates.

In columns 3 and 4, we show that the larger sample size when we increase the sample from 11 to 20 source countries yields a significant estimate of the relationship between management practices by MNEs headquartered in the different source countries and affiliate labor productivity in Sweden, even when we control for the both distance and GDP per capita of the source country. The observed significance is due to the greater variation in the data when we use 20 countries. The impact of this approach can also be observed in the different correlation coefficients presented in Tables A3a-A3e in the Appendix.

--Table 12 about here—

Ultimately, we conclude that differences in the global management practices of MNEs from different source countries robustly explain productivity differences between their affiliates in Sweden.

6. Summary and conclusions

Is FDI from certain countries preferable to FDI from other countries? Are there differences in productivity between foreign affiliates with headquarters in different source countries? Do such differences originate from differences in management practices between source countries?

Our theoretical framework suggests that source country heterogeneity in affiliate performance can arise in several ways: Institutional factors may promote efficient organizations and management in a source country (such as intense product market competition), and such efficiency might spill over to MNEs' affiliates in host markets. Moreover, MNEs headquartered in source countries that are proximate to the host country may face lower barriers to entry and therefore might need to be less efficient to recoup investment costs. Foreign firms also frequently invest in a country by purchasing domestic firms, and market power effects or source country tax advantages may then affect the buyer's ability to acquire targets, which will affect post-takeover performance.

Using detailed Swedish firm-level data and information on foreign affiliates, we first demonstrate that the well-known foreign productivity premium masks significant source country heterogeneity in productivity between foreign affiliates from different source countries. This result holds regardless of whether source country differences in affiliate productivity are estimated along a cross-sectional dimension (comparing Swedish-owned firms with foreign affiliates from different source countries) or are estimated from foreign acquisitions (estimating the effect of a transfer from Swedish to foreign ownership in order to control for unobserved heterogeneity and so-called "cherry-picking").

For instance, we find that US affiliates are approximately three times more productive than affiliates with headquarters in Norway. This source country difference may arise because institutions may promote efficient management in US firms. Alternatively, the difference may indicate that Norwegian firms have better information on the culture in neighbouring Sweden, engendering a lower entry barrier for Norwegian firms. We therefore examine why source country differences arise by assessing the impact of numerous source country characteristics

on the performance of foreign affiliates. In particular, using newly available data from the WMS, we find that approximately one-third of the observed source country variation in productivity between foreign affiliates is explained by differences in foreign MNEs' global management practices.

In addition to presenting new and more extensive evidence on source country heterogeneity in FDI outcomes, our paper contributes to a growing literature stream on the impact on management quality and its relationship with observed variation in productivity across firms. We do so by investigating a new channel, namely, the impact of source country differences in MNE performance. Differences in management practices not only explain the variation in productivity but also correlate with the variation in the skill share, wages, and employment of foreign affiliates. Future research could contribute further knowledge on other aspects of firm internationalization and could examine the relation between such aspects and management practices. One such aspect is a firm's export behaviour, as recent evidence indicates that substantial variation exists across firms in terms of both the magnitude and the duration of exports.

References

Barbosa, N. and H. Louri (2002), "On the determinants of multinationals' ownership preferences: evidence from Greece and Portugal", *International Journal of Industrial Organization, 20*(4), 493-515.

Beugelsdijk, S., S. Brakman, H. Garretsen and C. Van Marrewijk (2013), "International economics and business: nations and firms in the global economy", Cambridge University Press.

Bloom, N. and J. Van Reenen (2007), ''Measuring and Explaining Management Practices across Firms and Countries'', *Quarterly Journal of Economics*, 122(4), 1351–1408.

Bloom, N. and J. Van Reenen (2010), "Why Do Management Practices Differ across Firms and Countries?", *The Journal of Economic Perspectives*, 24(1), 203-224.

Bloom, N., R. Sadum and J. Van Reenen (2012a), "The Organization of firms across countries", *Quarterly Journal of Economics*, 127(4), 1663–1705.

Bloom, N., C. Genakos, R. Sadum and J. Van Reenen (2012b), "Management Practices Across Firms and Countries", *Academy of Management Perspectives*, 26(1), 12-33.

Bloom, N., R. Sadun and J. Van Reenen, (2012c), *Management as a Technology*, LSE mimeo.

Bloom, N., R. Sadum and J. Van Reenen (2012d) "Americans do I.T. better: US multinationals and the productivity miracle", *American Economic Review*, 102(1), 167-201.

Bloom, N., R. Lemos, R. Sadun, D. Scur and J. Van Reenen (2014), "The New Empirical Economics of Management", *Journal of the Eurooean Economic Association*, 12(4), 835-1126.

Conyon, M., S. Girma, S. Thompson and PW. Wright (2002), "The Productivity and Wage Effects of Foreign Acquisition in the United Kingdom", *Journal of Industrial Economics*, 50(1), 85-102.

Dunning, J. (1974), "Economic analysis and the multinational enterprise", Routledge.

Dunning, J. (1980), "Toward an Eclectic Theory of International Production: Some Empirical Tests", *Journal of International Business Studies*, 11(1), 9-31.

Dunning, J. (1985), "Multinational enterprises, economic structure, and international competitiveness", John Wiley & Sons Inc.

Dunning, J. (1988), "The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions", *Journal of International Business Studies*, 19(1), 1-31.

Griffith, R. and H. Simpson (2004), "Characteristics of Foreign-Owned Firms in British Manufacturing" in *Seeking a Premier Economy: The Economic Effects of British Economic Reforms, 1980-2000*, eds D. Card, R. Blundell and R. B. Freeman, University of Chicago

Press.

Grima, S., D. Greenaway and K. Wakelin (1999), "*Wages, Productivity and Foreign Ownership in UK Manufacturing*", University of Nottingham.

Helpman, E., M. Melitz and S. Yeaple (2004), "Exports versus FDI with Heterogeneous Firms.", *American Economic Review* 94(1), 300-16.

Horn, H. and L. Persson (2001), "Endogenous mergers in concentrated markets", *International Journal of Industrial Organization*, 19(8), 1213-1244.

Huttunen, K. (2007), "The Effect of Foreign Acquisition on Employment and Wages: Evidence from Finnish Establishments", *Review of Economics and Statistics*, 89(3), 497-509.

Jehiel, P. and B. Moldovanu (2000), "Auctions with Downstream Interaction among Buyers", *The RAND Journal of Economics*, 31(4), 768-791.

Kaufman, D., A. Kraay and P. Zoido-Lobatón (1999), *Aggregating governance indicators* (Vol. 2195). World Bank Publications.

Markusen, J. (2001), "General-Equilibrium Approaches to the Multinational Firm: A Review of Theory and Evidence", *Journal of International Economics* 53(1), 189-204.

Mayer, T. and S. Zignago (2006), "Notes on CEPII's distance measures", MPRA Paper No. 26469.

Neary, JP. (2009), "Foreign direct investment: The OLI framework" in K.A. Reinert, R.S. Rajan, A.J. Glass and L.S. Davis (eds.): The Princeton Encyclopedia of the World Economy, Volume I, Princeton: Princeton University Press, 12, 472-477.

Neary, JP. (2007), "Cross-border Mergers as Instruments of Comparative Advantage", *Review of Economic Studies* 74(4): 1229-57.

Norbäck, PJ. and L. Persson (2007) "Investment Liberalization - Why a Restrictive Cross-Border Merger Policy Can Be Counterproductive", *Journal of International Economics*, 72(2), 366-380.

Salant, S., S. Switzer and R. Reynolds (1983), "Losses from Horizontal Merger: The Effects of an Exogenous Change in Industry Structure on Cournot-Nash Equilibrium", *Quarterly Journal of Economics*, 98(2), 185-199.

Stevenson, B. and J. Wolfers (2006), "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress", *Quarterly Journal of Economics*, 121(1), 267-288.

Figure 1: Total employment and employment in foreign owned firms 1996-2009 (at least10 employees).

