Who's Your Daddy? Foreign Investor Origin, Multi-Product Firms, and the Benefit of Foreign Investment

Lee G. Branstetter

Matej Drev

This Version: November 2014

Abstract:

This paper uses a rich panel of the universe of Slovenian manufacturing firms in the period 1994-2010 to explore how receiving foreign investment impacts the subsequent scale and scope of recipient firms' activities. The empirical analysis is motivated with a theoretical model in which local firms endogenously chose their product mix and export destinations. The model details how receiving foreign investment affects the way firms alter their ex-post behavior, and then shows that predictions of the model align closely with the empirical results. Using a variety of estimation techniques that allow for foreign investors' strategic selection of local firms for investment, it finds that receiving investment significantly affects the product and export market choices of local firms, leading them to expand both the scale and scope of their activities. In addition, the paper explores how heterogeneity in investor origin and the intensity of investment modulate the effects of receiving foreign investment. It finds that targets of high-intensity investment from advanced country investors subsequently outperform similar domestically owned peers to the greatest degree along measures of both scale and scope, indicative of the notion that foreign investors transfer their superior management and technology practices to the recipient firms. The findings in this paper suggest that incorporating investor heterogeneity and the multi-product, multi-destination nature of firms yields important insights for furthering our understanding of how foreign investment impacts recipient firms.

EconLit Classification: D220, F210, F230, L200, O160

Acknowledgements: This research was made possible by data from the Statistical Office of the Republic of Slovenia and the Bank of Slovenia. We would like to thank Natasa Zidar of the Statistical Office of the Republic of Slovenia and Eva Sencar-Svetina of the Bank of Slovenia for their help throughout the data acquisition process. This paper benefited greatly from the helpful comments of Brian Kovak, Ashish Arora, Lowell Taylor, John Gardner, Renata Kosova, Jagadeesh Sidavasan and the participants of seminars and invited presentations at Carnegie Mellon University, Tsinghua University, Georgia Institute of Technology, The Federal Reserve Bank of Atlanta, the International Industrial Organization Conference, and the University of Vienna.

Affiliations:

Matej Drev: School of Public Policy, Georgia Institute of Technology

Lee G. Branstetter: Heinz College, Carnegie Mellon University & NBER

I. Introduction

Researchers have studied the impact of foreign direct investment for decades and there now exists an impressive body of work exploring the effects of foreign investment on the overall performance of local firms. This literature has shown that foreign subsidiaries often exhibit higher productivity, larger exports, and higher survival rates than their domestically owned peers, that firms receiving foreign investment subsequently pay higher wages, and that they also exhibit increased R&D performance. However, our knowledge of how and when these improvements take place remains very limited.[1] This paper addresses this gap and contributes to the literature by exploring the mechanisms that underlie the overall performance effects of foreign investment that have been previously reported in the literature. Specifically, we find that firms respond to receiving foreign investment by altering both the scale and scope of their activities. Specifically, they expand the scale of operations in both domestic and export markets, expand the scope of their product mix, and change the scope and composition of the export markets they serve. This results in marked improvements in their total factor productivity.

We motivate our empirical analysis by building on a theoretical framework of Bernard, Redding, and Schott (2006, 2011) in which firms endogenously choose their product mix and geographical scope. The model yields theoretical predictions about how receiving foreign investment affects the scope and scale of target firms in the product space as well as their breadth of geographical coverage. These changes occur because target firms' levels of ability increase via a transfer of superior managerial and technological capabilities from the foreign investing firms. Exploiting an unusually rich panel dataset on the universe of Slovenian manufacturing

[1] For a detailed discussion of this literature, please see Section II of the paper.

firms in the period 1994-2010, we empirically test the model's predictions and show that they align very closely with our empirical results. We find strong evidence supporting the notion that recipient firms respond to foreign investment by expanding the scope of their activities, broadening their geographical scope, and expanding the scope of their product mix, especially when foreign investors hail from advanced countries and when they take on a large share of the recipient firm's capital. They also dramatically increase imports of capital goods from the geographical region of investor origin in the years immediately before and after the investment, consistent with the notion that foreign investors transfer their superior management and technological practices to local firms via production re-tooling.

These findings provide an insight into the mechanisms and strategies that underlie the overall performance impacts observed in this paper and in the literature as a whole, and provide an alternative explanation for recent empirical findings presented by Guadalupe, Kuzmina, and Thomas (AER, 2013) that observe local firms engaging in self-reported product and process innovation after receiving foreign investment. Our findings suggest what they describe as "innovation" could be better understood as the transfer of already developed product and process knowledge from foreign firms to their local affiliated firms. These findings thus also relate to the literature exploring the mechanisms by which foreign multinationals embed local firms into their supply chains, and transfer their organizational practices and technological capabilities to their subsidiaries.[2] To the best of our knowledge, this is the first paper that jointly empirically explores the scope and scale effects of foreign investment on recipient firms.

[2] Prominent example of the former is Baldwin (2011), while examples of the latter include Caves (1996), Branstetter, Fisman, and Foley (2006), Bloom and Van Reenen (2010), and Bloom, Sadun, and Van Reenen (2012).

In addition, this paper adds to the literature by examining whether heterogeneity in investor characteristics affects the ability of local firms to benefit from receiving foreign investment, which is a question that has not received much attention in the literature.[3]We contribute to existing research by examining the way one important source of investor heterogeneity, geographical origin, impacts the ability of target firms to benefit from receiving foreign investment. Using the dataset of Slovenian manufacturing firms, we empirically show that all foreign investments are not created equal and that investor heterogeneity matters for how target firms respond and benefit from foreign investment. Consistent with a hypothesis that investor origin proxies for differences in average managerial and technological ability of investing firms, we find that firms receiving investment from advanced country investors (which are likely to be higher-ability investors) outperform their domestically owned peers to a larger degree than those who receive investment from developing country investors (likely lower-ability investors). Further, building on our previous results, we show that firms receiving investment of advanced country origin exhibit a greater degree of expansion in their product and geographical scope than firms receiving investment of developing country origin.

While the empirical focus of this paper is on examining the effects of foreign investment on domestic firms, our analysis also allows us to answer questions about the mechanisms that drive FDI decisions in the context of our data, specifically how local firms are selected for investment. We find strong evidence that foreign investors select the largest, most productive local firms (i.e. "cherries") for investment, which confirms the results of several recent studies.[4]

[3] A notable exception is the work of Chen (2011), who empirically examines differences in overall ex-post performance of acquired U.S. firms, depending on the geographical origin of the investor.

[4] These include Guadalupe Kuzmina, and Thomas (forthcoming) and Blonigen et al (2012).

We also find some preliminary evidence in support of the notion that foreign investors are choosing to invest in local firms in order to exploit their existing export networks, which is consistent with very recent theoretical and empirical findings in the literature.[5]

This paper is organized as follows. Section 2 briefly reviews the literature on foreign direct investment and how this paper relates to existing research, Section 3 introduces the theoretical model and its predictions, and Section 4 describes the data and provides a brief overview of Slovenia's economic context. Section 5 describes our empirical approach, while Section 6 presents the results and discusses how they align with the model. Finally, Section 7 discusses the implications and limitations of the paper and concludes.

II. The Impact of Foreign Direct Investment: A Brief Review of the Literature

A large body of work in economics and other disciplines has explored the effects of foreign investment on the overall performance of local firms. Researchers have examined the impact of foreign investment on the productivity and survival of local firms and found that foreign subsidiaries often exhibit higher productivity, larger exports, and higher survival rates than their domestically owned peers, and further that this seems to be at least partially a causal effect of receiving foreign investment. Kronborg and Thomsen (2009), Criscuolo and Martin (2009), Ramondo (2009), and Arnold and Javorcik (2009) are recent examples of this work. Researchers have also studied the effects of foreign ownership on wages and employment of target firms and have found mixed results (Aitken, Harrison, and Lipsey, 1996; Heynman, Sjoholm, and Tinvall, 2007; Huttunen, 2007). In addition, they have explored the effect of

[5] See Blonigen et al (2012) for details.

foreign investment on target firms' R&D investment and innovation and found evidence of a positive effect of foreign ownership on target firms' subsequent R&D performance (Falk, 2008; Guadalupe, Kuzmina, and Thomas, 2013), as well as mixed evidence for the presence of knowledge spillovers from foreign multinationals to local firms (Haddad and Harrison, 1993; Branstetter, 2000; Javorcik, 2004).

However, much is still unknown about the mechanisms that underlie the overall effects that have been observed in the literature. For example, we know little about how firms respond to receiving foreign investment by shifting the scope and geographical focus of the foreign markets they serve, altering the scope and quality of their product mix, and adjusting the prices they charge for their products. This paper tries to address this gap in the literature.

Another focus of the academic literature on foreign investment has been the study of firm-level determinants of why foreign investors engage in FDI, as well as how domestic firms are selected for foreign investment. One important stream of recent work in economics, management strategy, and industrial organization has tried to understand the decision for engaging in FDI -- as opposed to choosing another channel, such as exporting, to serve a foreign market -- from the perspective of the investing firm.[6] Researchers have emphasized a variety of motives, from difficulties related to contracting with foreign firms (e.g. the "hold-up" problem)[7] and the exploitation of complementarities between firm-specific and country-specific assets in

[6] See, for example, the papers by Blonigen (1997), Shaver (1998), Chung and Alcacer (2002), Luo and Tung (2007), and Seth, Song, and Pettit (2009), among others.

[7] See, for example, Hennart (1991), Shane (1994), Grossman and Helpman (2002), Antras (2003), and Feenstra and Hanson (2005),

the spirit of the resource-based theory of the firm[8] to issues related to the interplay of firms' strategic decision-making about gaining and retaining market power.[9] Studies conducted in a variety of geographical and industry contexts have found empirical evidence supporting all of the motivations listed above. Helpman, Melitz, and Yeaple (2004), Nocke and Yeaple (2007), and others have, for example, introduced models that attempt to explain how firms choose the mode of serving foreign customers – either through exports or via FDI, or between greenfield and brownfield investment – as the result of trade-offs between variable trade costs and fixed costs of setting up foreign subsidiaries, or conversely, the trade-offs between mobile and immobile capabilities of firms. They find that characteristics of the focal firm, such as its productivity, determine whether or not it will engage in FDI, and, similarly, whether or not it will engage in greenfield investment or foreign acquisition. This stream of research, along with the majority of the managerial literature, has thus focused primarily on exploring heterogeneity in the mode of foreign market entry and on examining how value from foreign direct investment is realized and transferred to the investor. This paper, in contrast, focuses on examining exactly how the local firm is affected and transformed after receiving foreign investment.

Recent research has also focused on another type of heterogeneity – that of local firms that foreign firms target for investment. Researchers have studied the process by which domestic firms are selected for investment, being particularly interested in resolving the old debate about whether foreign investors select underperforming ("lemons") or high performing local firms ("cherries"). Traditionally, the literature has emphasized the view in which the merger and

[8] Examples include Helpman, Melitz and Yeaple (2004), Jovanovic and Braguinsky (2004), Nocke and Yeaple (2007), and Meyer, Estrin, Bhaumik, and Peng (2009).

[9] Examples of this research include Kamien and Zhang (1990), Horn and Persson (2001), and Neary (2003).

acquisition activity is a consequence of natural selection in which winners absorb losers, which would imply that foreign investment is a process in which high-performing foreign firms take over the assets of poorly performing local firms.[10] Some recent work, however, has presented evidence supporting the opposite view. Guadalupe, Kuzmina, and Thomas (2013), for example, present a model in which foreign investors earn higher payoffs when investing in high-performing local firms and provide supporting empirical evidence that corroborates the story that foreign investors engage in "cherry-picking" in the context of Spanish manufacturing firms. Similarly, Blonigen et al. (2012) provide a model in which foreign investors tend to select high-performing local firms that have experienced a recent period of poor performance. Using French data, the authors present empirical evidence that foreign investors tend to target "cherries that are on sale." While the empirical focus of this paper is on examining the effects of foreign investment on domestic firms, our analysis allows us to also answer questions about how local firms are selected for investment in the context of my data, thereby validating the results of these recent studies.

While literature has explored heterogeneity in the mode of investor entry and heterogeneity between local firms that investors target with investment, research to date has paid only little attention to another source of heterogeneity that might be important, especially from the perspective of policymakers in domestic markets – namely, that of the heterogeneity of investors that do engage in direct foreign investment. This paper contributes to this literature by examining the way an important source of investor heterogeneity, geographical origin, impacts the ability of target firms to benefit from receiving foreign investment. Using our dataset of

[10] Some examples of this research include Lichtenberg and Siegel (1987) and Neary (2007).

Slovenian manufacturing firms, we empirically show that investments associated with different investor origins exhibit differential effects on the ex-post behavior and performance of domestic firms, consistent with a hypothesis that investor origin proxies for differences in average managerial and technological ability of investing firms. With a notable exception of Chen (2011), who empirically examined differences in overall ex-post performance of acquired U.S. firms as a function of the geographical origin of the investor, this is to the best of our knowledge the first paper that empirically explores the effect of heterogeneity in investor origin on the impact of foreign direct investment on local firms.

III. Theoretical Framework

To inform our empirical analysis, it is useful to first think about the effects of foreign investment on their recipient in the theoretical framework of multi-product firms developed by Bernard, Redding, and Schott (2010b). We borrow the model these authors used to describe the effects of trade liberalization on multi-product firms to consider the effects of receiving foreign investment on local firms. The description below characterizes a portion of that model that is useful for the purpose of this paper and develops a prediction that we then take to the data. A full description of the general equilibrium framework and properties of the model can be found in Bernard, Redding, and Schott (2010b).

The model is a natural generalization of Melitz's (2003) single-product, heterogeneous-firms model of trade in horizontally differentiated products. As in the Melitz model, there are a continuum of countries and products, and firm entry involves a sunk cost that reveals the entrant's productivity. But in this model, firms can then endogenously choose to produce any number of products and serve any number of markets in order to maximize their profits. Firm profitability depends on a measure of the firm's overall productivity dubbed "ability", as well as

on a set of product attributes which vary among products and possibly across export markets, but are common across firms.[11]

When firms export, they face fixed costs of entering each market and fixed costs of supplying each product to that market. Thus, because higher ability firms are able to generate sufficient variable profits to cover these fixed costs, they in equilibrium supply a wider range of products to a wider range of export markets. It also follows that firms with sufficiently low productivity exit production altogether, firms with somewhat higher productivity produce only domestically, and only firms above a certain productivity cutoff export.

To see this formally, we have to introduce the model in some more detail. Suppose the world consists of many countries, indexed by $i \in \{1, \dots, J\}$, and firms that produce many products, indexed by k, and within each product, many varieties of that product. Each firm is assumed to produce at most one unique variety of any given product.

There is an unbounded continuum of potential firms prior to entry, but in order to enter, each firm has to incur a sunk cost of entry in the home market, $f_i > 0$. The overall ability of a firm only gets revealed after entry and after the sunk cost is incurred. There are two components of production technology and product characteristics that influence firm profitability: a firm-specific ability captured by the scalar φ and an idiosyncratic measure of product characteristics,

[11] Bernard, Redding, and Schott (2010b) also derive a model where product attributes may vary across firms. But it turns out that under the assumption of constant elasticity of substitution preferences and monopolistic competition in the spirit of Dixit and Stiglitz, the model's predictions are very similar to those in the simplified version of the model.

captured by the k-dimensional vector λ, which we assume is independent of firm ability and is common across firms and countries. We can think of φ as firm productivity and λ as closeness to consumer preferences for various varieties of products.

Once the firm enters, it observes its ability, φ, and the set of product attributes for each product *k*, λ_k. Firm ability, $\varphi \in [0, \infty]$ is drawn from a continuous distribution $g_i(\varphi)$ that may vary across countries. We thus allow firm ability to be differentially distributed in different countries, consistent with empirical observations in the literature that firms in highly advanced countries possess superior managerial and technological expertise than firms in less advanced countries. A firm then decides whether to stay in the market and what products and markets to supply. Firms in country *i* face a fixed cost of entering country *j* of $F_{ij} > 0$ as well as a fixed cost of supplying product k to that country, $f_{ikj} > 0$. The first fixed cost component is intended to capture the initial costs of building a distribution network in a new export market, while the second is intended to capture the product-specific costs of market research, advertising, and conforming to regulatory standards for each product. In addition to fixed costs, firms also face a constant marginal cost of production for each product that is negatively related to firm ability (thus more productive firms can produce more cheaply), as well as variable costs of trade, capturing transportation costs, which take the standard "iceberg" form.[12]

[12] We can also allow the exporting costs to vary by firm or by firm-destination pair, consistent with the notion that some firms in a given country might have better access to export markets than others. The predictions of the model would not be qualitatively affected by this modification.