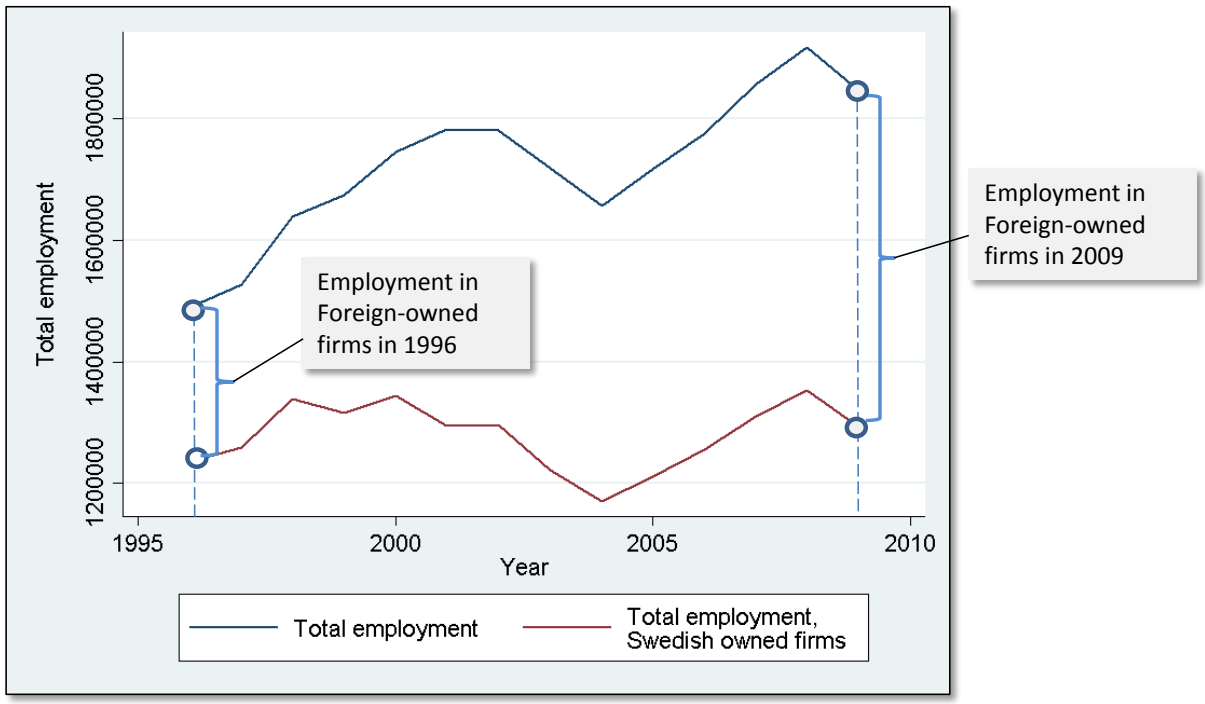


Table 1: Number of firms and foreign acquisitions of Swedish firms, 1996-2009 (at least 10 employees).

	Number of firms			Acquisitions
Year	Foreign	Sweden	Total	Foreign
1996	1826	22219	24045	-
1997	1955	23495	25450	129
1998	2137	24735	26872	205
1999	2265	25005	27270	230
2000	2624	25908	28532	497
2001	3294	25914	29208	742
2002	3360	25739	29099	356
2003	3503	25227	28730	364
2004	3376	25069	28445	198
2005	3586	25420	29006	358
2006	3730	26574	30304	308
2007	3951	27949	31900	405
2008	4117	29019	33136	403
2009	4260	28241	32501	386
Average	3142	25751	28893	352

Note: See section 3.1 for details on measuring foreign acquisitions.

Table 2: Country specific share of total employment in foreign-owned firms and the number of foreign firms, 1996-2009 (at least 10 employees).

	Share of employment				Number of firms
Country of origin	1996-2000	2001-2005	2006-2009	Average 1996-2009	Average 1996-2009
US	0,194	0,216	0,185	0,2	519
UK	0,102	0,105	0,12	0,11	275
Finland	0,113	0,105	0,102	0,11	280
Germany	0,079	0,082	0,096	0,09	313
Norway	0,074	0,076	0,083	0,08	370
Denmark	0,093	0,093	0,077	0,09	307
Netherlands	0,097	0,098	0,077	0,09	277
France	0,081	0,075	0,072	0,08	146
Luxembourg	0,004	0,015	0,043	0,02	86
Switzerland	0,111	0,052	0,043	0,07	150
Japan	0,013	0,013	0,013	0,01	72
China	0	0	0,001	0	2

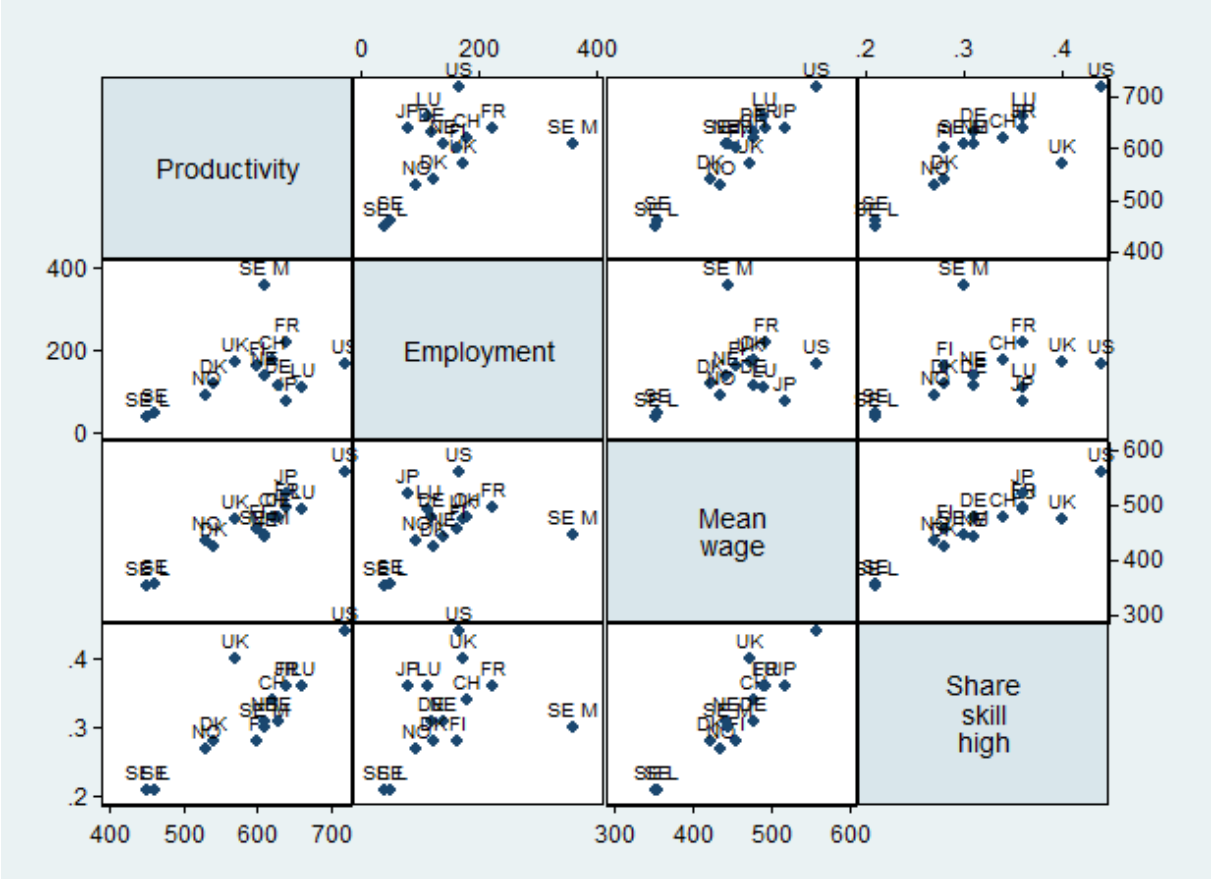
Note: Table sorted on average of employment share.

Table 3: Firm characteristics of performance variables, averages 1996-2009 (at least 10 employees).

Country	Productivity	Firm size	Wage	Share skill high
Foreign	610	142	476	0,34
USA	720	166	558	0,44
France	640	221	494	0,36
Switzerland	620	179	478	0,34
UK	570	172	473	0,4
Finland	600	163	457	0,28
Luxembourg	660	112	491	0,36
Japan	640	77	519	0,36
Germany	630	118	478	0,31
Netherlands	610	140	443	0,31
Denmark	540	122	423	0,28
Norway	530	91	435	0,27
Swedish	460	50	356	0,21
Swedish MNE	610	359	446	0,3
Swedish local	450	40	353	0,21

Note: Productivity – Value added per employee in 1000 SEK. Employment – Number of employees. Mean wage – Mean wage cost per employee in 1000 SEK. Share of high skilled workers – Share of total number of employees with higher education.

Figure 2: Affiliate performance and source country origin: means of different firm characteristics (affiliates with at least 10 employees), 2000-2009.



Note: The figure explores how source country origin affects affiliate characteristics and how different affiliate characteristics are related. Affiliate performance are measured as the average productivity, employment, mean wages and share of skilled workers for affiliates with ownership in different source countries during the period 2000-2009. For instance, inspecting the second graph in the top row, there is a clear positive relationship between the average productivity and the mean wage of affiliates with ownership in different source countries. It is also clear that US firms have on average the highest productivity and pay the highest wage.