Under constant-elasticity-of-substitution (CES) demand structure and the Dixit-Stiglitz type monopolistic competition market structure, the demand for each variety of a product will solely depend on its price, the prices of other varieties and other products, and on aggregate expenditure. As we assume there to be a continuum of varieties of any given product, each firm is therefore unable to influence the price index for any product. Its profit maximization problem reduces to choosing the price for each product variety separately to maximize its profits. The solution to this optimization problems leads to the typical result that the equilibrium price of a product variety is a constant mark-up over marginal cost. Since production technology and demand elasticity of substitution do not vary across varieties of the same product, we can derive the equilibrium profits that a firm from country i receives from selling a particular product to country j, which are as follows:[13]

$$\pi_{ij}(\varphi,\lambda) = \frac{r_{ij}(\varphi,\lambda)}{\sigma} - \omega_i f_{ij} \qquad (1)$$

Where $r_{ij}(\varphi,\lambda)$ are revenues the firm generates and are a function of its ability and its product characteristics, while σ is an elasticity-of-substitution parameter from the demand function. It follows from the equation above that there exists, for each firm ability level φ, a zero-profit cutoff for product attributes, $\lambda^*_{ij}(\varphi)$, such that a firm from country *i* will only sell a product to country *j* if its ability draw is above the threshold value. This cutoff is lower for higher ability firms, which thus have the ability to generate sufficient variable profits to cover

[13] For a detailed derivation, see Bernard, Redding, and Schott (2010b), pp.12-13.

fixed costs at lower values for product attributes. Since product attributes are independently distributed across the continuum of products, the share of products supplied by a firm with a given ability from source country *i* to destination *j* is just the probability of drawing a value of product attributes above the threshold, $\lambda_{ij}^{*}(\varphi)$: $\left[1 - Z(\lambda_{ij}^{*}(\varphi))\right]$, where Z is the cumulative distribution of product characteristics. We can now derive the total profits a firm will generate in each market. They equal the (expected) profits from each product minus the market fixed costs:

$$\pi_{ij}(\varphi) = \int_{\lambda_{ij}^{\bullet}(\varphi)}^{\infty} \left(\frac{r_{ij}(\varphi,\lambda)}{\sigma} - \omega_i f_{ij}\right) z(\lambda) d\lambda - \omega_i F_{ij} \qquad (2)$$

It follows from the above expression that as lower ability firms face a higher zero-profit product cutoff, they will, all else equal, supply a smaller fraction of products to a given market and, combined with expression (1), have lower expected profits from each product. For sufficiently low ability levels, overall profits from supplying products to a country may fall below the level necessary to cover the fixed costs of market entry, and such firms would exit that market.

This result allows us to think about what would happen to a firm if it got taken over by another firm from a different country. Suppose the investing firm is of a high-ability, which is consistent with much of the findings in the empirical and theoretical FDI literature that finds high-productivity firms to be the firms most likely to engage in FDI[14]. Further suppose that this investor firm implants the local firm with its superior management and technology practices, effectively raising the ability level of the recipient firm to match its own (Bloom and Van

[14] Please refer to the introduction to this paper for some examples of this research.

Reenen, 2007, 2010; Bloom, Sadun, and Van Reenen, 2012).[15] In the model, this translates into the local firm exhibiting a positive shock to its ability, φ. The model's prediction would be that this firm would, in equilibrium:[16]

(a) *Increase the scale of its operations*. As the firm's ability increases, it is able to sell larger quantities of its existing products, and find it profitable to introduce new products to its product mix.

(b) *Increase the scope of its product mix.* With a higher level of ability, the firm is able to export a larger share of products to any given market.

(c) *Increase the scope if its geographical export presence.* With a higher level of ability, the firm finds it profitable to export products to new markets with less favorable draws of product variety tastes for its products.

(d) *Lower the prices of its existing products.* Given the construction of the model, the equilibrium price a firm charges is a constant mark-up over its marginal cost. As marginal costs decline with higher firm ability, its equilibrium price drops as well.

To see that part (a) holds, one must just examine the structure of the product-country specific profit expression from equation (1). As $r_{ij}(\varphi, \lambda)$ is monotonically increasing in firm ability, φ, a

[15] This assumption is common in the theoretical literature. See, for example, Burstein and Monge-Naranjo (2009), Ramondo and Rodriguez-Clare (2009), and McGrattan and Prescott (2010). Empirical evidence for cross-country differences in management practices abounds (see Bloom and Van Reenen (2007, 2010), as does evidence for the transfer of technology and management expertise from foreign firms to their subsidiaries (e.g. Bloom, Sadun, and Van Reenen (2012). For additional examples, please refer to the introduction to this paper.

[16] For a formal proof of sections of the above proposition, please see Web Appendix to Bernard, Redding, and Schott (2010b)

firm that exhibits a positive shock to its ability, $\varphi_s > \varphi$, will in equilibrium exhibit increased scale of operations across all of the products it chooses to supply. To see that part (b) holds, refer back to the share of products supplied by a firm with a given ability (above the minimum ability cutoff) from source country *i* to destination *j*, which equals $\left[1 - Z(\lambda_{ij}^*(\varphi))\right]$, where Z is the cumulative distribution of product characteristics. It can be shown that $\lambda_{ij}^*(\varphi)$ is monotonically decreasing in φ, while we know that by construction Z is monotonically increasing in λ. It then follows that $\left[1 - Z(\lambda_{ij}^*(\varphi))\right]$ is monotonically increasing in firm ability and that increasing firm ability increases the share of products it chooses to supply to any market in equilibrium. For part (c), once again refer to $\left[1 - Z(\lambda_{ij}^*(\varphi))\right]$ and note that this expression also tells us the probability that a product is exported to any country *j* in equilibrium. Since we have established that it is increasing in firm ability, a positive shock to φ will increase the probability that a firm in equilibrium chooses to supply any product to any country, increasing the equilibrium geographical scope of that firm. Finally, part (d) holds as by construction the equilibrium pricing rule takes on the structure of a constant mark-up over its marginal cost. Also by construction, marginal costs are monotonically decreasing in firm ability. Thus, as a firm experiences a positive shock to φ it in equilibrium charges less for its existing products.

This proposition gives us a simple set of predictions of how foreign investment would affect the ex-post behavior and performance of local firms that we can directly take to the data. In addition, it also allows us to consider how heterogeneity in investor ability would result in

differential effects on the target firms. It is trivial to show that in the model receiving investment (and ability levels) from higher-ability investors leads to larger increases in target firm scale, larger changes in the scope of the firm's product mix and geographical presence, and a larger decline in prices charged for existing products, all else equal. While we do not directly observe investor ability in the data, we can exploit the fact that firm productivity, management practices, and technological prowess, have all been shown to differ across countries in a way that is closely related to the countries' levels of economic development. In the empirical analysis that follows, we thus attempt to use investor origin as broad proxy for investor ability, and evaluate whether the data support the hypothesis that heterogeneity in investor origin leads to effects in the performance and behavior of target firms that are consistent with what we would expect if the source of heterogeneity was in fact investor ability.

IV. Data Description and Historical Context

a. Description of Data

In our empirical analysis, we use a rich panel dataset containing a wealth of information on the universe of Slovenian firms during the period 1994-2010. The data were made available for this project by the Statistical Office of the Republic of Slovenia and Bank of Slovenia, and contain detailed information on financial accounts of Slovenian firms, detailed transaction-level data on all their import and export activities at the product-destination level, annual firm-level information on all foreign direct investments received by Slovenian firms, and additional descriptive information that allow us to observe their primary industry, number of employees, and geographical location.

For every firm-year combination, we thus observe detailed information from their balance sheets and income statements, allowing us to compute a variety of firm performance indicators, including revenue-based measures and total factor productivity (TFP)[17]. For every export and import transaction a firm reports, we observe product information at the 8-digit level of the Slovenian version of the Combined Nomenclature, the transaction value, a measure of product quantity and weight (if available), and information about export destination or import origin. This allows us to compute measures of a firm's product mix scope and scale in its export activities, as well as to observe how firms behave at the level of specific products and export destinations. In particular, we compute measures of a firm's geographical scope (number of export destinations served) and geographical focus (intensity and representation of exports in various geographical regions), as well as track prices (unit values) that a firm charges for its products.

Furthermore, investment data allow us to observe all inward foreign non-portfolio investments that surpass at least 10% of the local firm's outstanding capital in a given year. As Slovenian firms are required by law to annually report this information to the central bank, we can be confident we observe the universe of qualified foreign direct investment flows into the country. Aside from observing the fact that a firm has received foreign direct investment, we also know the investment amount and the origin of the investor, and are able to track this information at the firm level on an annual basis. We use investor origin to group investors into two main geographical groups: "advanced country investors" and "developing country investors". The former group contains investors originating from high-income member states of the Organization

[17] We compute TFP using the Levinsohn-Petrin method and use materials expenditure as the proxy for unobservable firm-level productivity shocks.

of Economic Cooperation and Development (OECD)[18], while the latter group is defined as a complement to the former, excluding countries that are typically deemed to be offshore tax havens[19].

Table 1 provides summary statistics for key variables in the dataset, both for the entire dataset and for three subgroups: firms that remain domestically owned during their entire spell in the dataset, firms that were initially domestically owned but then received foreign investment from an advanced country investor, and those that were initially domestically owned but then received foreign investment from a developing country investor. We thus drop all firms that reported having received foreign investors during their entire spell in the dataset, which include subsidiaries of foreign firms spawned by greenfield investment and domestic firms that received foreign investment prior to the first year of our sample period. In addition, we drop all firms which did not report positive revenue or variables needed for TFP calculations before and after receiving foreign investment. This insures that we are able to observe a firm for at least 5 continuous years in our data. In order to achieve comparability across periods, we first denominate values of all financial variables in terms of a common currency.[20] We then employ a series of price deflators in order to remove the effect of temporal price changes from financial variables used in the analysis.

[18] These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States.

[19] These include countries such as Luxembourg, Lichtenstein, Cyprus, and the Cayman Islands.

[20] As Slovenia adopted the European common currency, the euro, in 2007, I use average annual exchange rates as published by the Bank of Slovenia to convert all values prior to 2007 from the Slovenian Tolar into Euros.

The resulting dataset is an unbalanced panel that contains 8,171 firms, 7,970 of which are domestic and 194 of which are targets of foreign investment. Out of the latter group, 163 firms are targeted by investors originating from advanced countries, while 31 are targeted by investors from developing countries. The three most common advanced investor origins include Austria, Germany, and Italy, while developing country investor origins include, among others Croatia, Bosnia and Herzegovina, the Czech Republic, Belarus, and Hungary.

Comparing descriptive statistics for these groups of firms in Table 1, we observe that domestically owned firms differ substantially from firms that are targeted by foreign investors. They are, on average, significantly smaller, both in terms of their revenue and the number of employees; they export and import less, source imports from a more geographically narrow set of countries and export to a narrower set of market destinations. They also, on average, pay their employees substantially less than their peers who receive foreign investment, indicating that they might have lower levels of human capital.

If we compare the firms that receive foreign investment from advanced and developing country investors, we see that they are quite similar, at least compared to domestically owned firms. While developing country investor targets are somewhat larger, advanced country investor targets are more profitable, and pay their employees a higher wage. We should note however, that Table 1 provides descriptive statistics for variables for the entire duration of the sample and thus includes information on these firms both for the period before and after receiving foreign investment. To observe the effects foreign investment has on the ex-post performance of target firms, a more sophisticated analysis is required. While we turn to describing and implementing such an analysis in the next section, it might be useful to first provide the reader some context

about Slovenia's economic history in the period from which our data originate, and to briefly discuss a small set of illustrative examples of foreign investment in Slovenia.

b. Brief Summary of Slovenia's Economic History during the Sample Period

A former republic in the Socialist Federal Republic of Yugoslavia (henceforth, Yugoslavia), Slovenia declared its independence from Yugoslavia in 1991, and after a brief period of ethnic strife charted a new paper in its political and economic history, embarking on a process of economic transition from socialism to capitalism and beginning a process of alignment with Western Europe that included membership in the WTO in 1995, entry into the European Union and NATO in 2004, the adoption of the European common currency in 2007, and admission into the OECD in 2010.

Slovenia, being the northernmost state of Yugoslavia, bordering Austria to the North and Italy to the West, enjoyed the status of the federation's most economically advanced region. While it represented only one thirteenth of the population of Yugoslavia, it accounted for more than a fifth of the federation's GDP, and its firms represented an estimated one third of Yugoslav exports. Unlike in other countries of the Soviet Bloc, where collective ownership of productive assets meant state ownership in gigantic production complexes, Slovenian firms benefited from a policy of a decentralized system of self-management by the workers themselves, with moderate levels of interference from local councils and party organs (Pogatsa, 2012). As a consequence, Slovenian firms were well-positioned, compared to their peers from other Eastern European economies, to successfully manage the transition from a socialist to a capitalist system.

Nevertheless, macroeconomic instability in the early years of economic transition had left the Slovenia of the early 1990s in a difficult economic position with high rates of inflation and

negative economic growth. This was a period of mass economic restructuring and privatization in which the majority of large and medium-sized manufacturing firms received private ownership, went bankrupt, and/or split into smaller independent units. In this period, a number of large and medium sized manufacturing firms were acquired by foreign investors, while others, especially in what were deemed "strategic sectors" such as banking, insurance, telecommunications, and steel production, retained at least partial state ownership.

This period also marked the start of a radical period of trade liberalization, characterized by falling tariffs and non-tariff barriers to trade. Slovenia removed restrictions on foreign investment and expanded its network of bilateral and multilateral trade and investment agreements, which included the 1997 Interim Free-Trade Agreement with the European Union, liberalizing cross-border capital movements and reducing tariffs and some non-tariff barriers to trade for Slovenian exporters to EU member states, as well as bilateral trade and investment agreements with most former Yugoslavian republics, which eased cross-border business and investment.

From the mid-1990s until approximately the end of the time period studied in this paper and the onset of the global economic slowdown as a consequence of the 2008 financial crisis, Slovenia experienced a favorable pace of economic development with real economic growth in the 3-5% range. The country's traditional export-oriented manufacturing industries[21] expanded, fueled by exports to both Western European markets and the rebuilding of trade ties with traditional markets in Eastern Europe and former Yugoslavia. Business investment levels rose, unemployment and real wage trends trended favorably, and the overall export-intensity of the

[21] These included chemicals, electrical equipment and electronics, food processing, metal products and industrial equipment, motor vehicles and components, lumber and paper products, pharmaceuticals, and textiles.

economy, while already significantly higher than in most other post-socialist economies, inched further upward (Lorber, 1999; SURS, 2012). These trends continued throughout the early and mid 2000s and were coupled with both a gradual structural transition of Slovenia's economy from manufacturing towards services, as well as a slow transition in manufacturing itself toward sectors characterized by higher technological sophistication of production. Slovenia's transition towards closer resemblance of the economic structure of the world's advanced economies was aided by the country's integration within the European Union.

As proved to be the case with many economies on the "periphery" of the European Union, the country's integration into the European economic and financial system brought along a boom in capital inflows, investment, and wage inflation that lasted until the financial crisis of 2008. Convergence of interest rates with the rest of the European Union fueled business and public investment alike, especially in residential construction and infrastructure, and Slovenian wages and standards of living converged toward the European Union averages. In terms of GDP per capita, Slovenia passed some existing European Union member states such as Portugal and Greece, and moved on a path towards OECD membership, which was officially granted in 2010. The financial crisis of 2008 and its lasting aftermath have significantly affected Slovenia's economic dynamism and the country's economic woes mirror those of many European economies. As a small open economy with a particularly export-oriented private sector, the economic slowdown in its main European trading partners negatively affected Slovenia's exporters and a slowdown in business investment resulted in stagnation of Slovenia's economy in the recent years.

c. Illustrative Examples of Foreign Investments in Slovenia

In order to help elucidate the effects receiving foreign capital via foreign direct investment may have on recipient firms, as well as to illustrate how investor origin might moderate its effects, it is useful to provide a brief discussion of some prominent cases of Slovenian firms that received foreign capital of either developed or developing country origin during the sample period. While privacy protection policies that were a part of the data licensing agreement prohibit us from determining if these cases are actually featured in my data, they nonetheless provide useful insights into the dynamic effects receiving foreign investment has had on targeted Slovenian firms.