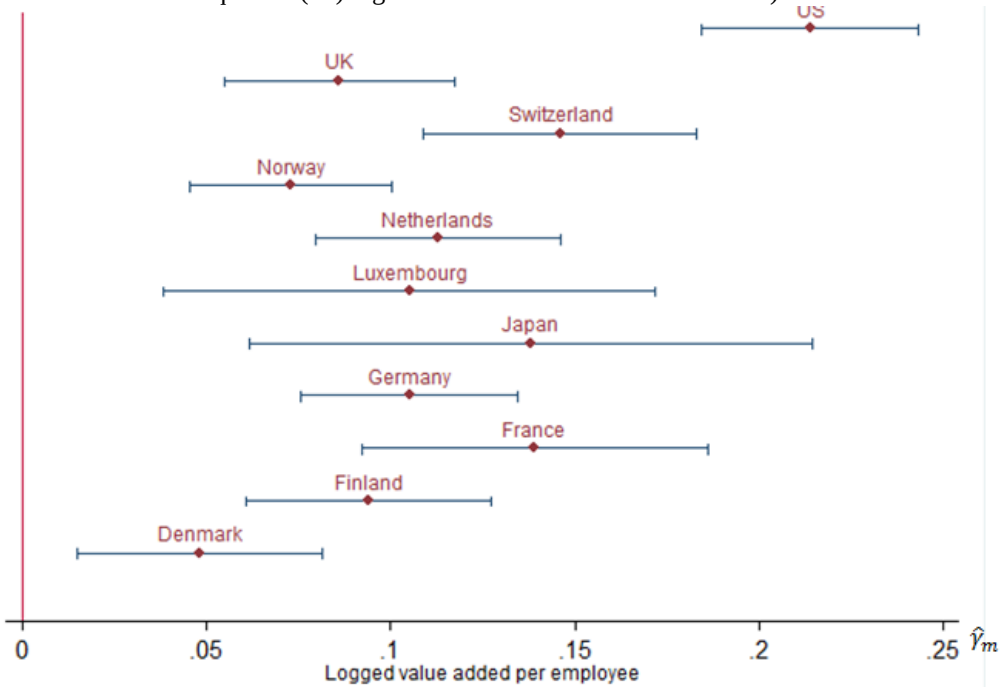
Table 4: Productivity differences between foreign and Swedish firms, 1996-2009 (at least 10 employees).

	All firms	All firms	All firms	Manu.	Service	Local firms	MNE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign	0.182***						
	(0.007)						
Japan		0.216***	0.138***	-0.016	0.175***	0.152***	-0.046
		(0.044)	(0.039)	(0.062)	(0.044)	(0.039)	(0.038)
US		0.305***	0.214***	0.163***	0.232***	0.231***	0.045***
		(0.016)	(0.015)	(0.028)	(0.017)	(0.015)	(0.016)
Denmark		0.085***	0.048***	0.038	0.053***	0.061***	-0.104***
		(0.019)	(0.017)	(0.026)	(0.020)	(0.017)	(0.018)
UK		0.160***	0.086***	0.089***	0.084***	0.103***	-0.072***
		(0.017)	(0.016)	(0.027)	(0.019)	(0.016)	(0.018)
Germany		0.190***	0.105***	0.088***	0.112***	0.121***	-0.054***
		(0.016)	(0.015)	(0.030)	(0.018)	(0.015)	(0.017)
France		0.202***	0.139***	0.043	0.175***	0.157***	-0.016
		(0.026)	(0.024)	(0.038)	(0.030)	(0.024)	(0.025)
Norway		0.102***	0.073***	-0.023	0.114***	0.085***	-0.085***
		(0.015)	(0.014)	(0.023)	(0.017)	(0.014)	(0.016)
Netherlands		0.187***	0.113***	0.086***	0.126***	0.128***	-0.032*
		(0.019)	(0.017)	(0.025)	(0.021)	(0.017)	(0.018)
Luxembourg		0.178***	0.105***	-0.035	0.157***	0.119***	-0.061*
		(0.036)	(0.034)	(0.048)	(0.041)	(0.034)	(0.035)
Finland		0.141***	0.094***	0.090***	0.090***	0.111***	-0.045**
		(0.018)	(0.017)	(0.023)	(0.024)	(0.017)	(0.018)
Switzerland		0.224***	0.146***	0.137***	0.154***	0.163***	-0.007
		(0.022)	(0.019)	(0.029)	(0.024)	(0.019)	(0.020)
Log(K/L)			0.114***	0.112***	0.115***	0.114***	0.110***
			(0.001)	(0.003)	(0.001)	(0.001)	(0.004)
Log(L)			0.017***	0.022***	0.016***	0.009***	0.000
			(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
Share skill high			0.579***	0.447***	0.599***	0.563***	0.703***
			(0.010)	(0.027)	(0.010)	(0.010)	(0.028)
Firm controls	No	No	Yes	Yes	Yes	Yes	Yes
Observations	381,403	381,403	381,403	94,344	286,268	370,797	46,815
R-squared	0.178	0.180	0.303	0.203	0.324	0.303	0.219

Note: The dependent variable is logged value added per employee. Reference group consists of Swedish firms; ”All”, ”MNEs” (multinational domestic firms), or ”Local” (non-multinational domestic firms). Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. ”Manu.” refers to the manufacturing sector and ”Service” is the service sector. All regressions include interacted and individual time and industry controls. Standard errors are clustered by firm. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Figure 3: Foreign ownership and foreign acquisitions compared to all Swedish firms, 1996-2009, dependent variable logged value added per employee (at least 10 employees).

Panel I - Productivity differences between foreign and. Swedish firms (Visual display of Table 4, column 3. Point estimates of Equation (15) together with 95% confidence intervals).



Panel II - Productivity differences after acquisitions of Swedish firms by foreign firms (Visual display of Table 5, column 3. Point estimates of Equation (16) together with 95% confidence intervals).

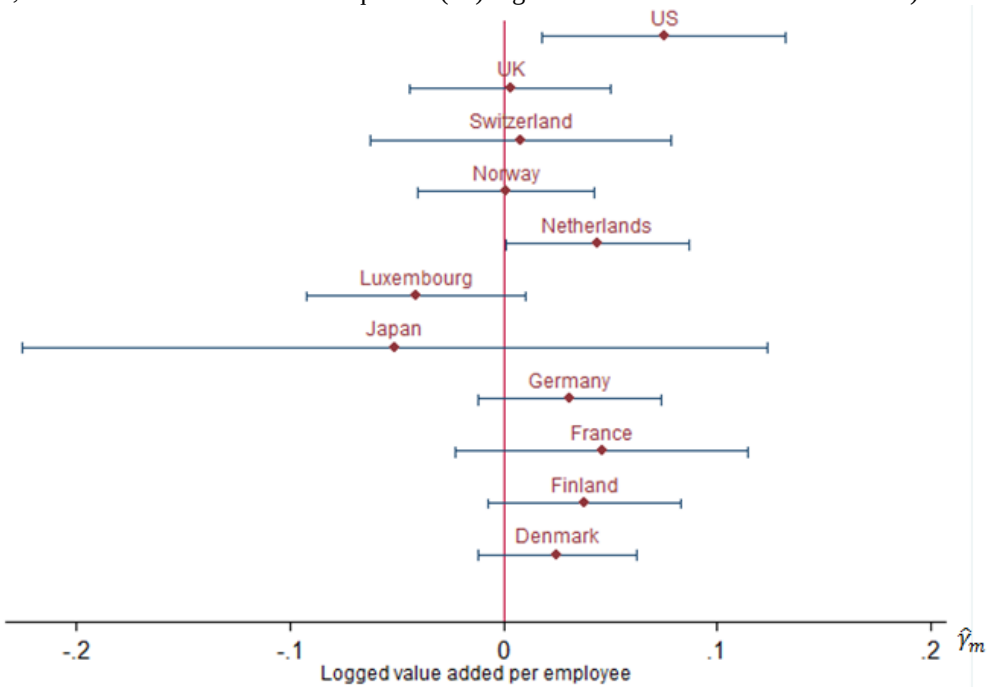
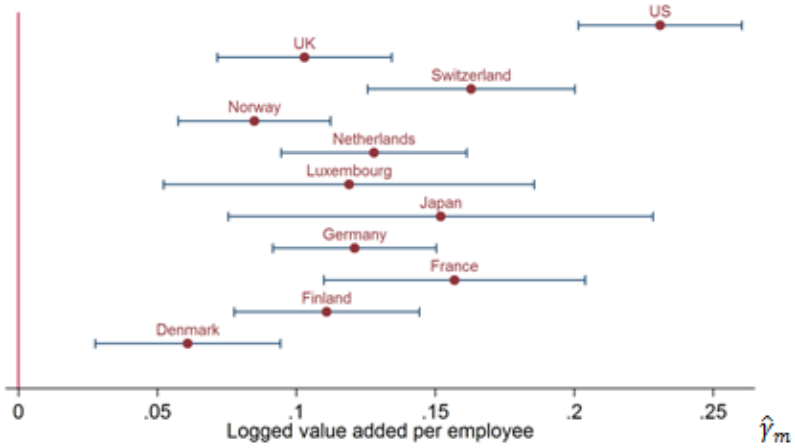
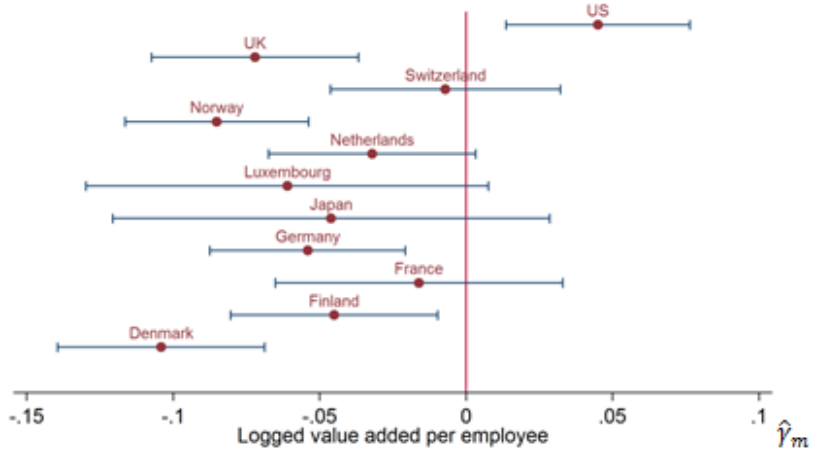