From its declaration of independence from Yugoslavia in 1991 and the subsequent turn toward capitalism in the early 1990s, Slovenia's manufacturing firms received a steady stream of foreign direct investments. A large majority of investments of developed country origin came from Slovenia's main Western European trading partners, though some notable investments also originated from the United States, but very few from Asia and elsewhere. Similarly, direct investments of developing country origin most frequently originated from the country's main trading partners in South-Eastern Europe, especially Croatia and (later) Serbia, but also from other former Soviet bloc countries such as Hungary, the Czech Republic, and Russia. The manufacturing industries that developed country investors targeted most frequently included chemical manufacturing, pharmaceuticals, industrial machinery and products, automobile components, and the manufacture of electrical and electronic equipment. Conversely, industries prominently featured among investments of developing country origin included paper and paper products manufacture, packaging manufacturers, food processing, and, in service-oriented industries, tourism, wholesale merchants, and retail chains.

The companies that were frequently targeted were large manufacturing firms with an already established tradition of export-oriented production, albeit one that was often primarily oriented toward markets in ex-Yugoslavia and the former Soviet Bloc. Foreign investors were typically large Western multinational concerns with existing operations in industries in which target firms were primarily engaged. While there is no shortage of cases to choose from, here is one illustrative example of developed country FDI in Slovenia during the 1990s and 2000s:[22]

- *Bosch and Siemens Home Appliances Group Nazarje:* Starting in 1993, Germany's Bosch and Siemens Hausgeräte GMBH (BSH Group), one of world's largest manufacturers of home appliances, began fostering an equity relationship with Slovenia's largest manufacturer of small motor-based home appliances, Tovarna malih hisnih aparatov Nazarje. Previously a division of Slovenia's Gorenje, one of Central Europe's largest manufacturers of (predominantly large) home appliances, the company had a relatively successful 30-year history of producing small home appliances, and it mainly focused on serving the Slovenian, ex-Yugoslavian, and Eastern European markets. After BSH Group's acquisition in the 1990s, however, the company expanded to become a prominent regional production and R&D hub for its parent company, as well as serve as BSH Group's sales and marketing headquarters for a large chunk of Central and South-Eastern Europe. By 2002, a decade after initial acquisition, BSH Nazarje's revenue had increased more than fourfold, with similar increases in R&D investment and a significant expansion in production capacity. The firm subsequently became fully integrated into BSH Group's global supply chain and presently produces approximately 5.5 million high-end home appliances of various types which are marketed globally under Bosch and Siemens brands.

[22] For additional examples, please refer to the Web Appendix.

Until the most recent past, foreign direct investments of developing country origin did not feature as prominently in the media and public consciousness as did developed country investments. While this was primarily due to their lower frequency, it was also related to the fact that prior to the most recent period of Slovenia's economic history, there were few examples of investors from developing countries buying majority stakes in Slovenian manufacturing firms that were considered to be national champions. This changed when in 2007 Slovenian Steel Group, the country's largest steel manufacturer, was taken over by Russia's KOKS Group, one of the world's largest metallurgical conglomerates. Soon thereafter, Droga Kolinska, Slovenia's largest processed food producer, was acquired by its peer from Croatia, Atlantic Group, while Fructal, Slovenia's largest fruit processing company, was acquired by its Serbian peer, Nectar. Nevertheless, the years prior to 2007 have seen some major manufacturing investments with developing-country origins, one prominent example of which is the following:

- *Valkarton:* in 2002, Belisce, Croatia's largest paper and packing products manufacturer, acquired a majority stake in Valkarton, Slovenia's largest producer and exporter of corrugated cardboard products and packaging, laminated packaging, and folding boxes. Following acquisition by Belisce, which is Valkarton's main supplier of raw materials, the company continued on its existing path of incremental upgrades to its technology and equipment, and on its strategy of growth by acquisition of smaller competitors in the former Yugoslavian republics, but it did not expand its product mix or international footprint dramatically. Today, Valkarton sells the majority of its products in Slovenia, while its subsidiaries predominantly serve their local ex-Yugoslavian markets. Other exports represent approximately 20% of the firm's revenue base and mainly include Italy, Hungary, Austria, and the Netherlands.

The distinctions between advanced and developing country investments highlighted in these particular cases are borne out in the complete analysis that follows. The next section systematically investigates these differences and embeds them in a formal econometric framework.

V. Estimation Approach

In order to estimate the effect of foreign investment on ex-post measures of target firm performance and behavior, we write a simple empirical model linking foreign investment and subsequent firm-level outcomes of interest as follows:

$$Y_{it} = \alpha + \beta F_{it-1} + d_t + d_i + \varepsilon_{it}, \qquad (3)$$

where Y_{it} is an outcome of interest for firm *i* in year *t*, F_{it-1} is an indicator of whether the firm had received foreign investment in the prior year and equals one in every year thereafter,[23] and d_t and d_i represent year- and firm-level fixed effects. We include firm-level fixed effects to control for the effect of time-invariant firm-level characteristics that might affect firm behavior and performance over the sample period and time effects to account for secular factors that might impact all firms operating in year *t*.

Recent literature tells us that it is very unlikely that assignment of foreign investment is random across firms. If foreign investors select their targets based on characteristics of these

[23] Please note that the coding of the foreign investment indicator implies we are not identifying a one-year effect of foreign investment on the firm-level variable of choice, but rather a (weighted) average effect of receiving foreign investment on the firm-level variable of interest over the entire post-investment horizon.

firms that vary over time, estimates of expression (3) will be biased and inconsistent. In order to alleviate this problem, we follow the approach of Chen (2011) and Guadalupe, Kuzmina, and Thomas (forthcoming) and propose a selection mechanism for foreign investment that depends on observable characteristics of target firms. If this selection mechanism, as described by the ex-ante trajectory of firm characteristics, is a sufficiently exhaustive description of the process by which foreign investors select their targets in my data, then by purging the selection effect in the equation above we may obtain consistent estimates of the effect of foreign investment on ex-post measures of target firm performance and behavior.

In order to implement this approach, we draw on the literature that discusses the use of propensity score estimation techniques in order to identify average effects of treatment.[24] This literature uses observed characteristics of participants and non-participants in a particular treatment program to estimate a single-dimensional propensity score that summarizes the relationship between participant characteristics and treatment and serves as an estimate of the probability that a participant will be treated. The propensity score is then used to adjust for selection into treatment on the basis of observable characteristics, allowing for consistent estimates of the average treatment effect.

The effectiveness of these methods depends on the validity of two assumptions: (1) whether observed pre-treatment characteristics do indeed predict participation in the program to the extent that treatment can be thought of being random, conditional on observed pre-treatment characteristics (this is often referred to as "unconfoundedness" or the "conditional independence" assumption), and (2) whether we can observe a sufficient number of similar

[24] See Busso, DiNardo, and McCrary, 2011 for a recent survey of the literature.

participants and non-participants to successfully build an empirical counterfactual for treatment by comparing the two groups (this is often referred to as the "overlap" assumption). Provided they both hold, the researcher can use these methods to consistently estimate the treatment effect of the program, and under some circumstances these estimators might even have desirable finite-sample efficiency properties (Busso, DiNardo, and McCrary, 2011).

We employ two variations of the above approach to estimating the average effect of foreign investment ("treatment") on target firms using propensity scores. First, we follow the method proposed Dehejia and Wahba (1999) and Busso, DiNardo, and McCrary (2011) and implemented by Guadalupe, Kuzmina, and Thomas (forthcoming) and employ a reweighting estimator, which uses estimated propensity scores to calculate re-weighted observations in equation (3), then estimate that equation using weighted least squares. Secondly, we employ a semi-parametric matching estimator that uses kernel regression matching to associate treated firms with an appropriate weighted set of untreated firms, then calculates the average treatment effect on the treated non-parametrically as the average difference in means of the outcomes of interest between the treated and control firms, conditional on the differences for the treated and control firms in the pre-treatment time period. This is the so-called difference-in-difference matching estimator used by Chen (2011) and others to study the effects of foreign investment on target firms.[25] The advantage of the first approach is its ease of implementation and possibly desirable efficiency properties, while the second approach requires fewer parametric assumptions and explicitly allows us to purge any systematic differences between target firms and matched firms that may be unobservable, as long as they are time-invariant. In addition, the difference-in-

[25] See Heckman, Ichimura, Smith, and Todd (1998) or Todd (2006) for a discussion.

difference matching estimator also lends itself directly to the estimation of the average effects of treatment with varying lags. For robustness, we employ both approaches in parallel and check that they produce qualitatively similar results.

In order to build a propensity score measure, however, it is necessary to specify an empirical model for the decision of a foreign firm to acquire a domestic firm. We follow the selection process as proposed by Guadalupe, Kuzmina, and Thomas (forthcoming) and assume that, in the presence of positive or negative selection, there is a threshold value of an underlying latent variable that measures future growth prospects of the domestic firm at any point in time, so that the firm will be acquired only if the threshold value is surpassed in the presence of positive selection or the firm will be acquired only if the threshold value is below some value in the presence of negative selection. Assuming that the observable underlying future growth prospects of the domestic firm, from the perspective of the foreign acquirer, can be proxied by observable characteristics of the domestic firm captured in our data, then we can write an empirical model for the acquisition decision in terms of variables observed in the data as follows:

$$F_{it} = \alpha + \beta\varphi_{it-1} + d_t + d_s + v_{it}, \qquad (4)$$

where F_{it} is a dummy variable indicating if firm i received foreign investment in year t, φ_{it} is a vector of a set of proxy variables for lagged underlying growth ability of firm i, and d_t and d_s are dummy variables representing year- and industry-specific fixed effects.

Estimating equation (4) gives us a set of propensity scores that we use to obtain consistent estimated of the parameter of interest in equation (3) and to estimate the difference-in-

difference matching estimator. Equation (4) also allows us to empirically examine the presence and form of selection on observable characteristics of domestic firms in our data and, as a consequence, determine whether foreign acquirers target the most productive domestic firms (i.e. they "cherry-pick") or the least productive domestic firms (i.e. they target "lemons"), a question that has recently attracted renewed attention in the literature.[26]

We follow the recent empirical literature, particularly Chen (2011) and Guadalupe, Kuzmina, and Thomas (forthcoming), in our selection of firm-level observable characteristics and use a broad set of proxy variables for the underlying growth ability of the domestic firm, including lagged export status, lagged total factor productivity, lagged labor productivity, lagged capital intensity of the firm as measured by fixed assets per worker and the share of fixed assets in total revenue, lagged productivity relative to the industry mean, lagged firm size measured in terms of revenue and employment, lagged skill intensity of the firm as measured by wages per worker, and lagged profitability measured as the share of net profit in total revenue. We also investigate a variety of functional forms and lag structures on the relationship between the set of proxy variables and foreign investment, and estimate propensity scores separately by industry to account for any inter-industry differences in the targeting behavior of foreign investors.

Our propensity score estimation results provide clear evidence that election into foreign investment is strongly correlated with observable firm-level characteristics, and our industry-specific probit propensity score estimates allow us to achieve covariate balance for virtually all industry-variable combinations. In addition,we explore the robustness of my empirical results to various propensity score specifications, and find that the findings we report below are not

[26] Please refer to the introduction to this paper for a brief discussion of this literature.

qualitatively sensitive to the particular choice of functional form and lag structure. For additional details, please refer to the Web Appendix to this paper.

VI. Results

The Effect on Target Firm Performance

Our empirical results indicate that receiving foreign investment has significant positive effects on the ex-post performance of target firms. As the fixed effects ordinary least squares estimate from the first column of Table 2 tells us, target firms more than double their revenues after receiving foreign investment, controlling for time-invariant differences between firms. Even after correcting for the selection process using the re-weighting estimator as presented in the fourth column of the same table, we still find that receiving foreign investment causes target firms to increase their revenues by more than 30%. This result is corroborated by the difference-in-difference matching estimator approach presented in Figure 1, which shows that targeted firms, relative to their domestically owned "matches", increase their revenues by 13% in the first year after investment, and this difference increases to almost 25% by the end of the fourth year.

We observe similar results when looking at the scale of the firms' export and import activities. As the simple fixed effects estimator in Table 3 tells us, target firms more than double their exports after receiving foreign investment, and this effect remains even after we control for selection, even though it becomes marginally statistically insignificant. Turning to the results from the difference-in-difference matching estimator, we observe a similar story: target firms' exports increase, relative to their peers, after receiving investment, but this effect takes several years to become statistically significant. The results from Figure 1 indicate that target firms'

exports increase by 37%, relative to their peers, by the fourth year after having received foreign investment.

These results are consistent with what the theoretical model would predict if foreign investment indeed led to an increase in the managerial and technological abilities of targeted local firms. In the second panel of Table 2, we attempt to measure this increase directly using target firms' total factor productivity. Looking at the simple fixed effects estimate, we find that target firms exhibit a 30% increase in their TFP after receiving foreign investment, but this effect goes away once we impose the propensity score re-weighting structure on the estimate. However, the difference-in-difference matching estimator finds that target firms do indeed exhibit a modest relative TFP increase over their peers. By the end of the fourth year after investment, target firms increase their TFP by an average of 12%. Given that empirical literature has shown it is very difficult to accurately measure total factor productivity for multi-product firms with aggregate financial data, these results are all the more striking.

If the observed increases in the performance and the scale of operations of target firms are indeed due to the effects of receiving foreign investment, we would expect the intensity of foreign investment to be positively associated with the observed measures of ex-post firm performance. This is exactly what the results in Figure 5 suggest. Firms that are targeted with investment that takes on an above-median share of the recipient firms' capital (i.e. high intensity investment) outperform their domestically owned peers to a much larger extent than those firms that are targeted with foreign investment that takes a below-median share of the recipient firms' capital (i.e. low intensity investments). By the end of the fourth year, high intensity investment targets' relative improvement is strong and statistically significant along all measures of firm performance and scale.

Do targets of investors of different geographical origins exhibit different ex-post scale and performance effects? Our results suggest that this is the case. Comparing the estimates in Tables 4 and 5, we find that while receiving investments originating from both advanced and developing countries leads to increases in target firms' revenues, the effect is significantly larger for those firms that receive investment from advanced country investors. Our results indicate that the revenue increase for firms receiving advanced country investment is 13 percentage points larger than for those receiving developing country investment. Similarly, estimates from Tables 6 and 7 tell us that this result also holds for the target firms' increase in the scale of their export and import activities. While simple fixed effects estimates show that investment from both origins leads to significant increases in the scale of exports, the coefficient on developing country investments goes away after we control for the selection process. These findings are qualitatively confirmed by the difference-in-difference matching estimator results. Firms receiving investment from advanced country investors exhibit sustained increases in exports that become statistically significant by the fourth year after investment. As Figure 10 suggests, this is especially true for targets of high intensity developed country investment. On the other hand, the estimates for firms receiving investment from developing country investors are very unstable and statistically indistinguishable from zero in most years, though this might be at least partially due to a smaller number of observed investments originating from developing countries.

The Effect on Target Firm Scope

Our results on the effects of foreign investment on target firms' scale and performance are thus far largely consistent with what the model would predict if investor origin signified heterogeneity in average investor ability across the two origin groups. However, we can test this

notion further by empirically investigating the model's prediction that receiving investment from higher ability investors would lead to larger increases in target firms' scope as well.

As estimates from Tables 8 and 9 reveal, overall foreign investment leads to target firms' increasing the scope of their product mix, consistent with what the model would predict if foreign investment led to improvement in their overall managerial and technological ability. However, results from Table 9 suggest that these results are entirely driven by increases in product mix scope of firms receiving investment from advanced country investors. Difference-in-difference matching estimators largely confirm this view and actually paint an even starker picture: as Figure 4 suggests, while advanced country investor targets exhibit moderate increases in the scope of their export product mix, developing country investor targets seem to actually decrease their scope in the product space.

The overall results align closely with the empirical findings from Guadalupe, Kuzmina, and Thomas (forthcoming), who find that local firms exhibit sustained increases in self-reported rates of product innovation after receiving foreign investment. Our findings, however, suggest that their treatment of all investors as essentially homogenous may be obscuring differential effects of investors of different abilities that might be underlying their estimates, provided investor heterogeneity dynamics in the context of Slovenian firms translate into their context of Spanish firms as well.

Similar results as in the case of product choices are found when examining the scope of destinations to which target firms export after receiving foreign investment. Results presented in Tables 10 and 11 show that recipient firms significantly expand the number of export destinations they service as a result of foreign investment. Simple fixed effects estimates from

the first column of Table 10 suggest that target firms add in excess of 6 new export destinations after receiving foreign investment, and even after we control for selection, the coefficient in the fourth column of Table 10 still shows that target firms exhibit a statistically significant increase in the scope of their geographical presence. Table 11 suggests that the increase in scope is large and statistically significant for firms that receive investment from advanced country investors, but after controlling for selection, the effect becomes statistically insignificant for firms that receive investment from developing country investors. The difference-in-difference matching estimator paints a similar picture, but again suggests that firms targeted by developing country investors might actually reduce their geographical scope. While the standard errors are large, the estimated average treatment effects are positive and marginally statistically significant for high intensity advanced investor targets and negative but largely statistically insignificant for developing investor targets.

The Effect on Product Prices and Capital Goods Imports

While our empirical results seem largely consistent with the hypothesis that heterogeneity in investor ability, as proxied by their origin, leads to differential effects on target firms' ex-post scope and scale, the model also yields a prediction that firms exhibiting increases in their ability would, on average, lower the prices they charge on their existing products. Tables 12 and 13 empirically examine this notion and find modest evidence in support of this hypothesis. While the difference-in-difference matching estimator results in Table 12 are very noisy, the point estimates do seem to suggest that firms receiving foreign investment might lower the average price of their products, relative to their peers, in the years following investment, and that this effect, although at most marginally statistically significant, is entirely driven by decreases in average prices by firms receiving investment from advanced country investors. Table 13 takes a

step further and examines the post-investment change in price for existing and new products. The results suggest that products introduced after receiving foreign investment exhibit significantly higher prices relative to existing products of the firm, and this effect is much stronger for firms receiving investment from advanced country investors. Combining this insight with results from Table 12 suggests that advanced country investor targets indeed lower the prices of their existing product portfolio after being targeted with foreign investment.[27]

If we assume foreign investors indeed transfer their superior managerial and technical abilities to their investment targets, we would expect to observe that these firms undergo extensive retooling of their production processes after receiving investment. While this is something we cannot directly observe in the data, we can observe whether target firms increase imports of manufacturing equipment and related capital goods before and after the entrance of the foreign investor. Table 14 estimates a simple fixed effects regression that suggests this is the case. Target firms experience a 26% increase in imports of capital goods after receiving foreign investment, and this effect is entirely driven by firms that receive investment from advanced country investors. Further, the results suggest that a majority of capital goods imports come from advanced OECD countries, consistent with the view that advanced country investors retool their local targets using superior production technology. These findings again mirror those presented in Guadalupe, Kuzmina, and Thomas (forthcoming), who observe that local firms report significant increases rates of process innovation and assimilation of foreign technologies after receiving foreign investment. While they suggest this reflects actual increases in indigenous rates of innovation, our findings would suggest they rather reflect evidence of production re-tooling

[27] Results presented in the Web Appendix suggest the lower prices are not a consequence of a shift toward lower quality products.

and technology transfer from the foreign investor to the local firm via imports of superior machinery and equipment.

When controlling for selection using the difference-in-difference matching estimator, however, the results paint a more nuanced picture. As the estimates from Figures 7 and 8 suggest, while targeted firms do exhibit a relative increase in the imports of capital goods in the year immediately following foreign investment, the vast majority of the relative increase in capital goods imports actually comes in the years immediately leading up to foreign investment. These findings are particularly interesting in that they suggest target firms might be undergoing pre-emptive upgrading of their production in anticipation of foreign investment. These results seem to be consistent with recent findings of the literature on "learning to export", which has shown in a variety of contexts that firms can be induced to invest in productivity improvements by being presented with improved exporting opportunities (Lileeva and Trefler, 2010; Bustos (2011). While this literature has mostly focused on exploring the effects of trade liberalization on investment decisions of local firms, my preliminary findings could suggest that foreign investment might be an alternative mechanism for inducing local firms to invest in productivity improvements.

Additional Findings

Our analysis also allows us to investigate the validity of certain findings emphasized by recent papers, specifically the proposition put forth in Guadalupe, Kuzmina, and Thomas (forthcoming) that foreign investors "cherry-pick" when selecting acquisition targets, as well as the proposition laid out in Blonigen et al (2012) that foreign investors acquire local firms in order to exploit their export distribution networks. Our data provide results consistent with both of these propositions.

Figures A1-A4 and Tables A15-A20 reported in the Web Appendix[28] clearly show that foreign investors do not randomly select their targets. Instead, they target the largest and most productive local firms, i.e. they invest in the local "cherries". Firms that receive investment are significantly larger and exhibit higher initial productivity than firms that do not receive foreign investment. They are also much more likely to be already active in export markets, and we find that the selection mechanism exhibits similar properties in the case of advanced country investors as in the case of developing country investors. Our results thus clearly support the notion from Guadalupe, Kuzmina, and Thomas (forthcoming) that foreign investors engage in "cherry-picking" on observable characteristics of target firms and underscore the need to control for ex-ante differences in the characteristics of target firms when attempting to estimate causal effects of receiving foreign investment on their ex-post performance.

Our data also allow us to engage in an initial exploration of the validity of the notion put forth in Blonigen et al (2012) that foreign investors might seek to acquire local firms for their proprietary export distribution networks. As we have discussed in our description of the country's historical context, Slovenian firms have enjoyed a long history of economic ties to markets in former Yugoslavia, Eastern and South-Eastern Europe. If Blonigen et al (2012) are correct, we should see target firms disproportionally increasing exports to these markets after receiving foreign investment, especially from advanced country investors. While the results we discussed above tell us that target firms expand the scope of their export presence overall as well as their export presence in high-income OECD countries after receiving foreign investment, we find mixed evidence that they do indeed disproportionally increase the volume of ex-post exports

[28] The Web Appendix is available online at https://sites.google.com/site/matejdrev/

to countries where their ex-ante export ties were strongest. As Tables 15 and 16 report, export volume increases are strongest in non-OECD destinations, and are particularly strong in ex-Yugoslavia and in former Eastern Bloc markets. Interestingly, this is especially true for firms receiving investment from advanced country investors, which is consistent with the story that advanced country investors might partially target local firms in order to exploit their regional export networks and which confirms anecdotal evidence from the illustrative examples. Difference-in-difference matching estimator results, however, provide little evidence in support of this notion.

VII. Conclusions

In this paper, we have used panel data on Slovenian firms to measure the effects of receiving foreign investment on subsequent behavior and performance of targeted local firms. Consistent with several recent studies, we find evidence that firms receiving foreign investment improve their ex-post performance. We take a step beyond existing literature by exploring the importance of investor ability, as proxied by their origin, on the ability of local firms to benefit from foreign investment in the context of a developing country.[29] We find evidence that firms receiving investment from advanced country (i.e. higher-ability) investors experience a larger performance boost ex-post than do firms receiving investment from developing country (i.e. lower-ability) investors. This suggests heterogeneity in investor ability might be important, which is something most recent studies on foreign investment have not focused on.

[29] Chen (2011) has explored overall target firm performance effects of foreign investor origin using data on foreign acquisitions of firms in the United States.

Building on a theoretical framework developed by Bernard, Redding, and Schott (2010b), we show that foreign investment, if accompanied by a transfer of superior managerial and technological abilities from the foreign investor to the local firm, results in an expansion in the local firm's product mix and export destination scope, as well as in a decrease in the prices the firm charges for its existing product portfolio. We present empirical evidence supporting the assertion that local firms endogenously shift their scope, in addition to the scale of their operations, as a result of increases in their ability following foreign investment. Our empirical results also provide evidence that local firms modify the scope of their operations in a way consistent with the view that advanced country (i.e. high-ability) investments result in larger increases in target firm ability than developing country (i.e. low-ability) investments, especially when foreign investment is of high intensity. While one needs to exercise caution in drawing general policy implications from these findings, our results do suggest local policymakers in developing countries might maximize the outcomes for local firms offered for investment by targeting high-ability foreign investors and engaging in investor "cherry-picking."

These findings suggest several fruitful avenues for future research. As our data currently only allow us to observe a small set of investor characteristics, most notably their origin, future work using richer data on foreign investors should focus on understanding how investor and target firm characteristics jointly determine the ability of local firms to benefit from foreign investment. Drawing on existing theoretical literature in management strategy and economics that investigates the determinants and effects of cross-border mergers and acquisitions and multinational activity, research using data on a universe of firms in a particular country or set of countries to empirically examine what synergies between investor and target firm abilities are

required for a local firm to benefit from foreign investment could yield important insights for future researchers and policy decision-makers.

Our empirical results also provide suggestive evidence in support of several notions recently reported in the literature: we find that foreign investors "cherry-pick" when deciding which local firms to target, validating a notion that was put forth in several recent papers. Similarly, we find some preliminary evidence consistent with the view that foreign investors might target local firms in order to exploit their regional export networks. These results suggest it would be useful to extend our theoretical framework to formally include the investment decision, which is something this paper currently abstracts from. Embedding the above stylistic facts, alongside investor heterogeneity and the multi-product multi-destination nature of firms into an internally consistent theoretical framework holds the promise to give us a new depth of understanding of the mechanisms that underlie the results reported in recent literature and in this paper.

References

Aitken, Brian, Ann E. Harrison, and Robert Lipsey, "Wages and Foreign Ownership: A Comparative Study of Mexico, Venezuela, and the United States," Journal of International Economics, 40:3-4 (1996), 345-371.

Antras, Pol, "Firms, Contracts, and Trade Structure," The Quarterly Journal of Economics, 118:4 (2003), 1375-1418.

Arnold, Jens Matthias, and Beata S. Javorcik, "Gifted Kids or Pushy Parents? Foreign Direct Investment and Plant Productivity in Indonesia," Journal of International Economics, 79:1 (2009), 42-53.

Baldwin, Richard, "Trade and Industrialization After Globalization's 2nd Unbundling: How Building and Joining a Supply Chain are Different and Why It Matters," NBER Working Paper #17716 (2011).

Baldwin, John, and Wulong Gu, "Global Links: Multinationals, Foreign Ownership and Productivity Growth in Canadian Manufacturing," The Canadian Economy in Transition Series Research Paper (2005).

Barba Navaretti, Giorgio, and Anthony Venables, "Multinational Firms in the World Economy," Princeton, NJ: Princeton University Press, 2004.

Bernard, Andrew B., Stephen J. Redding, and Peter K. Schott, "Multi-Product Firms and Product Switching," American Economic Review, 100:1 (2010), 70-97.

Bernard, Andrew B., Stephen J. Redding, and Peter K. Schott, "Multi-Product Firms and Trade Liberalization," Working Paper (2010).

Blonigen, Bruce A., "Firm-Specific Assets and the Link between Exchange Rates and Foreign Direct Investment," American Economic Review, 87:3 (1997), 447-465.

Blonigen, Bruce A., Lionel Fontagne, Nicholas Sly, and Farid Toubal, "Cherries for Sale: Export Networks and the Incidence or Cross-Border M&A," NBER Working Paper #18414 (2012).

Bloom, Nicholas, and John Van Reenen, "Measuring and Explaining Management Practices Across Firms and Countries," The Quarterly Journal of Economics, 122:4 (2007), 1351-1408.

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

Bloom, Nicholas, Raffaella Sadun, and John Van Reenen, "Americans do IT Better: US Multinationals and the Productivity Miracle," American Economic Review, 102:1 (2012), 167-201.

Branstetter, Lee G., Raymond Fisman, and Fritz Foley, "Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from the U.S. Firm-Level Panel Data," The Quarterly Journal of Economics, 121:1 (2006), 321-349.

Burstein, Ariel, and Alexander Monge-Naranjo, "Foreign Know-How, Firm Control, and the Income of Developing Countries," The Quarterly Journal of Economics, 124:1 (2009), 149-195.

Busso, Matias, John DiNardo, and Justin McCrary, "New Evidence on the Finite Sample Properties of Propensity Score Reweighting and Matching Estimators," Working Paper (2011).

Bustos, Paula, "Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinean Firms," American Economic Review, 101:1 (2011), 304-340.

Caves, Richard, "Multinational Enterprise and Economic Analysis (2nd Edition)," Cambridge, MA: Cambridge University Press (1996).

Chen, Wenjie, "The Effect of Investor Origin on Firm Performance: Domestic and Foreign Direct Investment in the United States," Journal of International Economics 83 (2011), 219-228.

Chung, Wilbur, and Juan Alcacer, "Knowledge Seeking and Location Choice of Foreign Direct Investment in the United States," Management Science, 38:12 (2002), 1534-1554.

Criscuolo, Chiara, and Ralf Martin, "Multinationals and U.S. Productivity Leadership: Evidence from Great Britain," Review of Economics and Statistics, 92:2 (2009), 263-281.

Dehejia, Rajeev H. and Sadek Wahba, "Causal Effects in Non-Experimental Studies: Re-Evaluating the Evaluation of Training Programs," Journal of the American Statistical Association, 94:448 (1999), 1053-1062.

Dixit, Avinash, and Joseph Stiglitz, "Monopolistic Competition and Optimum Product Diversity," American Economic Review, 67:3 (1977), 297-308.

Estrin, Saul, Jan Hanousek, Evzen Kocenda, and Jan Svejnar, "The Effects of Privatization and Ownership in Transition Economies", Journal of Economic Literature, 47:3 (2009), 699-728.

Falk, Martin, "Effects of Foreign Ownership on Innovation Activities: Empirical Evidence for Twelve European Countries," National Institute Economic Review, 204:1 (2008), 85-97.

Feenstra, Robert C., and Gordon H. Hanson, "Ownership and Control in Outsourcing to China: Estimating the Property-Rights Theory of the Firm," The Quarterly Journal of Economics, 120:2 (2005), 729-761.

Guadalupe, Maria, Olga Kuzmina, and Catherine Thomas. "Innovation and Foreign Ownership," American Economic Review (forthcoming).

Grossman, Gene M., and Elhanan Helpman, "Integrations versus Outsourcing in Industry Equilibrium," The Quarterly Journal of Economics, 117:1 (2002), 85-120.

Haddad, Mona, and Ann E. Harrison, "Are There Positive Spillovers from Direct Foreign Investment? Evidence from Panel Data for Morocco," Journal of Development Economics, 42:1 (1993), 51-74.

Heckman, James, Hidehiko Ichimura, Jeffrey Smith, and Petra Todd, "Characterizing Selection Bias Using Experimental Data," Econometrica, 66:5 (1998), 1017-1098.

Hennart, Francois, "The Transaction Costs Theory of Joint Ventures: An Empirical Study of Japanese Subsidiaries in the United States," Management Science, 37:4 (1991), 483-497.

Heynman, Fredrik, Fredrik Sjoholm, and Patrik Gustavsson Tinvall, "Is There Really a Foreign Ownership Premium? Evidence from Employer-Employee Matched Data," Journal of International Economics, 73:2 (2007), 355-376.

Helpman, Elhanan, Marc Melitz, and Stephen Ross Yeaple, "Export Versus FDI with Heterogeneous Firms," American Economic Review, 94:1 (2004), 300-316.

Horn, Henrik, and Lars Persson, "The Equilibrium Ownership of an International Oligopoly," Journal of International Economics, 53:2 (2001), 307-333.

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

Javorcik, Beata, "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages," American Economic Review, 94:3 (2004), 605-627.

Jovanovic, Boyan, and Serguey Braguinsky, “Bidder Discounts and Target Premia in Takeovers,” American Economic Review, 94:1 (2004), 46-56.

Kamien, Morton I., and Israel Zhang, “The Limits of Monopolization Through Acquisition,” The Quarterly Journal of Economics, 105:2 (1990), 465-499.