Figure 4: Foreign ownership and foreign acquisitions compared to Swedish local firms and MNEs, 1996-2009, dependent variable logged value added per employee (at least 10 employees).

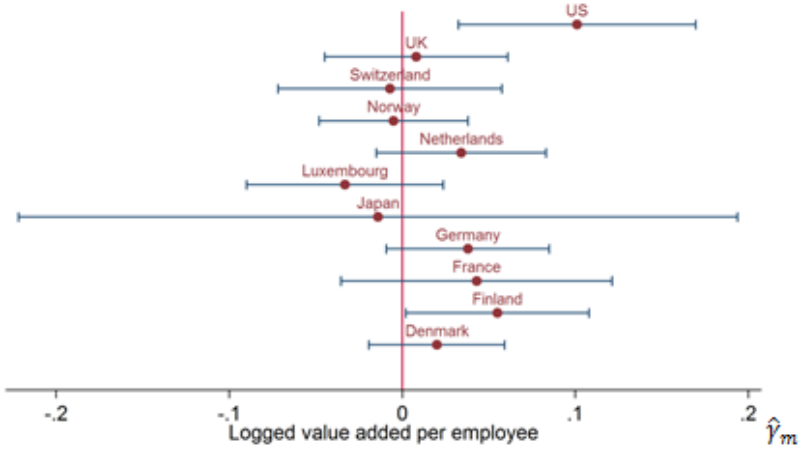
Panel I - Productivity differences between foreign and Swedish local firms (Visual display of Table 4, column 6, point estimates and 95% confidence intervals).



Panel II - Productivity differences between foreign firms and Swedish MNEs (Visual display of Table 4, column 7, point estimates and 95% confidence intervals).



Panel III - Productivity differences after acquisitions of Swedish local firms by foreign firms (Visual display of Table 5, column 6, point estimates and 95% confidence intervals).



Panel IV - Productivity differences after acquisitions of Swedish MNEs by foreign firms (Visual display of Table 5, column 7, point estimates and 95% confidence intervals).

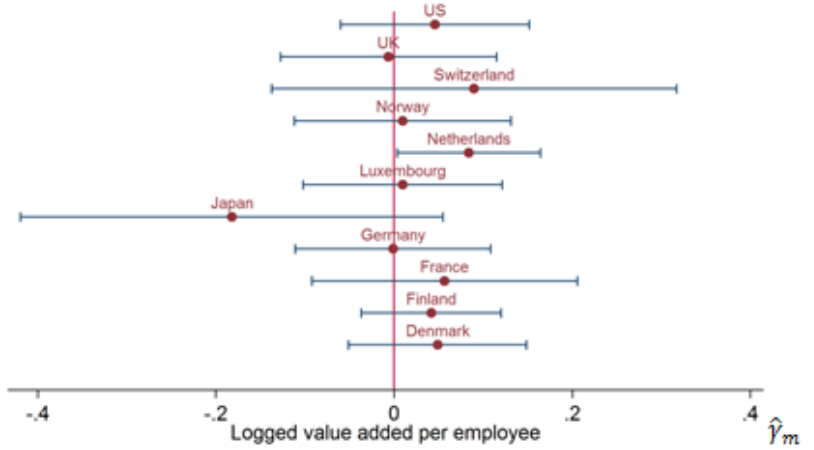


Table 5: Productivity differences after acquisitions of Swedish firms by foreign firms 1996-2009 (at least 10 employees).

	All firms	All firms	All firms	Manu.	Service	Local firms	MNEs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign	0.022**						
	(0.009)						
Japan		-0.037	-0.051	0.051	-0.071	-0.014	-0.182
		(0.083)	(0.089)	(0.129)	(0.110)	(0.106)	(0.121)
US		0.050*	0.075***	0.075*	0.066*	0.101***	0.046
		(0.029)	(0.029)	(0.040)	(0.038)	(0.035)	(0.054)
Denmark		0.023	0.025	0.039	0.018	0.020	0.049
		(0.019)	(0.019)	(0.029)	(0.026)	(0.020)	(0.051)
UK		-0.012	0.003	-0.049	0.013	0.008	-0.006
		(0.024)	(0.024)	(0.044)	(0.028)	(0.027)	(0.062)
Germany		0.031	0.031	0.044	0.026	0.038	-0.001
		(0.022)	(0.022)	(0.042)	(0.028)	(0.024)	(0.056)
France		0.032	0.046	-0.042	0.059*	0.043	0.057
		(0.035)	(0.035)	(0.095)	(0.034)	(0.040)	(0.076)
Norway		0.003	0.001	-0.099**	0.020	-0.005	0.010
		(0.021)	(0.021)	(0.043)	(0.025)	(0.022)	(0.062)
Netherlands		0.048**	0.044**	0.032	0.053*	0.034	0.084**
		(0.023)	(0.022)	(0.037)	(0.028)	(0.025)	(0.041)
Luxembourg		-0.042	-0.041	-0.078	-0.059**	-0.033	0.010
		(0.026)	(0.026)	(0.053)	(0.029)	(0.029)	(0.057)
Finland		0.028	0.038*	0.004	0.076**	0.055**	0.042
		(0.023)	(0.023)	(0.032)	(0.034)	(0.027)	(0.040)
Switzerland		0.011	0.008	-0.022	0.044	-0.007	0.090
		(0.036)	(0.036)	(0.062)	(0.043)	(0.033)	(0.116)
Log(K/L)			0.074***	0.090***	0.068***	0.071***	0.077***
			(0.007)	(0.025)	(0.006)	(0.010)	(0.020)
Log(L)			-0.109***	-0.105***	-0.126***	-0.094***	-0.139***
			(0.012)	(0.021)	(0.016)	(0.015)	(0.029)
Share skill high			0.059	-0.030	0.053	0.088	0.085
			(0.056)	(0.114)	(0.065)	(0.067)	(0.210)
Firm controls	No	No	Yes	Yes	Yes	Yes	Yes
Observations	39,369	39,369	39,369	11,889	25,594	25,664	5,660
R-squared	0.032	0.033	0.058	0.056	0.058	0.057	0.076

Note: The dependent variable is logged value added per employee. Reference group consists of Swedish firms; ”All”, ”MNEs” (multinational domestic firms), or ”Local” (non-multinational domestic firms). Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. ”Manu.” refers to the manufacturing sector and ”Service” is the service sector. All regressions include interacted and individual time and industry controls. Standard errors are clustered by firm. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 6: Differences in other performance variables for foreign vs. Swedish firms (FOF) and acquisition of Swedish firms (ACQ) 1996-2009 (at least 10 employees).

	FOF			ACQ		
	Log(L)	Share skill high	Log(w)	Log(L)	Share skill high	Log(w)
	(1)	(2)	(3)	(4)	(5)	(6)
Japan	0.552***	0.140***	0.201***	-0.032	0.016	-0.005
	(0.092)	(0.018)	(0.020)	(0.057)	(0.014)	(0.035)
US	0.802***	0.138***	0.206***	0.112***	0.004	0.094***
	(0.040)	(0.007)	(0.009)	(0.029)	(0.004)	(0.020)
Denmark	0.626***	0.043***	0.085***	0.071***	0.004	0.025**
	(0.046)	(0.008)	(0.008)	(0.021)	(0.004)	(0.010)
UK	0.801***	0.098***	0.105***	0.085***	-0.002	0.039**
	(0.052)	(0.008)	(0.010)	(0.026)	(0.004)	(0.019)
Germany	0.683***	0.089***	0.139***	0.044	-0.006	0.030**
	(0.049)	(0.008)	(0.009)	(0.028)	(0.005)	(0.015)
France	1.053***	0.098***	0.154***	0.047	0.007	0.058**
	(0.087)	(0.011)	(0.013)	(0.046)	(0.007)	(0.024)
Norway	0.570***	0.028***	0.135***	-0.002	-0.004	0.018**
	(0.038)	(0.005)	(0.008)	(0.023)	(0.004)	(0.009)
Netherlands	0.685***	0.078***	0.103***	0.047*	0.004	0.050***
	(0.054)	(0.007)	(0.010)	(0.025)	(0.003)	(0.015)
Luxembourg	0.534***	0.076***	0.125***	0.020	-0.005	0.008
	(0.069)	(0.013)	(0.017)	(0.028)	(0.005)	(0.015)
Finland	0.869***	0.049***	0.135***	0.030	0.003	0.019*
	(0.054)	(0.007)	(0.008)	(0.029)	(0.004)	(0.011)
Switzerland	0.850***	0.104***	0.156***	0.018	-0.000	0.009
	(0.071)	(0.012)	(0.012)	(0.036)	(0.007)	(0.018)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	386,816	386,816	385,934	40,534	40,534	40,424
R-squared	0.126	0.471	0.296	0.099	0.108	0.162

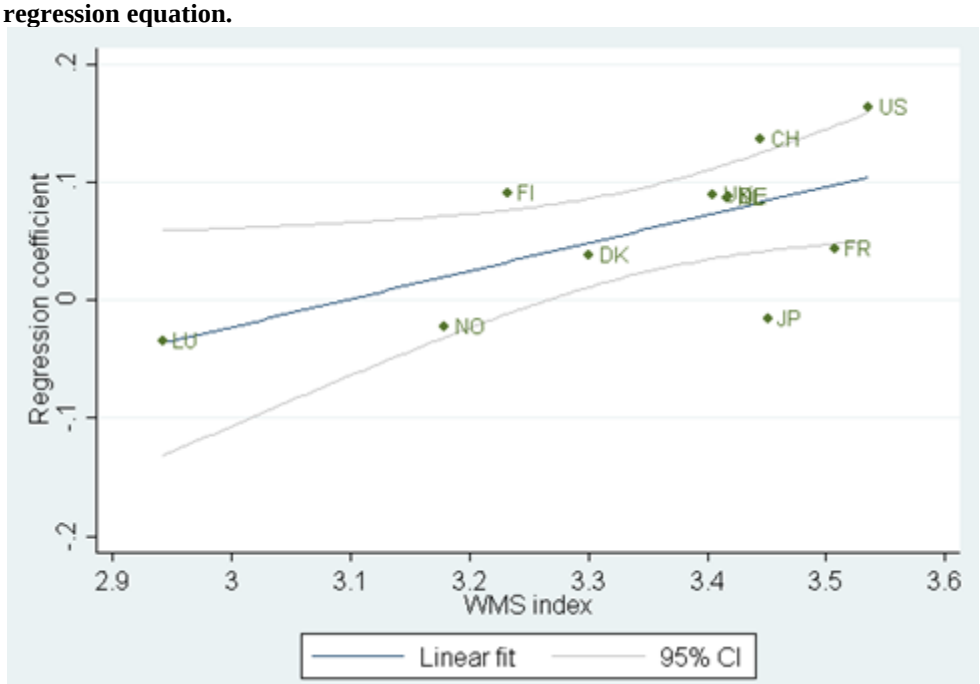
Note: The dependent variables are logged capital per employee, share of skilled workers at firm, and logged wage cost per employee. Reference group consists of all Swedish firms. Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at the firm. All regressions include firm and year fixed effects. Standard errors are clustered by firm. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 7: WMS management index calculated in different ways 2000-2009.

	Management1	**Management2**	Management3	Management4	Management5	Management6	Management7
	(1)	**(2)**	(3)	(4)	(5)	(6)	(7)
US	**0.505*** **	**0.478*** **	0.511***	0.412***	0.487***	0.500***	0.446***
Japan	**0.420*** **	**0.393*** **	0.412***	0.371***	0.412***	0.419***	0.326***
Switzerland	**0.414*** **	**0.411*** **	0.397***	0.391***	0.414***	0.428***	0.383***
Germany	**0.387*** **	**0.363*** **	0.352***	0.290***	0.380***	0.392***	0.305***
Netherlands	**0.386*** **	**0.347*** **	0.333***	0.354***	0.370***	0.386***	0.388***
France	**0.476*** **	**0.452*** **	0.332***	0.358***	0.466***	0.473***	0.419***
Finland	**0.201** **	**0.264*** **	0.249***	0.165*	0.175**	0.188**	0.105
Denmark	**0.270*** **	**0.264*** **	0.249**	0.249**	0.239**	0.243**	0.230**
UK	**0.374*** **	**0.425*** **	0.136***	0.136***	0.359***	0.370***	0.331***
Norway	**0.148**	**0.165**	0.150	0.112	0.130	0.145	0.071
Luxembourg	**-0.089**	**0.002**	-0.012	-0.095	-0.118	-0.096	-0.138
Constant	**3.031*** **	**2.865*** **	2.880***	3.024***	2.691***	3.083***	3.990***
Observations	6,789	6,789	8,550	8,550	6,789	6,789	6,789
R-squared	0.204	0.075	0.079	0.182	0.171	0.177	0.256

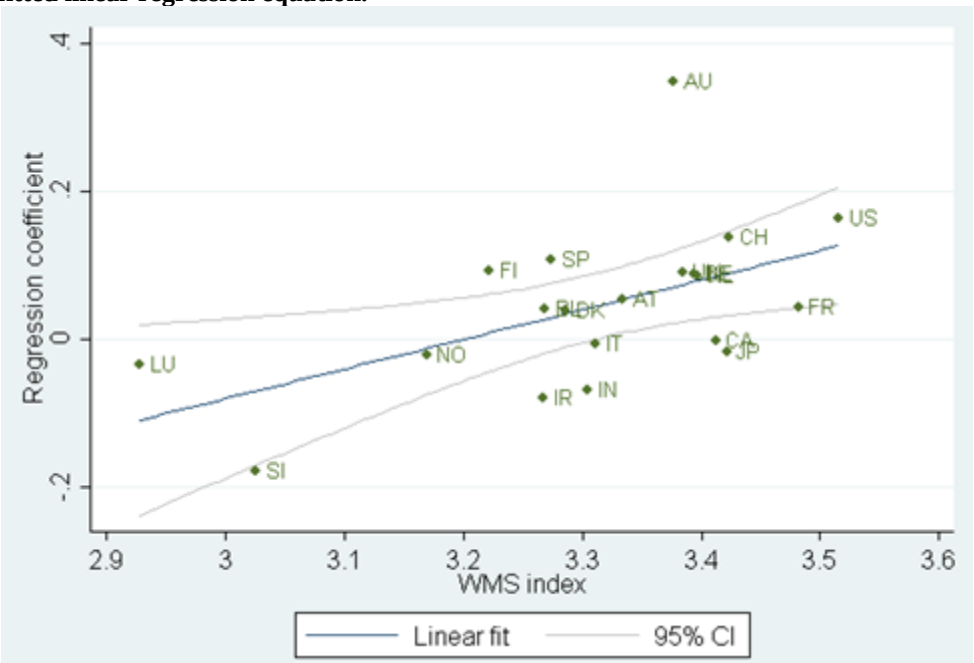
Note: Management1 - w/o domestic multinationals, controls for year and country effect integrated. Management2 - w/o domestic multinationals. Management3 - with domestic multinationals, also equal to average index by country across the entire period. Management4 - with domestic multinationals, controls for year and country effect integrated. Management5 - w/o domestic multinationals, controls for country effect only. Management6 - w/o domestic multinationals, controls for year and country effect separately. Management7 - w/o domestic multinationals, controls for year and country effect integrated, also controls for industry effects. Reference group consists of index for all other foreign MNEs, local domestic firms, and with or without domestic multinationals dependent on specification. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Figure 5a: Plotted estimates from regression model on productivity differences between foreign and Swedish firms for 11 countries for firms in the manufacturing sector (Table 4, column 4) against the Management1 index regression (Table 7, column 1). The figure also includes correlations and fitted linear regression equation.