Kronborg, Dorte, and Steen Thomsen, “Foreign Ownership and Long-Term Survival,” Strategic Management Journal, 30 (2009), 207-219.

Lichtenberg, Frank R., and Donald Siegel, “Productivity and Changes of Ownership in Manufacturing Firms,” Brookings Papers on Economic Activity, 1987:3 (1987), 643-83.

Lileeva, Alla, and Daniel Trefler, "Improved Access to Foreign Markets Raises Plant-Level Productivity…For Some Plants," The Quarterly Journal of Economics, 125:3 (2010), 1051-1099.

Lorber, Lucka, “The Economic Transition of Slovenia in the Process of Globalization”, Geografski zbornik, 39 (1999), 134-166.

Luo, Yadong, and Rosalie L. Tung, “International Expansion of Emerging Market Enterprises: A Springboard Perspective,” Journal of International Business Studies, 38:1 (2007), 481-498.

McGrattan, Ellen, and Edward Prescott, “Technology Capital and the U.S. Current Account,” American Economic Review, 100:4 (2010), 1493-1522.

Melitz, Mark, “The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity,” Econometrica 71:6 (2003), 1695-1725.

Meyer, Klaus E., Saul Estrin, Sumon Kumar Bhaumik, and Mike W. Peng, ”Institutions, Resources, and Entry Strategies in Emerging Economies,” Strategic Management Journal, 30 (2009), 61-80.

Neary, Peter J., “Cross-Border Mergers as Instruments of Comparative Advantage, ”Review of Economics Studies, 74:4 (2007), 1229-57.

Nenadic, Tina, “Prestrukturiranje predelovalnih dejavnosti v Sloveniji” (Structural Changes in Slovenian Manufacturing), UMAR Working Paper, 21:2 (2012).

Nocke, Volker, and Stephen R. Yeaple, “Cross-Border Mergers and Acquisitions Versus Greenfield Foreign Direct Investment: The Role of Firm Heterogeneity,” Journal of International Economics, 72:2 (2007), 336-365.

Nocke, Volker, and Stephen R. Yeaple, „An Assignment Theory of Foreign Direct Investment,” Review of Economic Studies, 72:2 (2008), 529-557.

Pogatsa, Zoltan, “Slovenia: The Only Successful Case of Economic Transition”, Hungarian Review, 3:4 (2012).

Ramondo, Natalia, “Foreign Plants and Industry Productivity: Evidence from Chile,” The Scandinavian Journal of Economics, 111:4 (2009), 789-809.

Ramondo, Natalia, and Andres Rodriguez-Clare, “Trade, Multinational Production, and the Gains from Openness,” NBER Working Paper #15604 (2009).

Seth, Anju, Kean P. Song, and Richardson Pettit, “Synergy, Managerialism, or Hubris? An Empirical Examination of Motives for Foreign Acquisitions of U.S. Firms,” Journal of International Business Studies, 31:3 (2000), 387-405.

Shane, Scott, “The Effect of National Culture on the Choice between Licensing and Direct Foreign Investment,” Strategic Management Journal, 15 (1994), 627-642.

Shaver, J. Myles, “Accounting for Endogeneity When Assessing Strategy Performance: Does Entry Mode Choice Affect FDI Survival?” Management Science, 44:4 (1998), 571-585.

Simoneti, Marko, Joze P. Damijan, Matija Rojec, and Boris Majcen, "Case-by-Case Versus Mass Privatization in Transition Economies: Initial Owner and Final Seller Effects on Performance of Firms in Slovenia", World Development, 33:10 (2005), 1603-1625.

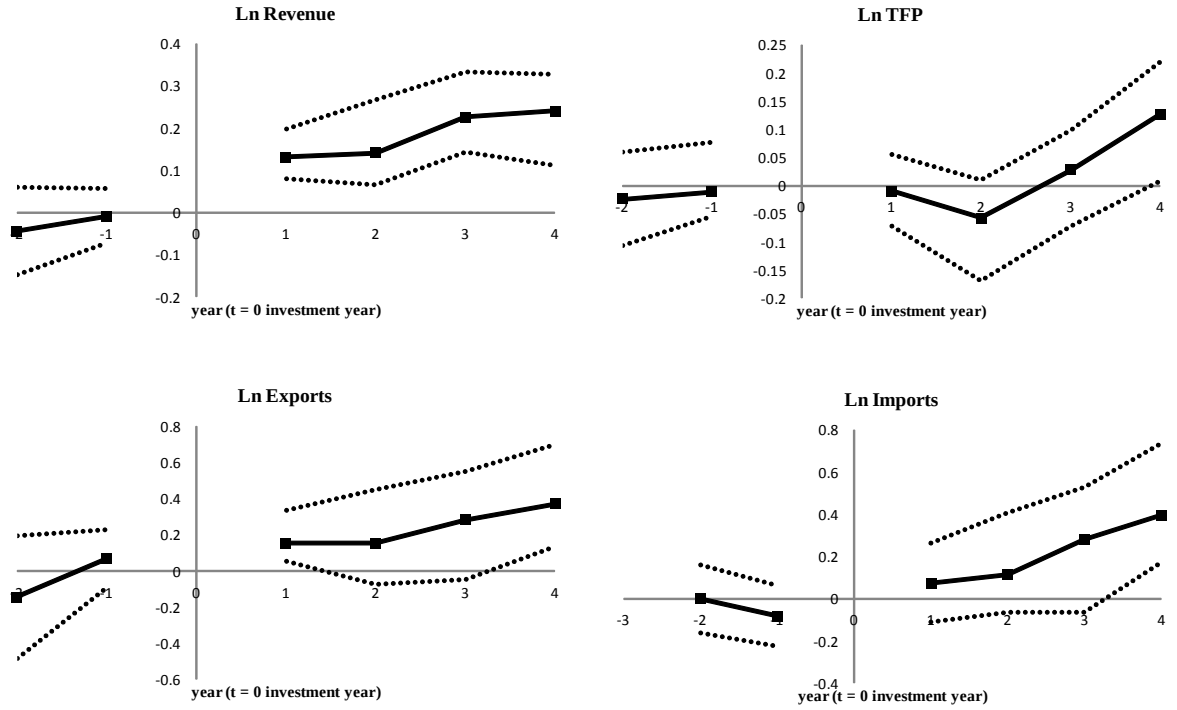
Statistical Office of the Republic of Slovenia (SURS), "Statisticni letopis", Multiple Vintages (1995-2012), (http://www.stat.si/publikacije/pub_letopis_prva.asp).

Todd, Petra. E., "Matching Estimators," Working Paper (2006).

Yeaple, Stephen Ross, "Offshoring, Foreign Direct Investment, and the Structure of U.S. Trade," Journal of the European Economic Association, 4:2-3 (2006), 602-611.

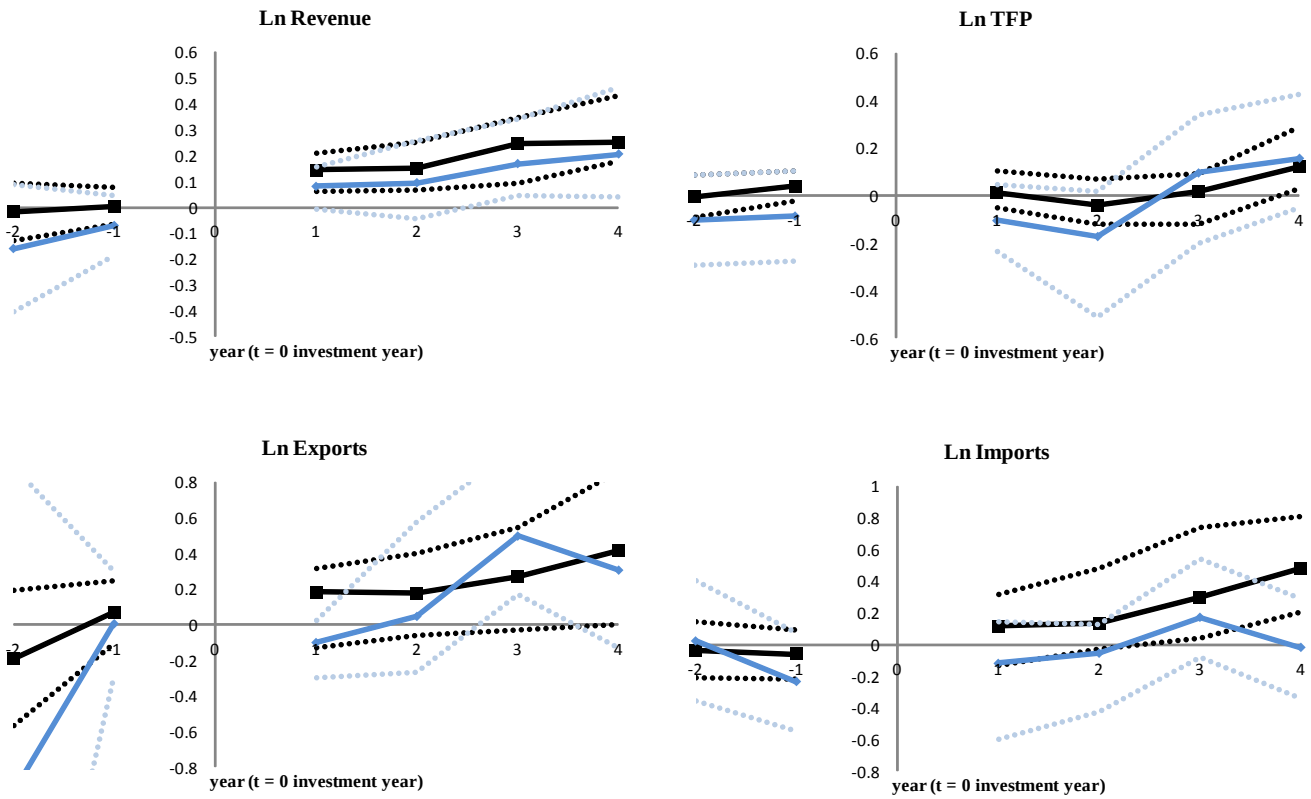
Tables and Figures

Figure 1: Effect of Foreign Investment on Firm Performance and International Trade Dynamics, Difference-in-Difference Matching Estimator



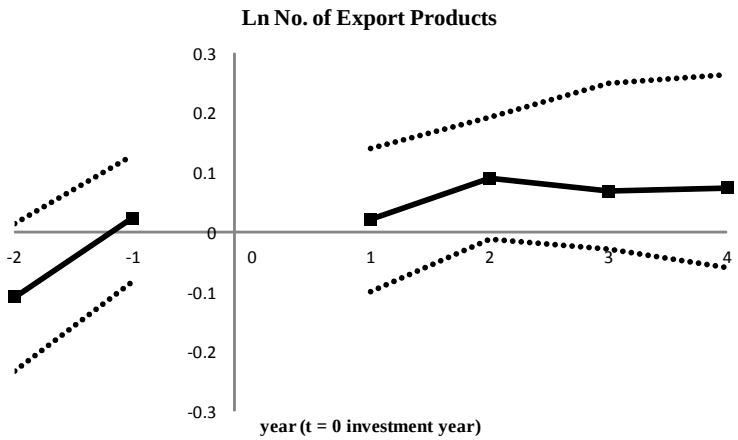
This figure documents difference-in-difference matching estimator results for the post-acquisition performance between firms who received foreign investment and "matched" firms who stayed domestically owned. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

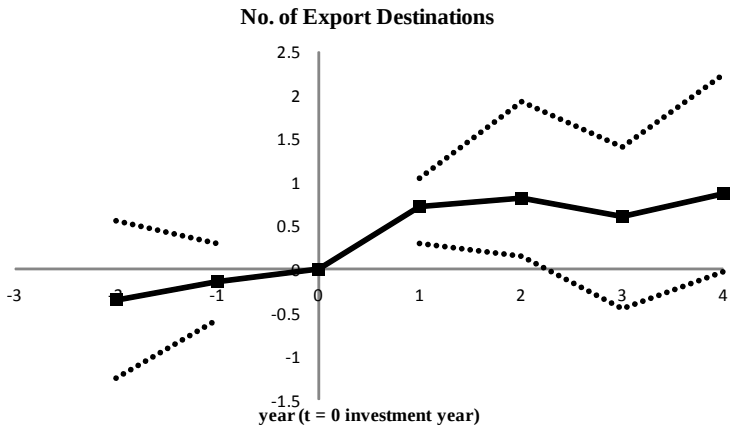
Figure 2: Investor Origin, Firm Performance, and International Trade Dynamics, Difference-in-Difference Matching Estimator



This figure documents difference-in-difference matching estimator results for the post-acquisition performance between firms who received foreign investment from a certain geographical origin and matched firms who remained domestically owned. Black line denotes advanced country investors, while blue line denotes developing country investors Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

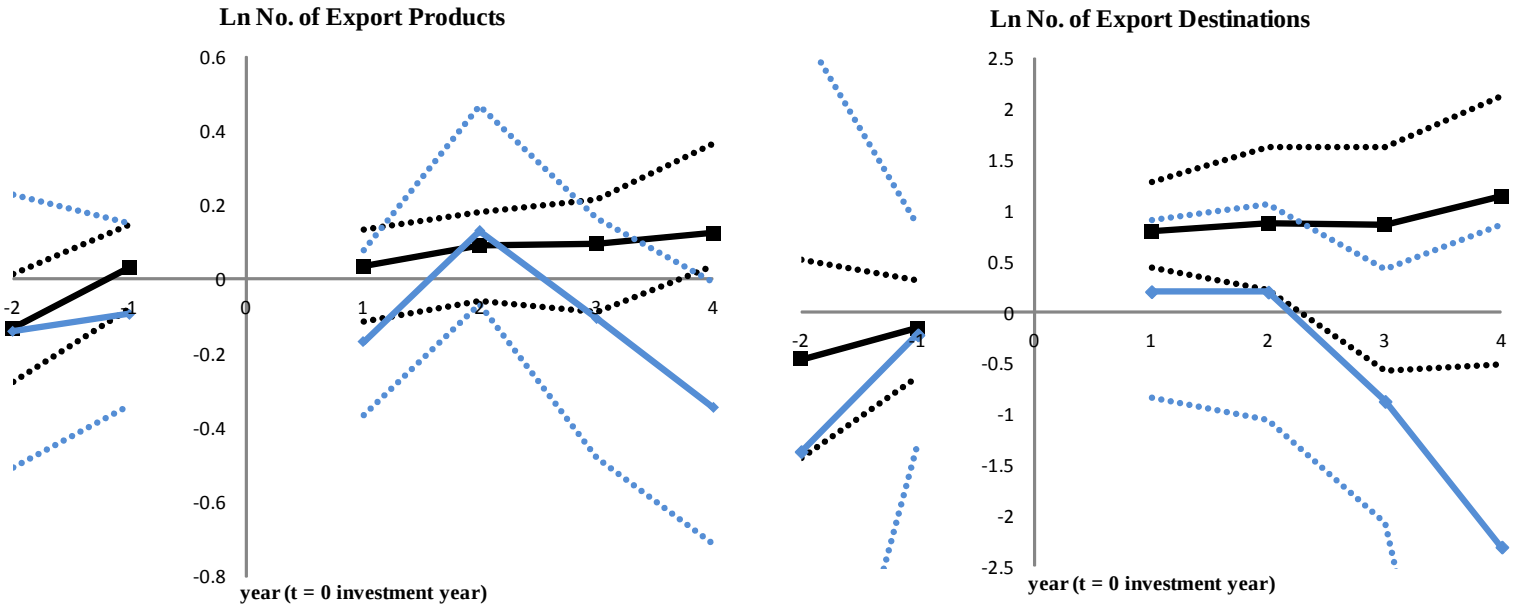
Figure 3: Effect of Foreign Investment on Firm Product Mix and Export Destination Scope, Difference-in-Difference Matching Estimator





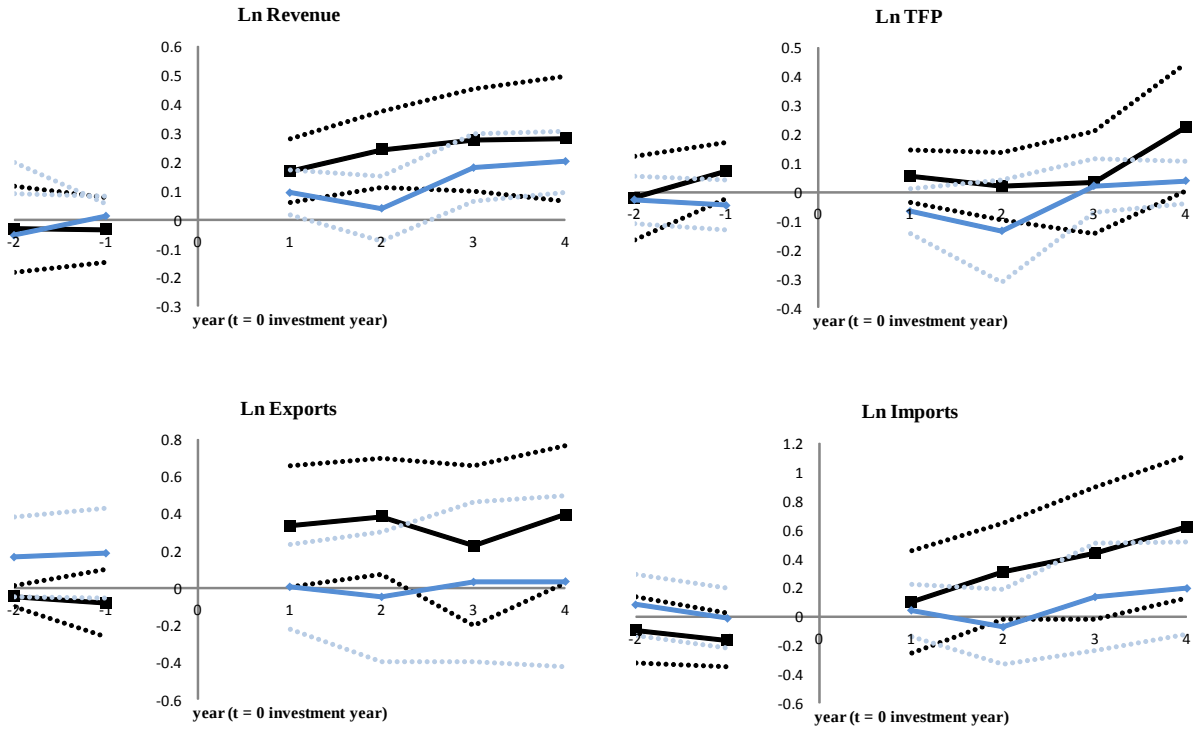
This figure documents difference-in-difference matching estimator results for the post-acquisition product mix and export destination scope between firms who received foreign investment and "matched" firms who stayed domestically owned. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

Figure 4: Investor Origin, Firm Product Mix, and Export Destination Scope, Difference-in-Difference Matching Estimator



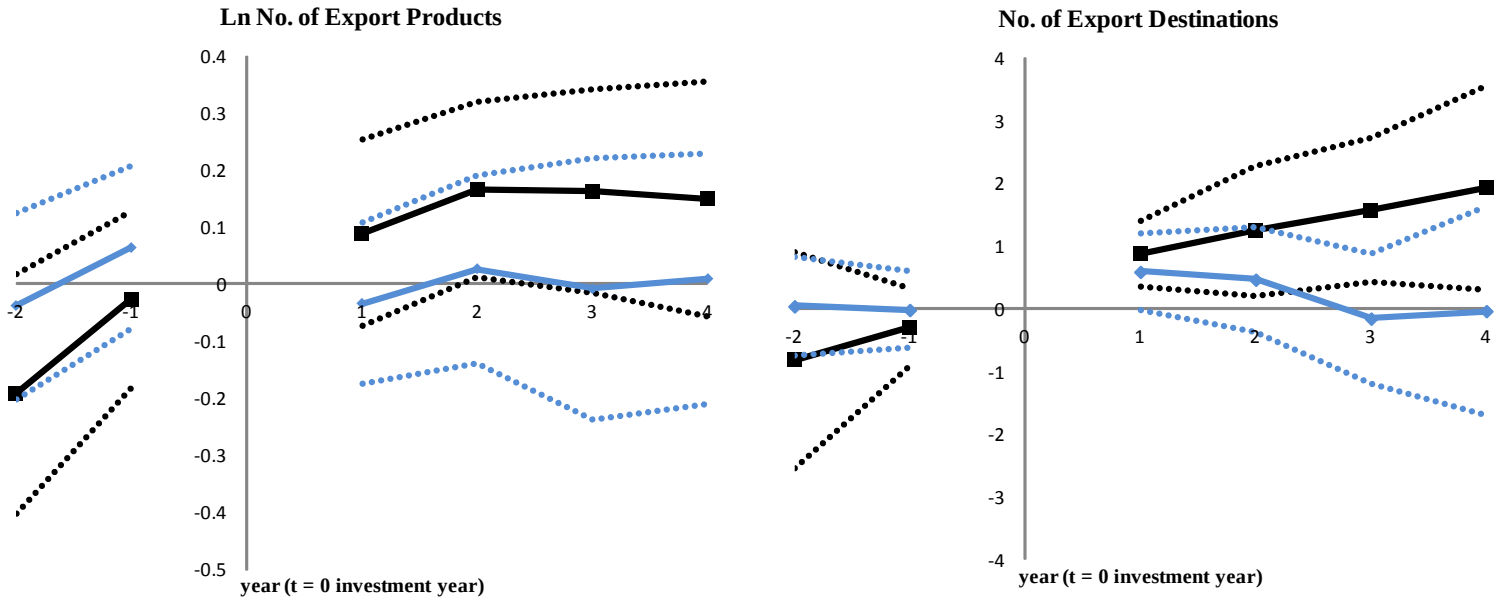
This figure documents difference-in-difference matching estimator results for the post-acquisition product mix and export destination scope between firms who received foreign investment from a certain geographical origin and matched firms who remained domestically owned. Black line denotes advanced country investors, while blue line denotes developing country investors. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Product mix was calculated at the 8-digit level of the Slovenian version of the Combined Nomenclature. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

Figure 5: Investment Intensity, Firm Performance, and International Trade Dynamics, Difference-in-Difference Matching Estimator



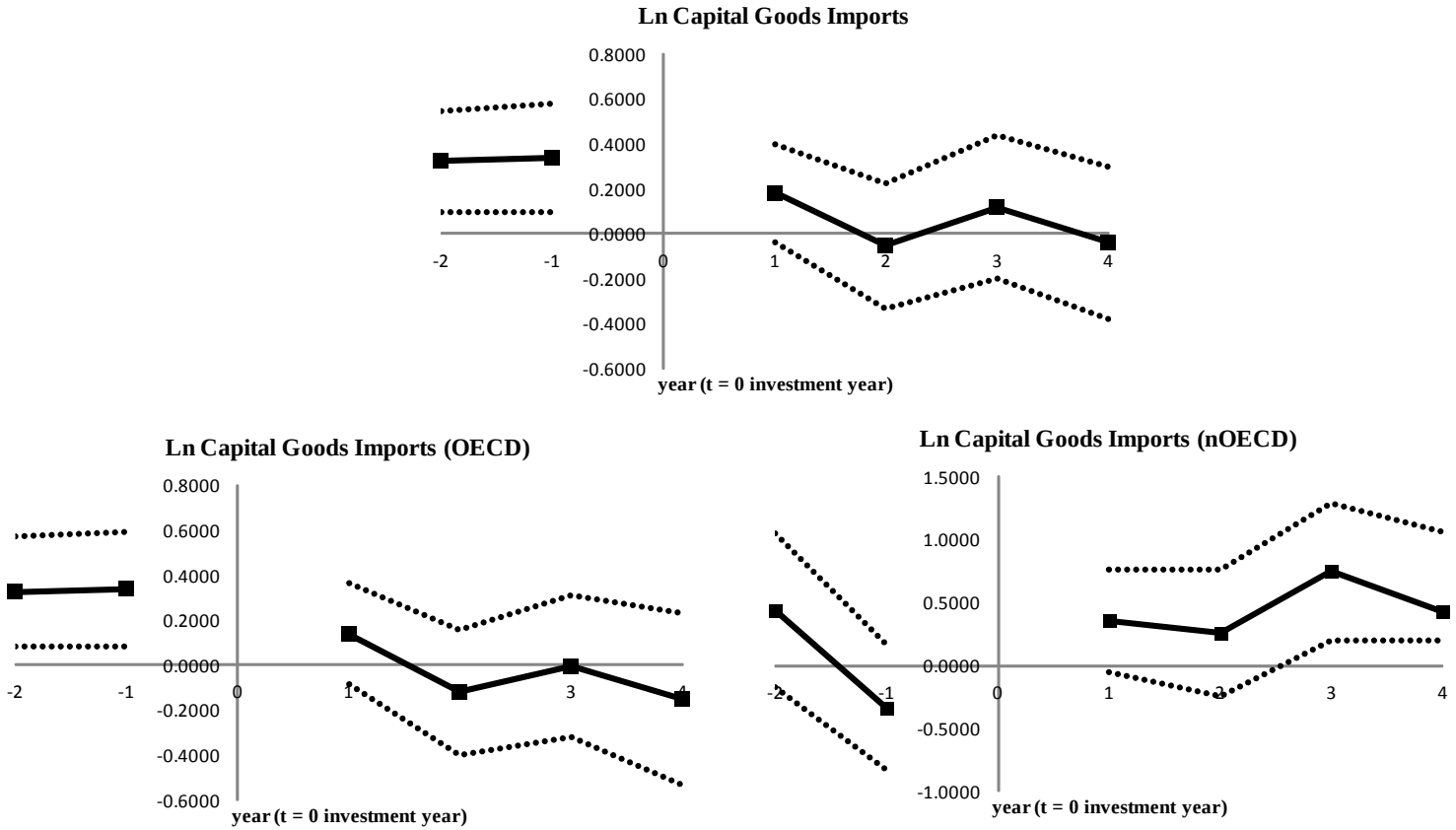
This figure documents difference-in-difference matching estimator results for the post-acquisition performance between firms who received foreign investment and matched firms who remained domestically owned. Black line denotes investment target for which the scaled initial investment amount was above the median of the sample (i.e. high intensity), while blue line denotes investment target for which the scaled initial investment amount was below the median of the sample (i.e. low intensity). Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

Figure 6: Investment Intensity, Firm Product Mix, and Export Destination Scope, Difference-in-Difference Matching Estimator



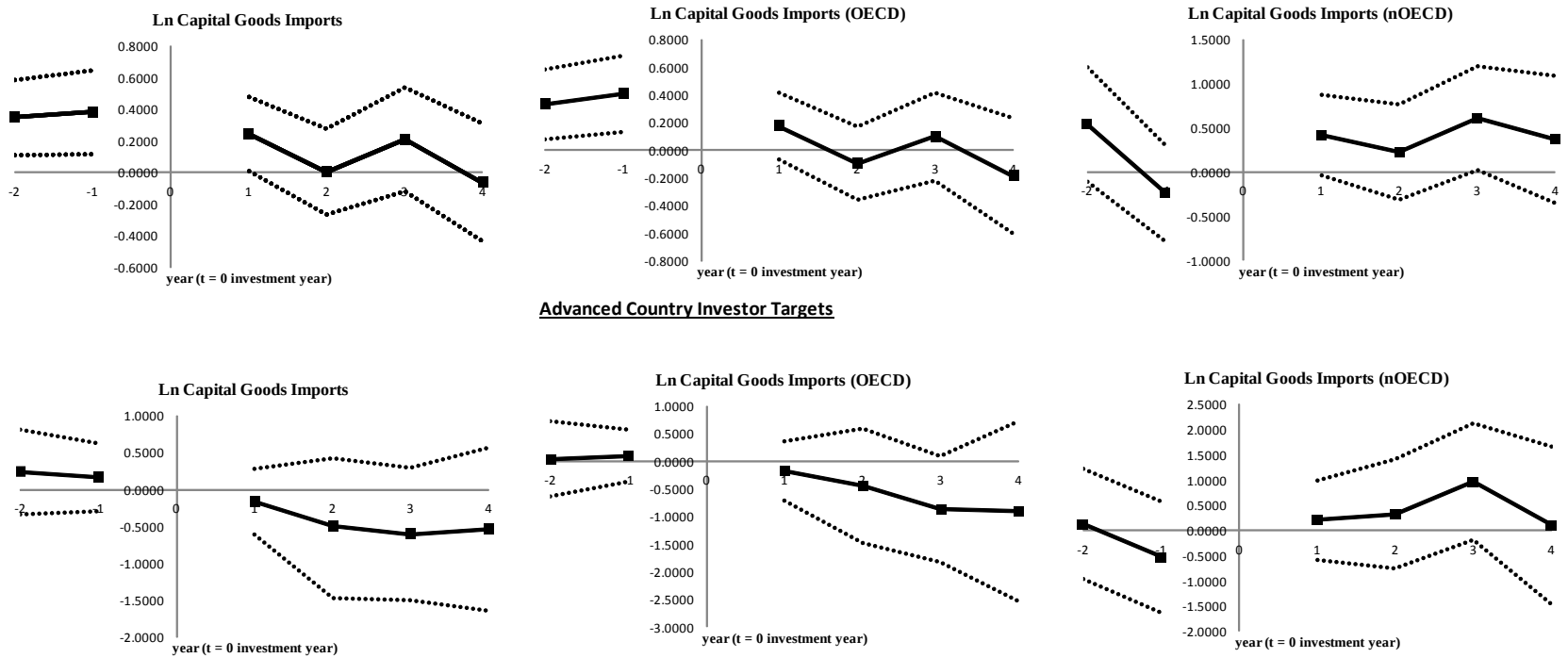
This figure documents difference-in-difference matching estimator results for the post-acquisition product mix and export destination scope between firms who received foreign investment and matched firms who remained domestically owned. Black line denotes investment target for which the scaled initial investment amount was above the median of the sample (i.e. high intensity), while blue line denotes investment target for which the scaled initial investment amount was below the median of the sample (i.e. low intensity). Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Product mix was calculated at the 8-digit level of the Slovenian version of the Combined Nomenclature. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups..

Figure 7: Foreign Investment and Imports of Capital Goods by Target Firms, Difference-in-Difference Matching Estimator



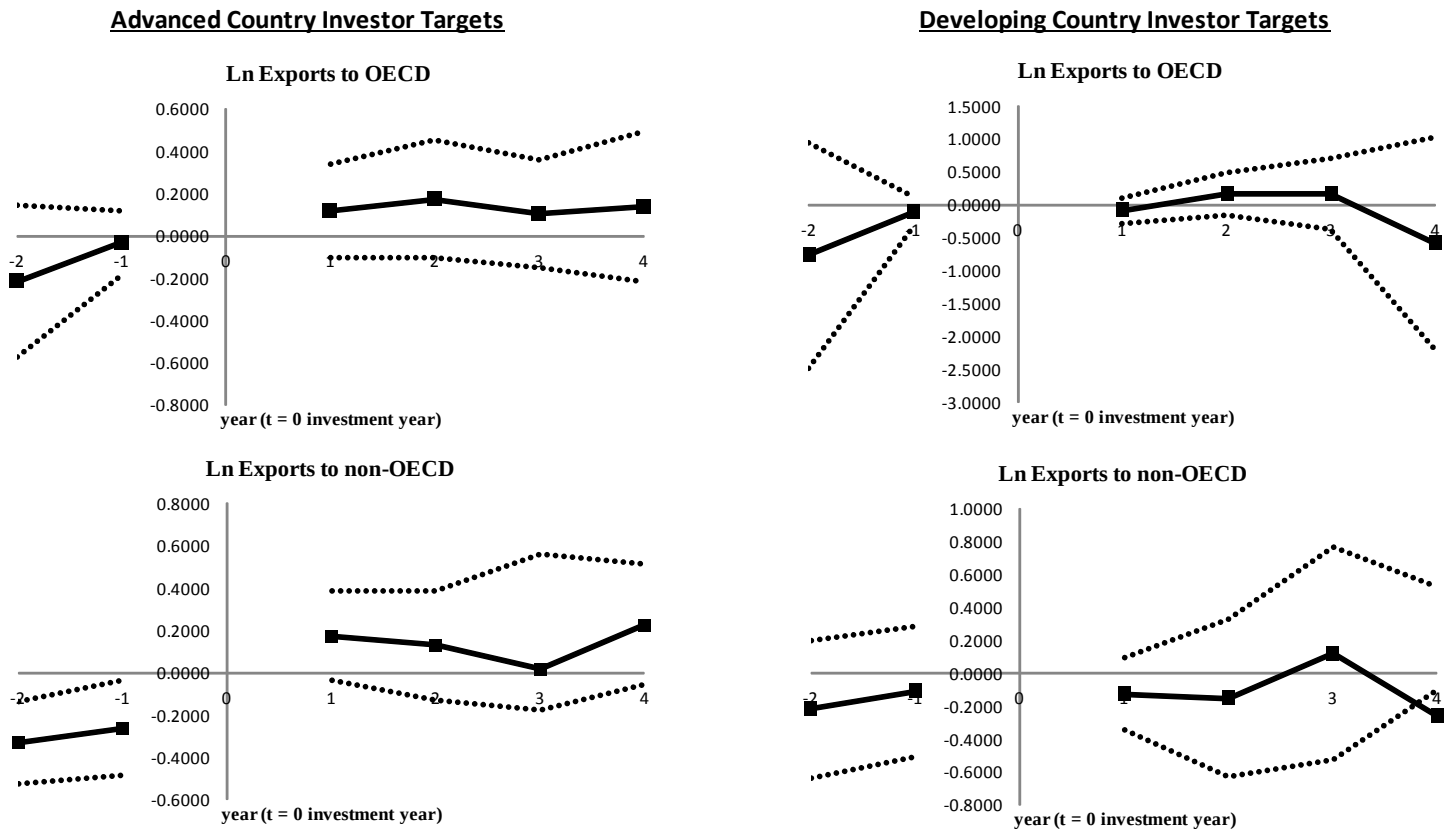
This figure documents difference-in-difference matching estimator results for the imports of capital goods between firms who received foreign investment and matched firms who remained domestically owned. Capital goods are defined using the Slovenian vintages of the Combined Nomenclature at the 4-digit level (codes 8201-9033). Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups.