Fitted line equation		**Correlations**	
Intercept:	-0.74	Pearson correlation:	0.64
Beta:	0.24***	Spearman correlation:	0.50
R-squared:	0.40		

Figure 5b: Plotted estimates for 20 countries from regression model on productivity differences between foreign and Swedish firms for 11 countries for firms in the manufacturing sector (Table 4, column 4) against the Management1 index regression (Table 7, column 1). The figure also includes correlations and fitted linear regression equation.



Fitted line equation		**Correlations**	
Intercept:	-1.28	Pearson correlation:	0.53
Beta:	0.40***	Spearman correlation:	0.51
R-squared:	028		

Table 8: Management and productivity, 2000-2009 (at least 10 employees). Comparing different management indices.

	Management1			Management2			Management3	Management4	Management7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Management	0.451**	0.290**	0.353***	0.600***	0.399***	0.517***	0.376**	0.249**	0.261**
	(0.152)	(0.112)	(0.107)	(0.159)	(0.114)	(0.134)	(0.135)	(0.104)	(0.101)
Log(K/L)		0.118***	0.118***		0.118***	0.119***	0.118***	0.118***	0.118***
		(0.012)	(0.012)		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Log(L)		0.028*	0.028*		0.026*	0.026*	0.028*	0.028*	0.028*
		(0.013)	(0.014)		(0.013)	(0.014)	(0.014)	(0.014)	(0.014)
Share skill high		0.678***	0.677***		0.674***	0.675***	0.685***	0.681***	0.674***
		(0.106)	(0.104)		(0.107)	(0.104)	(0.104)	(0.104)	(0.104)
Weighted distance			0.000			0.000	-0.000	0.000	0.000
			(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
Rule of Law			0.119**			0.139**	0.024	0.041	0.094**
			(0.042)			(0.048)	(0.055)	(0.053)	(0.040)
Business freedom			0.004			-0.003	0.015	0.014	0.007
			(0.016)			(0.013)	(0.020)	(0.020)	(0.017)
Freedom to trade			-0.081			-0.080	-0.029	-0.041	-0.071
			(0.117)			(0.103)	(0.115)	(0.127)	(0.119)
Observations	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464
R-squared	0.050	0.154	0.155	0.052	0.156	0.157	0.157	0.154	0.154

Note: The dependent variable is logged value added per employee. Management1 - w/o domestic multinationals, controls for year and country effect integrated. Management2 - w/o domestic multinationals. Management3 - with domestic multinationals, also equal to average index by country across the entire period. Management4 - with domestic multinationals, controls for year and country effect integrated. Management7 - w/o domestic multinationals, controls for year and country effect integrated, also controls for industry effects. Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. Country controls include; CEPII population weighted distance measure, WGIs level of legal institutions "Rule of Law", and the Heritage foundation measures of economic freedom. All regressions include interacted and individual time and industry controls as well as clustered standard errors on country id. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 9: Management and productivity, 2000-2009 (at least 10 employees). Impact of additional countries.

	Management1			Management2		
	(1)	(2)	(3)	(4)	(5)	(6)
Management	0.466***	0.307**	0.324***	0.571***	0.388***	0.391***
	(0.148)	(0.108)	(0.098)	(0.148)	(0.104)	(0.104)
Firm controls	No	Yes	Yes	No	Yes	Yes
Country controls	No	No	Yes	No	No	Yes
Observations	9,111	9,111	9,111	9,111	9,111	9,111
R-squared	0.061	0.161	0.162	0.062	0.162	0.163

Note: Additional countries include; Australia, Austria, Belgium, Canada, India, Ireland, Italy, Singapore, and Spain. Management1 - w/o domestic multinationals, controls for year and country effect integrated. Management2 - w/o domestic multinationals. Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. Country controls include; CEPII population weighted distance measure, GDP per capita from the Penn dataset, WGIs level of legal institutions "Rule of Law", and the Heritage foundation's measures of economic freedom. All regressions include interacted and individual time and industry controls as well as clustered standard errors on country id. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 10: Management and productivity, 2000-2009 (at least 10 employees). Impact of different subindex.

	Management1-specification		
	(1)	(2)	(3)
Monitor	0.245**		
	(0.093)		
People		0.364***	
		(0.099)	
Target			0.325**
			(0.138)
Firm controls	Yes	Yes	Yes
Country controls	Yes	Yes	Yes
Observations	8,464	8,464	8,464
R-squared	0.166	0.167	0.165

Note: The dependent variable is logged value added per employee. Subindex according to Management1 structure, i.e. index with year and host country controls, without domestic MNEs. Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. Country controls include; CEPII population weighted distance measure, WGIs level of legal institutions "Rule of Law", and the Heritage foundation measures of economic freedom. All regressions include interacted and individual time and industry controls as well as clustered standard errors on country id. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 11: Management and productivity, with additional source country controls, 2000-2009 (at least 10 employees).

	Openness	FDI inflow	Trade Free. Int.	Legal Str. & Prop. Rights	Prop. Rights	Inv. Free.	Fin. Free.	Corr. Free.	Mean Edu. F.	Mean Edu. M.	GDP per capita	Pop	Trad. Cult. Diff.	Surv. Cult. Diff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Mng1	0.386**	0.463**	0.291***	0.351***	0.312***	0.316***	0.329***	0.346**	0.362***	0.400***	0.073	0.308***	0.351***	0.420***
	(0.154)	(0.176)	(0.057)	(0.105)	(0.085)	(0.061)	(0.082)	(0.113)	(0.087)	(0.099)	(0.135)	(0.095)	(0.076)	(0.102)
Country controls	0.000	0.000	0.048**	0.019	0.055**	0.010	0.005	0.027	-0.000***	-0.031	0.000	0.000***	-0.066*	-0.056**
	(0.000)	(0.000)	(0.020)	(0.017)	(0.022)	(0.007)	(0.006)	(0.025)	(0.000)	(0.018)	(0.000)	(0.000)	(0.036)	(0.025)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464	8,464
R2	0.167	0.167	0.168	0.167	0.168	0.167	0.167	0.167	0.167	0.168	0.169	0.168	0.167	0.168

Note: Mng1 is Management1. The dependent variable is logged value added per employee. Management1 - w/o domestic multinationals, controls for year and country effect integrated. The additional country control variables consists of; ”Openness” from the Penn dataset (1), the inflow of FDI comes from WDI (2), ”Legal structure and property rights” and ”International trade freedom” comes from the Fraser Institute (3)-(4) , the economic freedom variables and legal structure variables (5)-(8) comes from the Heritage Foundation, Human capital accumulation is collected from QOG (9)-(10), and finally GDP per capita and population from the Penn dataset (11)-(12). Traditional/Secular-rational cultural differences and Survival/Self-expression cultural differences from the World Value Survey, average across values for 2000 and 2005 (13)-(14). Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. Country controls include; CEPII population weighted distance measure, WGIs level of legal institutions ”Rule of Law”, and the Heritage foundation’s measures of economic freedom. All regressions include interacted and individual time and industry controls as well as clustered standard errors on country id. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table 12: Management and productivity, 2000-2009 (at least 10 employees). Entire economy.

	11 countries, distance only	20 countries, distance only	11 countries, distance & GDP per capita	20 countries, distance & GDP per capita
	(1)	(2)	(3)	(4)
Management1	0.141*	0.190**	0.033	0.193*
	(0.075)	(0.082)	(0.135)	(0.101)
Firm controls	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes
Observations	29,440	31,161	29,440	31,161
R-squared	0.165	0.161	0.165	0.161

Note: Additional countries include; Australia, Austria, Belgium, Canada, India, Ireland, Italy, Singapore, and Spain. Management1 - w/o domestic multinationals, controls for year and country effect integrated. Management2 - w/o domestic multinationals. Firm controls are logged capital per employee, logged number of employees, and share of skilled workers at firm. Country controls include; CEPII population weighted distance measure, GDP per capita from the Penn dataset, WGIs level of legal institutions "Rule of Law", and the Heritage foundation's measures of economic freedom. All regressions include interacted and individual time and industry controls as well as clustered standard errors on country id. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Appendix

Table A1: Wald tests of estimates from Table 4 (specifications with firm controls) – Reference group: Swedish firms; All, Manufacturing, Service, MNEs, Local.

All firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,03	0,29	0,18	0,00	0,82	0,08	0,01	0,00	0,00	0,84
Finland		0,76	0,40	0,33	0,12	0,60	0,72	0,05	0,00	0,30
Luxembourg			0,83	0,37	0,42	1,00	0,60	0,13	0,00	0,53
Netherland				0,06	0,37	0,73	0,22	0,01	0,00	0,56
Norway					0,02	0,11	0,53	0,25	0,00	0,12
France						0,23	0,06	0,00	0,01	0,97
Germany							0,36	0,01	0,00	0,44
UK								0,09	0,00	0,22
Denmark									0,00	0,03
US										0,06
Manu. firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,19	0,00	0,16	0,00	0,05	0,23	0,22	0,01	0,52	0,02
Finland		0,02	0,90	0,00	0,28	0,96	0,98	0,12	0,04	0,11
Luxembourg			0,02	0,82	0,20	0,03	0,02	0,18	0,00	0,81
Netherland				0,00	0,34	0,95	0,93	0,17	0,03	0,12
Norway					0,13	0,00	0,00	0,07	0,00	0,92
France						0,33	0,32	0,90	0,01	0,41
Germany							0,98	0,18	0,06	0,12
UK								0,16	0,05	0,12
Denmark									0,00	0,42
US										0,01
Service firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,09	0,92	0,37	0,19	0,37	0,18	0,03	0,00	0,01	0,64
Finland		0,26	0,36	0,53	0,02	0,55	0,84	0,17	0,00	0,10
Luxembourg			0,60	0,44	0,44	0,44	0,19	0,03	0,06	0,64
Netherland				0,70	0,08	0,68	0,20	0,01	0,00	0,28
Norway					0,03	0,98	0,32	0,02	0,00	0,18
France						0,03	0,00	0,00	0,17	0,83
Germany							0,34	0,02	0,00	0,17
UK								0,17	0,00	0,06
Denmark									0,00	0,01
US										0,21
MNE firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,13	0,17	0,31	0,00	0,77	0,05	0,01	0,00	0,02	0,35
Finland		0,67	0,56	0,07	0,32	0,68	0,23	0,01	0,00	0,98
Luxembourg			0,44	0,51	0,29	0,86	0,76	0,25	0,00	0,77
Netherland				0,01	0,59	0,31	0,07	0,00	0,00	0,72
Norway					0,02	0,14	0,55	0,36	0,00	0,34
France						0,18	0,05	0,00	0,03	0,50
Germany							0,41	0,02	0,00	0,84
UK								0,16	0,00	0,53
Denmark									0,00	0,16
US										0,02
Local firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,04	0,25	0,16	0,00	0,84	0,07	0,01	0,00	0,00	0,80
Finland		0,83	0,46	0,22	0,12	0,68	0,70	0,03	0,00	0,33
Luxembourg			0,80	0,35	0,36	0,97	0,66	0,12	0,00	0,52
Netherland				0,04	0,32	0,73	0,26	0,00	0,00	0,57
Norway					0,01	0,08	0,39	0,27	0,00	0,10
France						0,20	0,06	0,00	0,01	0,92
Germany							0,40	0,01	0,00	0,44
UK								0,06	0,00	0,24
Denmark									0,00	0,03
US										0,05

Note: Numbers in red indicate significant values, i.e. that the coefficients compared are significantly different from another at the 10 % level or lower.

Table A2: Wald tests of estimates from Table 5 (specifications with firm controls) – Reference group: Swedish firms; All, Manufacturing, Service, MNEs, Local.

All firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,48	0,27	0,39	0,87	0,45	0,57	0,92	0,67	0,14	0,54
Finland		0,02	0,83	0,24	0,84	0,84	0,31	0,68	0,31	0,34
Luxembourg			0,01	0,20	0,05	0,03	0,21	0,04	0,00	0,91
Netherland				0,16	0,97	0,68	0,21	0,51	0,40	0,30
Norway					0,27	0,31	0,95	0,39	0,04	0,57
France						0,72	0,32	0,60	0,52	0,31
Germany							0,39	0,83	0,23	0,37
UK								0,48	0,06	0,56
Denmark									0,15	0,40
US										0,18
Manu. firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,71	0,49	0,46	0,31	0,86	0,37	0,73	0,37	0,19	0,61
Finland		0,19	0,58	0,06	0,65	0,44	0,33	0,41	0,17	0,72
Luxembourg			0,09	0,76	0,74	0,07	0,67	0,05	0,02	0,36
Netherland				0,02	0,47	0,82	0,16	0,87	0,43	0,89
Norway					0,58	0,02	0,41	0,01	0,00	0,27
France						0,41	0,95	0,41	0,26	0,56
Germany							0,12	0,92	0,60	0,96
UK								0,09	0,04	0,46
Denmark									0,47	0,93
US										0,86
Service firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,57	0,04	0,87	0,62	0,78	0,71	0,53	0,60	0,70	0,33
Finland		0,00	0,61	0,19	0,74	0,26	0,16	0,18	0,85	0,20
Luxembourg			0,00	0,03	0,01	0,03	0,07	0,04	0,01	0,92
Netherland				0,37	0,88	0,49	0,31	0,35	0,78	0,27
Norway					0,34	0,87	0,84	0,96	0,30	0,42
France						0,44	0,29	0,33	0,89	0,26
Germany							0,74	0,84	0,39	0,39
UK								0,88	0,25	0,46
Denmark									0,29	0,43
US										0,24
MNE firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,70	0,54	0,97	0,54	0,81	0,47	0,47	0,74	0,74	0,10
Finland		0,66	0,47	0,66	0,86	0,51	0,52	0,92	0,95	0,08
Luxembourg			0,29	0,99	0,63	0,88	0,85	0,61	0,65	0,15
Netherland				0,32	0,75	0,21	0,22	0,58	0,58	0,04
Norway					0,63	0,89	0,86	0,64	0,66	0,15
France						0,53	0,53	0,93	0,91	0,09
Germany							0,96	0,49	0,53	0,16
UK								0,50	0,52	0,19
Denmark									0,98	0,08
US										0,08
Local firms	Finland	Luxembourg	Netherlands	Norway	France	Germany	UK	Denmark	US	Japan
Switzerland	0,15	0,55	0,32	0,95	0,34	0,27	0,73	0,48	0,02	0,95
Finland		0,03	0,57	0,09	0,80	0,63	0,22	0,30	0,30	0,53
Luxembourg			0,08	0,43	0,12	0,06	0,30	0,13	0,00	0,86
Netherland				0,25	0,85	0,92	0,48	0,66	0,12	0,66
Norway					0,30	0,20	0,72	0,41	0,01	0,93
France						0,91	0,47	0,61	0,27	0,62
Germany							0,41	0,57	0,14	0,63
UK								0,71	0,03	0,84
Denmark									0,04	0,75
US										0,30

Note: Numbers in red indicate significant values, i.e. that the coefficients compared are significantly different from another at the 10 % level or lower.

Table A3a: Correlation matrix of selected variables (obs.=8464).

	Mng1	Log(VA/L)	Log(K)	Log(L)	Share skill high	GDP per capita	Rule of law	Business freedom	Freedom of trade	Distance
Management1	1.0000									
Log(VA/L)	0.1144	1.0000								
Log(K)	-0.0293	0.2580	1.0000							
Log(L)	0.0943	0.1358	0.2450	1.0000						
Share skill high	0.1835	0.1933	-0.1890	0.0083	1.0000					
GDP per capita	-0.3311	-0.0323	-0.0650	-0.0423	0.0338	1.0000				
Rule of law	-0.7435	-0.0761	0.0263	-0.1010	-0.1828	0.1584	1.0000			
Business freedom	0.0120	0.0745	-0.0136	0.0067	0.0624	0.0565	0.1292	1.0000		
Freedom of trade	-0.1520	0.0457	-0.0299	-0.0546	0.0606	0.3629	0.2627	0.4514	1.0000	
Distance	0.6341	0.0930	-0.0482	0.0983	0.1806	0.3411	-0.6593	0.1174	-0.0527	1.0000

Table A3b: Correlation matrix of selected variables, w/o the US (obs.=6975).

	Mng1	Log(VA/L)	Log(K)	Log(L)	Share skill high	GDP per capita	Rule of law	Business freedom	Freedom of trade	Distance
Management1	1.0000									
Log(VA/L)	0.0817	1.0000								
Log(K)	-0.0055	0.2764	1.0000							
Log(L)	0.0570	0.1599	0.2429	1.0000						
Share skill high	0.1429	0.1547	-0.1986	0.0064	1.0000					
GDP per capita	-0.6830	-0.0816	-0.0555	-0.0851	-0.0204	1.0000				
Rule of law	-0.6468	-0.0374	0.0052	-0.0721	-0.1482	0.4105	1.0000			
Business freedom	-0.1236	0.0556	-0.0005	-0.0079	0.0329	-0.0206	0.2715	1.0000		
Freedom of trade	-0.1989	0.0359	-0.0216	-0.0529	0.0478	0.3974	0.3162	0.4534	1.0000	
Distance	0.3316	0.0147	-0.0221	0.0399	0.1530	0.0811	-0.5894	-0.1635	-0.1403	1.0000

Table A3c: Correlation matrix of selected variables, w/o the US and Japan (obs.=6833).