Figure 8: Investor Origin and Imports of Capital Goods by Target Firms, Difference-in-Difference Matching Estimator



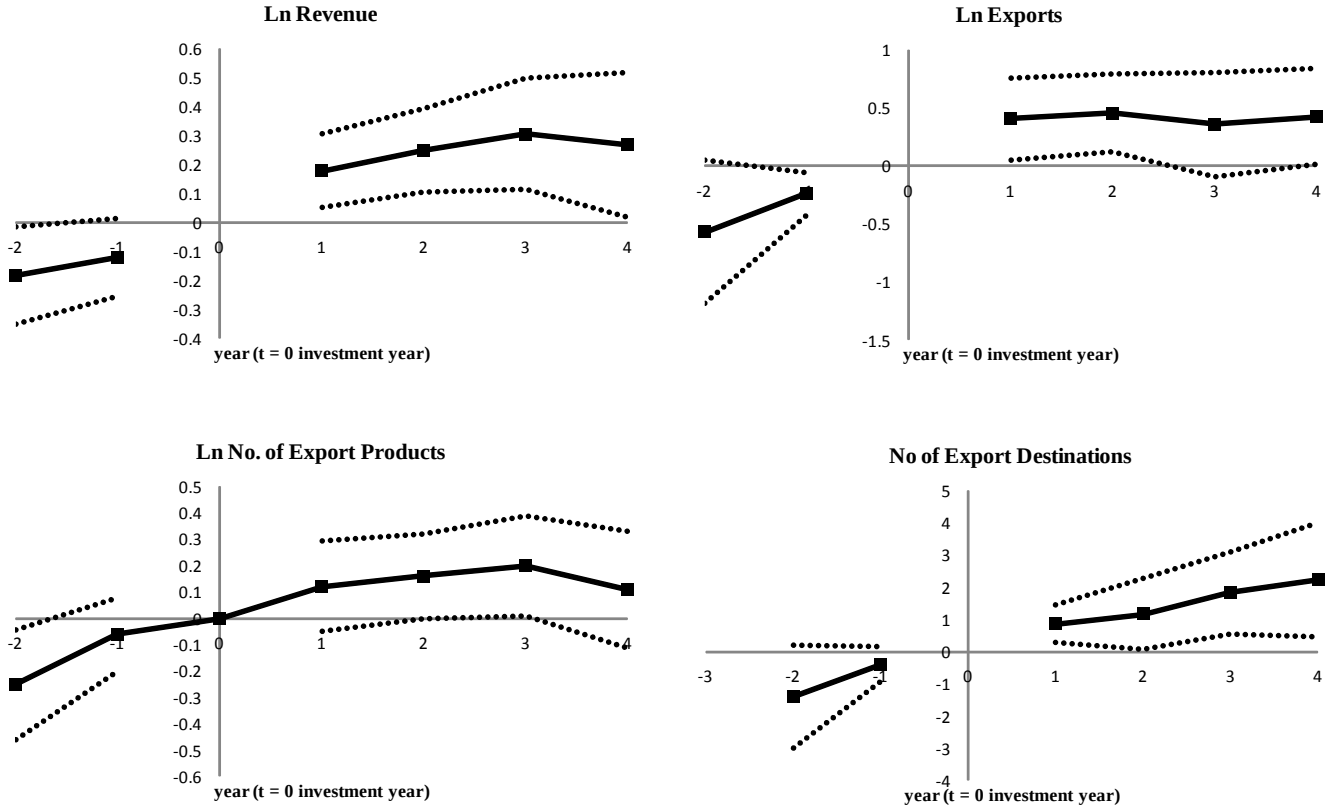
This figure documents difference-in-difference matching estimator results for the imports of capital goods between firms who received foreign investment and matched firms who remained domestically owned. The top panel contains targets of advanced country investors, while the bottom panel contains targets of developing country investors. Capital goods are defined using the Slovenian vintages of the Combined Nomenclature at the 4-digit level (codes 8201-9033). Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups.

Figure 9: Investor Origin and Geography of Export Destinations, Difference-in-Difference Matching Estimator



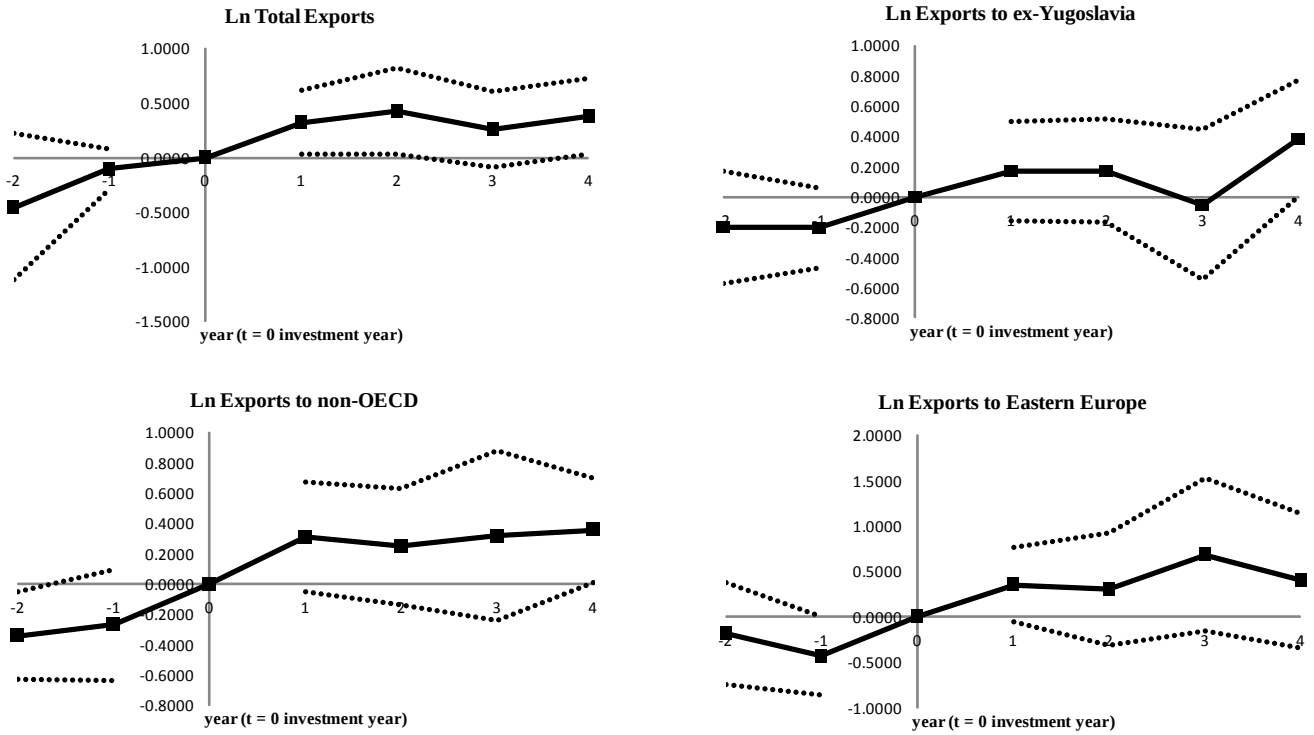
This figure documents difference-in-difference matching estimator results for the geography of export destinations between firms who received foreign investment and matched firms who remained domestically owned. The left-hand panel contains targets of advanced country investors, while the right-hand panel contains targets of developing country investors. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups.

Figure 10: Effect of High-Intensity Foreign Investment of Developed Country Investor Origin on Firm Performance and International Trade Dynamics, Difference-in-Difference Matching Estimator



This figure documents difference-in-difference matching estimator results for the post-acquisition performance between firms who received high-intensity foreign investment from developed country investors and "matched" firms who stayed domestically owned. Only those targets of developed country investors for which the scaled initial investment amount was above the median of the sample (i.e. high intensity) were used in the estimation. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

Figure 11: High-Intensity Foreign Investment of Developed Country Origin and Geography of Export Destinations, Difference-in-Difference Matching Estimator



This figure documents difference-in-difference matching estimator results for the for the geography of export destinations between firms who received high-intensity foreign investment from developed country investors and "matched" firms who stayed domestically owned. Only those targets of developed country investors for which the scaled initial investment amount was above the median of the sample (i.e. high intensity) were used in the estimation. Bold line indicates the point estimate, while dotted lines indicate boundary of the 95% confidence interval. Kernel matching with a bandwidth of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Confidence intervals are calculated using bias-adjusted bootstrapped standard errors.

Table 1: Summary Statistics

	Total Sample			Domestic Firms			Advanced Investor Targets			Developing Investor Targets		
Variable	Mean	St. Dev.	# of Obs.	Mean	St. Dev.	# of Obs.	Mean	St. Dev.	# of Obs.	Mean	St. Dev.	# of Obs.
Revenue	1873.30	11867.20	96940	1581.10	10697.50	94074	10419.64	25234.47	2301	16159.57	48813.66	466
Net Income	29.31	1132.91	96800	21.50	1023.94	93943	326.55	3251.81	2290	150.54	1647.76	468
Fixed Assets	905.96	6268.96	96672	774.18	5927.59	93812	5271.31	13352.27	2295	4761.25	8210.42	466
Materials Expenditure	835.67	6063.94	96564	709.79	5776.96	93704	4584.48	10300.96	2297	6281.79	15558.43	464
Labor Expenditure	404.20	2294.64	94611	344.11	2066.28	91755	2324.67	5818.47	2290	2242.87	5850.83	467
Value Added	561.69	4018.58	96911	472.33	3593.56	94045	3521.91	11358.63	2301	3268.57	7487.84	466
Total Exports	2515.41	15129.40	34856	2060.78	14034.28	32462	7342.36	20672.23	1964	15736.38	42261.90	340
Total Imports	1268.30	7158.38	42524	1048.39	6565.98	39922	3943.16	10216.37	2110	7734.42	21677.08	393
Number of Exp. Destinations	5.69	8.59	35579	5.20	7.93	33151	12.18	12.99	1992	13.28	14.78	343
Number of Imp. Destinations	4.68	5.24	43269	4.41	4.98	40632	8.73	6.91	2139	8.67	7.31	396
Number of Exp. Products (8-Digit)	14.35	28.08	35579	13.01	25.73	33151	31.50	44.68	1992	31.06	43.65	343
Number of Imp. Product (8-Digit)	32.10	56.15	43269	29.17	52.29	40632	78.92	87.52	2139	57.08	66.50	396
Number of Exp. Product Lines (4-Digit)	8.54	13.98	35579	7.82	12.93	33151	18.07	21.63	1992	18.43	23.08	343
Number of Imp. Product Lines (4-Digit)	18.64	26.47	43269	17.10	24.78	40632	43.77	38.66	2139	32.61	32.73	396
Number of Employees	29.96	146.15	94075	25.85	136.54	91228	160.62	283.73	2284	149.44	364.79	464
Average Wage	7.85	4.20	80700	7.77	4.14	77934	10.18	5.60	2217	9.59	3.46	450

This table provides summary statistics of key variables available in the dataset used in this paper. The first column provides summary statistics for the entire dataset, while the 2nd, 3rd, and 4rd columns split the dataset into three categories: domestic firms, firms targeted by advanced country investors, and firms targeted by developing country investors. Domestic firms are those that remain domestically owned in the entire period they appear in the data set. Advanced country investor targets are those firms that are initially domestically owned, but then report receiving investment from an advanced country investor. Developing country investor targets are those firms that are initially domestically owned, but then report receiving investment from an investor from a developing country. All financial accounts and trade data values are in thousands of real Euros, with 2000 set as the base year. Number of export/import destinations is the number of distinct countries a firm reports exporting/importing to/from in a given year. Number of exported/imported products is the number of exported/imported products a firm reports in a given year. The product identification was conducted using the Slovenian version of the Combined Nomenclature, either at the 8-digit level (products) or at the 4-digit level (product lines)

Table 2: Foreign Investment and Measures of Firm Performance, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Revenue			
Lag Foreign	2.8388***	0.3443***	0.1238***	0.2780***
	(0.1443)	(0.0645)	(0.0392)	(0.0712)
No. of Observations	88768	88768	63511	59586
R-Squared	0.8614	0.8501	0.9238	0.9580
Panel B	Ln TFP			
Lag Foreign	0.3096***	0.0971***	0.0445*	0.0097
	(0.0316)	(0.0305)	(0.0270)	(0.0338)
No. of Observations	73571	73571	60007	56820
R-Squared	0.7562	0.4508	0.5114	0.7824
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated sales revenue of a firm in year t, while the dependent variable in Panel B is the natural log of firm-level Levinsohn-Petrin estimated TFP in year t. Lag Foreign is an indicator variable that equals one if firm had reported at least 10% foreign ownership in year t-1. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Number of observations can differ between columns due to the fact that we are using an unbalanced panel and not all variables were available for all firm-year observations. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 3: Foreign Investment and Measures of International Trade Dynamics, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Exports			
Lag Foreign	2.5529***	0.3206***	0.1965**	0.1837
	(0.2118)	(0.0986)	(0.0915)	(0.1223)
No. of Observations	33051	33051	27316	26164
R-Squared	0.7398	0.8263	0.8564	0.9415
Panel B	Ln Imports			
Lag Foreign	2.4988***	0.3866***	0.1550**	0.1663
	(0.1622)	(0.0771)	(0.0651)	(0.1057)
No. of Observations	39851	39851	31871	30462
R-Squared	0.7281	0.7985	0.8320	0.9296
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated exports of a firm in year t, while the dependent variable in Panel B is the natural log of deflated imports of a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Export intensity was top-censored at one. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 4: Advanced Country Foreign Investment and Measures of Firm Performance, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Revenue			
Lag Foreign	2.9011***	0.3670***	0.1371***	0.3158***
	(0.1482)	(0.0726)	(0.0439)	(0.0833)
No. of Observations	88336	88336	63132	59377
R-Squared	0.8613	0.8488	0.9230	0.9475
Panel B	Ln TFP			
Lag Foreign	0.3148***	0.0974***	0.0457*	0.0376
	(0.0337)	(0.0309)	(0.0264)	(0.0348)
No. of Observations	73158	73158	59638	56615
R-Squared	0.7558	0.4508	0.5114	0.7054
Industry FEs	Yes			
Time Fes	Yes	Yes	Yes	Yes
Firm Fes		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated sales revenue of a firm in year t, while the dependent variable in Panel B is the natural log of firm-level Levinsohn-Petrin estimated TFP in year t. Lag Foreign is an indicator variable that equals one if firm had reported at least 10% foreign ownership in year t-1. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. .Number of observations can differ between columns due to the fact that we are using an unbalanced panel and not all variables were available for all firm-year observations. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 5: Developing Country Foreign Investment and Measures of Firm Performance, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Revenue			
Lag Foreign	2.6220***	0.2636**	0.0905	0.1845*
	(0.4154)	(0.1146)	(0.0704)	(0.1023)
No. of Observations	86613	88336	61665	58663
R-Squared	0.8596	0.8437	0.9198	0.9297
Panel B	Ln TFP			
Lag Foreign	0.2800***	0.0805	0.0292	-0.0914
	(0.0797)	(0.0853)	(0.0811)	(0.0771)
No. of Observations	71526	71526	58202	55914
R-Squared	0.7521	0.4473	0.5070	0.6857
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated sales revenue of a firm in year t, while the dependent variable in Panel B is the natural log of firm-level Levinsohn-Petrin estimated TFP in year t. Lag Foreign is an indicator variable that equals one if firm had reported at least 10% foreign ownership in year t-1. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Developing country investor is defined as investment originating from a complement of the set of advanced investor countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. Number of observations can differ between columns due to the fact that we are using an unbalanced panel and not all variables were available for all firm-year observations. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 6: Advanced Country Foreign Investment and Measures of International Trade Dynamics, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Exports			
Lag Foreign	2.6339***	0.3488***	0.2154**	0.2310*
	(0.2186)	(0.1083)	(0.1011)	(0.1407)
No. of Observations	32731	32731	27072	26002
R-Squared	0.7393	0.8243	0.8546	0.9362
Panel B	Ln Imports			
Lag Foreign	2.5696***	0.4213***	0.1642**	0.2306**
	(0.1583)	(0.0853)	(0.0712)	(0.1081)
No. of Observations	39481	39481	31538	30279
R-Squared	0.7268	0.7965	0.8303	0.9183
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated exports of a firm in year t, while the dependent variable in Panel B is the natural log of deflated imports of a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Export intensity was top-censored at one. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 7: Developing Country Foreign Investment and Measures of International Trade Dynamics, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Exports			
Lag Foreign	2.1120***	0.2919	0.2682	0.0696
	(0.6169)	(0.2152)	(0.1964)	(0.2286)
No. of Observations	31182	31182	25666	25352
R-Squared	0.7288	0.8181	0.8493	0.8741
Panel B	Ln Imports			
Lag Foreign	2.2063***	0.2356	0.1427	0.0118
	(0.5367)	(0.1554)	(0.1368)	(0.2581)
No. of Observations	37850	37850	30124	29596
R-Squared	0.7146	0.7910	0.8253	0.8683
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of deflated exports of a firm in year t, while the dependent variable in Panel B is the natural log of deflated imports of a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Export intensity was top-censored at one. Developing country investor is defined as investment originating from a complement of the set of advanced investor countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 8: Foreign Investment and Firm Export Product Mix Scope, Linear Regression Approach

Variable / Performance Measure				
Panel A	Ln Number of Exported Products (8-digit CN level)			
Lag Foreign	0.9504***	0.2117***	0.0875*	0.0996*
	(0.1027)	(0.0561)	(0.0504)	(0.0593)
No. of Observations	33730	33730	27778	26592
R-Squared	0.6638	0.7625	0.7996	0.9142
Panel B	Ln Number of Exported Products (4-digit CN level)			
Lag Foreign	0.8823***	0.1953***	0.0804*	0.0780
	(0.0917)	(0.0493)	(0.0444)	(0.0551)
No. of Observations	33730	33730	27778	26592
R-Squared	0.6291	0.7499	0.7872	0.9098
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the natural log of the number of exported products measured at the 8-digit Combined Nomenclature level for a firm in year t, while the dependent variable in Panel B is the natural log of the number of exported products measured at the 4-digit Combined Nomenclature level for a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Only firms that exported at least one product in a given year were included in the regressions. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 9: Investor Origin and Firm Product Mix Scope, Linear Regression Approach

Variable / Performance Measure				
Panel A	Advanced Country Investor			
Lag Foreign	1.013***	0.2744***	0.1285**	0.1250**
	(0.1054)	(0.0586)	(0.0521)	(0.0605)
No. of Observations	33407	33407	27486	26430
R-Squared	0.6632	0.7611	0.7984	0.9065
Panel B	Developing Country Investor			
Lag Foreign	0.6611**	-0.1342	-0.1170	-0.0776
	(0.3004)	(0.1096)	(0.1168)	(0.1648)
No. of Observations	31833	31833	26104	25780
R-Squared	0.6514	0.7556	0.7929	0.8316
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable is the natural log of the number of exported products measured at the 8-digit Combined Nomenclature level for a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Only firms that exported at least one product in a given year were included in the regressions. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. Developing country investor is defined as investment originating from a complement of the set of advanced investor countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 10: Foreign Investment and Firm Export Geographical Scope, Linear Regression Approach

Variable / Performance Measure				
Panel A	Number of Export Destinations			
Lag Foreign	6.6794***	1.5621***	0.8652**	1.4830***
	(1.0419)	(0.4314)	(0.3756)	(0.4170)
No. of Observations	33730	33730	27778	26592
R-Squared	0.3578	0.8828	0.9085	0.9594
Panel B	Number of OECD Export Destinations			
Lag Foreign	4.2756***	0.9283***	0.4888**	0.7457***
	(0.6159)	(0.2193)	(0.1990)	(0.2368)
No. of Observations	33730	33730	27778	26592
R-Squared	0.3366	0.8714	0.8957	0.9553
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable in Panel A is the number of export destination countries for a firm in year t, while the dependent variable in Panel B is the number of OECD-member export destination countries for a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Only firms that exported to at least one country in a given year were included in the regressions. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 11: Advanced Country Foreign Investment and Firm Export Destination Scope, Linear Regression Approach

Variable / Performance Measure				
Panel A	Advanced Country Investor			
Lag Foreign	6.8906***	1.8776***	1.1033***	1.6211***
	(1.1194)	(0.4659)	(0.4058)	(0.4493)
No. of Observations	33407	33407	27486	26430
R-Squared	0.3574	0.8810	0.9069	0.9562
Panel B	Developing Country Investor			
Lag Foreign	5.5620**	0.3043	0.2329	1.7513
	(2.5254)	(0.9376)	(0.9188)	(1.3676)
No. of Observations	31833	31833	26104	25780
R-Squared	0.3436	0.8865	0.9072	0.9216
Industry FEs	Yes			
Time FEs	Yes	Yes	Yes	Yes
Firm FEs		Yes	Yes	Yes
Selection Controls			Yes	
Propensity Score Weights				Yes

The dependent variable is the number of export destination countries for a firm in year t. Industry fixed effects were inserted at the 2-digit industry classification level where applicable, while selection controls include covariates reported in the firm selection decision and propensity score estimation specifications, lagged one year relative to the foreign investment decision. Only firms that exported to at least one country in a given year were included in the regressions. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. Developing country investor is defined as investment originating from a complement of the set of advanced investor countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm.

* indicates 10% significance; ** 5% significance; *** 1% significance

Table 12: Foreign Investment and Average Export Price, Difference-in-Difference Matching Estimator

Panel A	Combined FDI			
Measure / Time Lag	Foreign+1	Foreign +2	Foreign +3	Foreign +4
Ln	-0.2541	-0.1649	-0.2010	-0.2584
Average Export Price	(0.0998)	(0.1847)	(0.2050)	(0.2246)
Panel B	Developed Country Investor			
Measure / Time Lag	Foreign+1	Foreign +2	Foreign +3	Foreign +4
Ln	-0.2580	-0.2605	-0.3466	-0.2816
Average Export Price	(0.1345)	(0.2016)	(0.2779)	(0.2988)
Panel C	Developing Country Investor			
Measure / Time Lag	Foreign+1	Foreign +2	Foreign +3	Foreign +4
Ln	-0.47961	0.2460	0.4311	0.0731
Average Export Price	(0.3577)	(0.5782)	(0.8664)	(0.7230)

This table documents difference-in-difference matching estimates for the post-acquisition export price dynamics between firms who received foreign investment and "matched" firms who stayed domestically owned. "Foreign" denotes the foreign investment year. Average export price is weighted average of deflated value of exported products price per kilogram by a firm in given year. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. Developing country investor is defined as investment originating from the complement of the above list of countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. Kernel matching with a bandwith of 0.005 and caliper of 0.005 was employed. Post-matching balancing tests reveal covariate balance in the treated and matched control groups. Reported are bootstrapped standard errors. Reported are bootstrapped standard errors.

Table 13: Foreign Investment and Price of New Versus Continuing Products, Linear Regression Approach

Variable			
Subset	*Total Sample*	*Developed Country*	*Developing Country*
Panel A	Difference in Average Price of Whole Vs. Continuing Product Mix		
Lag Foreign	1.4114*	1.5578*	0.5353**
	(0.7869)	(0.9179)	(0.2052)
No. of Observations	1918	1650	268
R-Squared	0.6655	0.6657	0.1493
Panel B	Difference in Share of Exports to OECD of Whole Vs. Continuing Product Mix		
Lag Foreign	0.0052	0.0002	0.0349
	(0.0058)	(0.0054)	(0.0239)
No. of Observations	1918	1650	268
R-Squared	0.3078	0.3361	0.1953
Firm FEs	Yes	Yes	Yes

The dependent variable in Panel A is % difference in the average price of the entire product mix a firm is exporting in year t and the average price of the "continuing" product mix a firm is exporting in year t. "Continuing" product mix is defined as the set of products a firm was exporting before receiving FDI. The dependent variable in Panel A is 0 before a firm receives FDI and can then deviate from 0 after FDI was received, provided the firm exports new products, and that the average price of these products differ from that of the "continuing" products. The dependent variable in Panel B is the difference in the share of the entire product mix a firm is exporting to the OECD in year t and the share of the "continuing" product mix a firm is exporting in year t. Estimations include only firms that received FDI. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. Developing country investor is defined as investment originating from the complement of the above list of countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. Yearly time effects and firm fixed effects were included in the estimations. "Lag Foreign" is an indicator that foreign investment was received in previous year, whereas All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 14: Foreign Investment and Imports of Capital Goods by Target Firms, Linear Regression Approach

Variable						
Subset	*Total FDI*		*Developed Country*		*Developing Country*	
Panel A	Imports of Capital Goods					
Lag Foreign	0.2414**	0.2605**	0.3336***	0.3764***	-0.3173	-0.3924
	(0.1135)	(0.1198)	(0.1188)	(0.1249)	(0.3341)	(0.3446)
Lag Foreign _2	-0.1502			-0.1681		-0.0509
	(0.1198)			(0.1015)		(0.3446)
No. of Observations	2169	1999	1870	1722	299	277
R-Squared	0.7346	0.7499	0.7284	0.7466	0.7671	0.7688
Panel B	Imports of Capital Goods from OECD					
Lag Foreign	0.1707	0.2316*	0.2427**	0.2844**	-0.3303	-0.0798
	(0.1164)	(0.1004)	(0.1225)	(0.1326)	(0.3457)	(0.3500)
Lag Foreign _2		-0.2144**		-0.1888*		-0.4182
		(0.1004)		(0.0993)		(0.4158)
No. of Observations	2119	1954	1845	1698	274	256
R-Squared	0.7202	0.7367	0.7144	0.7339	0.7498	0.7497
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable in Panel A is natural log of imports of capital goods by a firm in year t, while the dependent variable in Panel B is natural log of imports of capital goods originating in OECD countries by a firm in year t. Capital goods are defined using the Slovenian vintages of the Combined Nomenclature at the 4-digit level (codes 8201-9033) Estimations include only firms that received FDI. Advanced country investor is defined as foreign investment originating from high-income OECD countries. These include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. Developing country investor is defined as investment originating from the complement of the above list of countries, except countries that are offshore tax haven countries, which are excluded from this part of the empirical analysis. Yearly time effects and firm fixed effects were included in the estimations. "Lag Foreign" is an indicator that foreign investment was received in previous year, whereas "Lag Foreign _2 is lagged two years. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 15: Foreign Investment and Geography of Export Destinations, Linear Regression Approach

Variable						
Subset	*Total FDI*		*Developed Country*		*Developing Country*	
Panel A	Total Exports					
Lag Foreign	0.4094***	0.2213*	0.4412***	0.2682*	0.3613*	0.1122
	(0.1032)	(0.1224)	(0.1137)	(0.1409)	(0.2118)	(0.2291)
No. of Observations	33729	26592	33406	26430	31832	25780
R-Squared	0.8108	0.9370	0.8085	0.9312	0.8023	0.8646
Panel B	Exports to "High-Income" OECD					
Lag Foreign	0.1860*	-0.0259	0.2225*	-0.0381	0.0365	-0.0887
	(0.1081)	(0.1539)	(0.1184)	(0.1733)	(0.2636)	(0.3935)
No. of Observations	21878	17325	21643	17188	20205	16572
R-Squared	0.8147	0.9404	0.8127	0.9384	0.8071	0.8470
Panel C	Exports to Non- "High-Income" OECD					
Lag Foreign	0.4296***	0.3176***	0.4473***	0.3542***	0.3478*	0.2024
	(0.1057)	(0.1061)	(0.1162)	(0.1195)	(0.2059)	(0.1810)
No. of Observations	27206	21786	26893	21631	25562	21070
R-Squared	0.7826	0.9225	0.7796	0.9150	0.7761	0.8433
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Prop. Score Weights		Yes		Yes		Yes

The dependent variable in Panel A is the natural log of total exports for a firm in year t, the dependent variable in Panel B is the natural log of total exports to "high-income" OECD-member export destinations for a firm in year t, while the dependent variable in Panel C is the natural log of total exports to non "high-income" OECD-member export destinations. High-income OECD member destinations are defined as current OECD member states minus Chile, Czech Republic, Estonia, Greece, Hungary, Mexico, Poland, Portugal, Slovakia, Slovenia, and Turkey. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance

Table 16: Foreign Investment and Geography of non-OECD Exports, Linear Regression Approach

Variable						
Subset	*Total FDI*		*Developed Country*		*Developing Country*	
Panel A	Exports to ex-Yugoslavia					
Lag Foreign	0.2645***	0.2579***	0.2732**	0.2480**	0.1769	0.2884
	(0.1000)	(0.0977)	(0.1073)	(0.1057)	(0.2281)	(0.2163)
No. of Observations	25340	20398	25037	20244	23799	19721
R-Squared	0.7739	0.9212	0.7721	0.9142	0.7691	0.8355
Panel B	Exports to "post-Communist" Eastern Europe					
Lag Foreign	0.3012**	0.1678	0.3072**	0.2481*	0.2443	-0.0347
	(0.1211)	(0.1302)	(0.1346)	(0.1426)	(0.2031)	(0.2230)
No. of Observations	9807	7853	9618	7752	8726	7356
R-Squared	0.7510	0.9281	0.7445	0.9241	0.7473	0.8053
Panel C	Exports to Other Non- "High-Income" OECD Markets					
Lag Foreign	0.6021	0.6194	0.7682*	0.5512	-0.5257	0.3209
	(0.3947)	(0.4614)	(0.4452)	(0.5221)	(0.5027)	(0.6598)
No. of Observations	9200	7481	9033	7392	8181	7043
R-Squared	0.6513	0.8731	0.6516	0.8707	0.6591	0.7243
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Prop. Score Weights		Yes		Yes		Yes

The dependent variable in Panel A is the natural log of total exports to ex-Yugoslavia for a firm in year t, the dependent variable in Panel B is the natural log of total exports to "post-Communist" Eastern Europe export destinations for a firm in year t, while the dependent variable in Panel C is the natural log of total exports to non "high-income" OECD-member, non ex-Yugoslavia, non "post-Communist" Eastern Europe export destinations. Ex-Yugoslavia member destinations are defined as Croatia, Bosnia and Herzegovina, Serbia, Montenegro, and FYR Macedonia. Post-Communist Eastern Europe member destinations are defined as Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine. All reported standard errors are calculated using heterogeneity-robust estimators and are clustered at the level of the firm. * indicates 10% significance; ** 5% significance; *** 1% significance