	Mng1	Log(VA/L)	Log(K)	Log(L)	Share skill high	GDP per capita	Rule of law	Business freedom	Freedom of trade	Distance
Management1	1.0000									
Log(VA/L)	0.0855	1.0000								
Log(K)	-0.0046	0.2783	1.0000							
Log(L)	0.0574	0.1626	0.2504	1.0000						
Share skill high	0.1327	0.1593	-0.2040	0.0218	1.0000					
GDP per capita	-0.7213	-0.0824	-0.0556	-0.0884	-0.0382	1.0000				
Rule of law	-0.6493	-0.0463	0.0027	-0.0766	-0.1235	0.5192	1.0000			
Business freedom	-0.1170	0.0557	-0.0016	-0.0079	0.0336	-0.0141	0.2682	1.0000		
Freedom of trade	-0.1868	0.0349	-0.0228	-0.0534	0.0589	0.4205	0.3017	0.4539	1.0000	
Distance	0.5822	0.0752	-0.0465	0.1029	0.1817	-0.1825	-0.6949	-0.3190	-0.1278	1.0000

Table A3d: Correlation matrix of selected variables, w/o Luxembourg and Norway (obs.=8827).

	Mng1	Log(VA/L)	Log(K)	Log(L)	Share skill high	GDP per capita	Rule of law	Business freedom	Freedom of trade	Distance
Management1	1.0000									
Log(VA/L)	0.0662	1.0000								
Log(K)	-0.0605	0.2743	1.0000							
Log(L)	0.0522	0.1237	0.2524	1.0000						
Share skill high	0.1940	0.1872	-0.1728	-0.0080	1.0000					
GDP per capita	0.4656	0.0566	-0.0918	0.0253	0.1437	1.0000				
Rule of law	-0.7934	-0.0410	0.0318	-0.0727	-0.1581	-0.1624	1.0000			
Business freedom	-0.2385	0.0471	-0.0255	-0.0206	0.0369	0.3040	0.2217	1.0000		
Freedom of trade	0.0216	0.0855	-0.0458	-0.0357	0.1119	0.2910	0.1740	0.5131	1.0000	
Distance	0.7254	0.0713	-0.0540	0.0797	0.1623	0.7656	-0.6344	0.0745	0.0206	1.0000

Table A3e: Correlation matrix of selected variables with additional countries (obs.=9111).

	Mng1	Log(VA/L)	Log(K)	Log(L)	Share skill high	GDP per capita	Rule of law	Business freedom	Freedom of trade	Distance
Management1	1.0000									
Log(VA/L)	0.1122	1.0000								
Log(K)	-0.0292	0.2434	1.0000							
Log(L)	0.0925	0.1306	0.2439	1.0000						
Share skill high	0.1722	0.1996	-0.1989	0.0004	1.0000					
GDP per capita	-0.2928	-0.0222	-0.0591	-0.0385	0.0275	1.0000				
Rule of law	-0.4810	-0.0393	0.0099	-0.0640	-0.1194	0.3124	1.0000			
Business freedom	0.0240	0.0785	-0.0149	0.0110	0.0690	0.1301	0.2276	1.0000		
Freedom of trade	-0.1286	0.0529	-0.0226	-0.0454	0.0605	0.3921	0.3198	0.4809	1.0000	
Distance	0.5929	0.0903	-0.0440	0.1066	0.1790	0.2589	-0.4448	0.1197	-0.0722	1.0000

Table A4: Management index calculated for foreign and domestic MNEs as well as local firms 2000 - 2009.

	MNE Coefficients	Local Coefficients	Domestic MNE Coefficients
Constant	2.898***		
	(0.015)		
US	0.475***	0.024	0.271***
	(0.029)	(0.062)	(0.066)
Sweden	0.230***	0.265***	0.206***
	(0.072)	(0.082)	(0.080)
Germany	0.363***	0.057	0.180***
	(0.040)	(0.067)	(0.069)
UK	0.351***	-0.026	0.034
	(0.055)	(0.051)	(0.047)
France	0.452***	-0.052	0.238***
	(0.051)	(0.067)	(0.067)
Switzerland	0.391***		
	(0.059)		
Finland	0.179**		
	(0.087)		
Denmark	0.253***		
	(0.098)		
Norway	0.126		
	(0.100)		
Netherlands	0.445***		
	(0.073)		
Luxembourg	-0.102		
	(0.146)		
Japan	0.393***		
	(0.048)		
Observations		8,769	
R-squared		0.187	

Note: Management1 - w/o domestic multinationals, controls for year and country effect integrated. Reference group consists of index for all other foreign MNEs, local domestic firms, and without domestic multinationals. ***, **, * show significance at the 1%, 5%, and 10% level, respectively.

Table A5a: Definitions and descriptive statistics (means and standard deviations). Firms with at least 10 employees 1996-2009.

Firm variables:	Definition:	All firms	All Swedish firms	Local Swedish firms	Swedish MNEs	Service firms	Manufacturing firms	Foreign firms (11 countries)	Source:
Productivity	Value added per employee (MSEK)	0.47	0.46	0.45	0.61	0.48	0.46	0.61	Swedish firm data (SCB)
		(0.43)	(0.41)	(0.40)	(0.58)	(0.47)	(0.31)	(0.56)	
Capital intensity	Capital divided by labor ratio	0.47	0.48	0.49	0.37	0.54	0.27	0.33	-
		(2.81)	(2.88)	(2.91)	(1.85)	(3.38)	(1.00)	(2.01)	
Firm size	Number of employees	58.68	49.62	39.77	360.35	51.16	85.33	143.57	-
		(383.14)	(365.27)	(297.70)	(1203.13)	(368.39)	(460.69)	(513.83)	
Share skill high	Percentage share of employees with a higher education	0.22	0.21	0.21	0.30	0.27	0.28	0.34	-
		(0.24)	(0.24)	(0.24)	(0.24)	(0.27)	(0.27)	(0.25)	

Table A5b: Definitions and descriptive statistics (means and standard deviations). Firms with at least 10 employees 2000-2009, selected countries, manufacturing sector.

		11 countries		20 countries		
Management variables:	Definition:	Mean:	SD:	Mean:	SD:	Source:
Management1	Index w/o domestic multinationals, controls for year and country effect integrated.	3.17	(0.11)	3.17	(0.11)	World Management Survey
Management2	Index w/o domestic multinationals.	3.16	(0.29)	3.15	(0.29)	-
Monitor1	Organization monitoring index of home country. Management1 method.	3.50	(0.17)	3.50	(0.17)	-
Target1	Target setting index of home country. Management1 method.	3.18	(0.09)	3.18	(0.10)	-
People1	Incentive index of home country. Management1 method.	2.91	(0.14)	2.91	(0.13)	-
Country variables:	Definition:	Mean:	SD:	Mean:	SD:	Source:
Distance	Weighted distance (pop-wt. km)	2162	(2639)	2248	(2734)	CEPII distance measure
Rule of law	Rule of law estimate	8.65	(0.33)	8.60	(0.44)	Worldwide Governance Indicators (WGI)
Business freedom	Business freedom	8.47	(0.93)	8.44	(0.96)	Heritage Foundation
Freedom to trade	Freedom of trade	8.32	(0.32)	8.31	(0.35)	-
Openness	Share of Exports and imports (% of GDP)	78.67	(51.03)	80.24	(52.29)	Penn
FDI inflow	Foreign direct investment. net inflows (% of GDP)	14.50	(62.77)	13.90	(60.66)	WDI
Legal structure and secure property rights	Legal structure and secure property rights.	8.58	(0.61)	8.51	(0.69)	Fraser Institute
Freedom to trade internationally	Freedom to trade internationally.	7.69	(0.57)	7.70	(0.58)	-
Investment freedom	Investment freedom.	7.37	(1.30)	7.36	(1.31)	Heritage Foundation
Financial freedom	Financial freedom.	7.44	(1.61)	7.42	(1.59)	-
Property rights	Property rights.	8.87	(0.49)	8.81	(0.65)	-
Freedom from corruption	Freedom from corruption.	8.51	(0.88)	8.41	(1.01)	-
Average years of education (F)	Average number of years of education of women aged 25 and older.	12.18	(1.04)	12.08	(1.22)	Quality of Government Institute (QOG)
Average years of education (M)	Average number of years of education of men aged 25 and older.	12.35	(1.00)	12.27	(1.11)	-
GDP per capita	GDP per capita (constant 2000 US$)	31 652	(7252)	31 030	(7487)	Penn
Population	Population, total	$7.44*10^7$	($1.06*10^8$)	$7.38*10^7$	($1.17*10^8$)	-
Traditional/Secular	Traditional/Secular-rational cultural differences from Sweden. Average 2000 and 2005.	-0.89	(0.37)	-0.93	(0.39)	World Value Surveys
Survival/Self	Survival/Self-expression cultural differences from Sweden. Average 2000 and 2005.	-0.74	(0.50)	-0.76	(0.50)	-