

The Real Effects of Foreign Investment: Productivity and Growth

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Abstract

This paper studies the direct effect of foreign investment on target firm operating performance and growth. Foreign-invested firms grow in size but not in productivity compared with non-invested firms over a four-year horizon. Decomposing foreign investment into foreign direct investment and foreign institutional investment reveals that the results are attributable to institutional investment. The effect is attenuated under weak corporate governance conditions, with foreign investment in business group firms resulting in little effect on productivity or growth but leading to growth in stand-alone firms. Foreign-invested firms in industries dependent on external financing experience superior growth, suggesting that foreign investment relaxes credit constraints.

Key words:

Foreign Direct Investment, Foreign Institutional Investors, Total Factor Productivity, Difference-in-Differences Matching Estimator

JEL codes: D21, D24, F21, F23, G32, G34, O19

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1. Introduction

Foreign investment into developing countries has gained importance over the last decade with the growth rate of both foreign direct investment (FDI) and foreign institutional investment (FII) exceeding 25% per year for most of the period.¹ Still, the effects of such foreign capital inflows on foreign-invested firms are not firmly established. This study focuses on the operating performance implications of foreign investment and explores the mechanisms for these effects. Importantly, the analysis differentiates between the performance outcomes of FDI and FII. Foreign direct investors have an active interest in managing the target firm and typically have product market relationships with it, whereas foreign institutional investors (FIIs) are portfolio investors, such as mutual funds or pension funds, who might be passive or activist investors. The distinction between FDI and FII is crucial because, as Allen and Phillips (2000) have noted, ownership by corporations is potentially quite different from ownership by institutions and yet, we know very little about the differences. FDI is likely to lead to transfer of know-how and efficiency gains (Nocke and Yeaple, 2007) while FIIs are more apt to discipline management through the threat of exit (Albuquerque, 2003). Gauging whether the effects of foreign investment are modulated by internal corporate governance, foreign investment is examined separately in the context of business group and stand-alone firms, contrasting the opaqueness of the former with the transparency of the latter. Further probing whether the mechanism for the effects is related to access to financing, foreign investment in firms dependent on external financing is compared with its outcomes in firms less dependent on external financing. The research question is addressed by exploiting within country firm heterogeneity in the context of Indian manufacturing. India provides a particularly suitable setting, being one of the largest emerging economies in the world and having attracted a substantial and growing inflow of cross-border investment in recent years.²

To my knowledge, this is the first study to estimate and compare the causal effect of FDI and FII on firm productivity and growth. Consistent with previous findings (Ammer, Holland, Smith,

¹ See top panel of Table 1.

² See bottom panel of Table 1 and Table 2.

and Warnock, 2012; Dahlquist and Robertsson, 2001; Ferreira and Matos, 2008; Leuz, Lins, and Warnock, 2009), the tests show that foreign investment overall, defined as the sum of FDI and FII, flows to larger firms that are more globally engaged and have better corporate governance. Although foreign investment has a limited effect on efficiency, estimated by a consistent total factor productivity (TFP) index using the Levinsohn and Petrin (2003) methodology,³ it has a positive impact on firm growth, measured by the rate of change of the value of output, fixed assets and salaries and wages. These findings are consistent with the notion that Asian firms are disproportionately focused on growth rather than efficiency (Allen, Qian, and Qian, 2005). Distinguishing between FDI and FII reveals that the growth result is entirely due to institutional investment, with direct investment leading to no significant changes in productivity or growth. It appears that the disciplining effect of the threat of exit, which is stronger in the context of FII, has more important implications for performance and growth than the technology transfer channel commonly associated with FDI activity.

Examining whether internal corporate governance conditions affect the outcomes of foreign investment, the effects of overall foreign investment are evaluated in the context of business group and stand-alone firms, where business groups are considered conducive to bad governance practices (Bertrand, Mehta, and Mullainathan, 2002). The subsample analysis sheds light on the role of corporate governance, which is an important factor for foreign shareholding as pointed out by Leuz, Lins, and Warnock (2009) and Ferreira and Matos (2008). The tests show that foreign investment in weak corporate governance environments is associated with no significant changes in productivity or growth. By contrast, the more favorable governance conditions of stand-alone firms are conducive to significant firm growth. The results suggest that a favorable internal corporate governance environment is a necessary condition for the effects of foreign investment to take place.

Foreign investment is often thought to alleviate financing constraints for cash-strapped local firms. If this is indeed the mechanism through which foreign investment impacts growth, the

³ The terms performance, productivity and efficiency are used interchangeably for the purposes of this study.

effect should be larger in firms that are more dependent on external financing (Rajan and Zingales, 1998). The analysis here shows that foreign investment in firms more dependent on external financing leads to significant growth in output, fixed assets and salaries and wages. The effect is also pronounced for stand-alone firms, which do not have access to the internal capital markets of business group firms. FII leads to high growth regardless of external financing dependence, suggesting that the mechanism for the positive effect of FII is through the disciplining effect of the threat of exit rather than access to financing. The subsample analyses of the different types of foreign investment interacted with external financing dependence lend broad support to the notion that foreign investment alleviates credit constraints.

Gauging whether foreign investment *per se* affects operating performance and growth is challenging econometrically because differences in behavior between foreign-invested and non-invested firms could also be due to selection bias resulting from foreign investors choosing to invest in firms with desirable characteristics. To measure the effects of foreign investment one would need data on the outcomes of firms in the event that they receive foreign investment treatment and the outcomes of these same firms in the event that they do not receive such treatment. Unfortunately the counterfactual is not observed, creating a missing data problem. To create the counterfactual, the changes in productivity and growth of foreign-invested firms are compared with a carefully selected group of non-invested firms using a difference-in-differences estimator combined with propensity score matching, addressing selection on observable and time-invariant unobservable characteristics. Typically, researchers ignore the selection bias issue by not re-weighting non-treated firms based on their similarity to treated firms, or only partially address the issue by using industry and performance matching (Barber and Lyon, 1996). The analysis here provides evidence pointing to the advantages of the propensity score matching procedure over the more widely used methodologies.

Even with careful matching on firm characteristics, including proxies for firm growth, one might be concerned that the link between firm growth and foreign investment might be an artifact of foreign investors successfully picking high growth targets. To assuage these concerns the analy-

sis is repeated for high growth and low growth industries, with the understanding that if the results persist in these two settings, it is unlikely that they are due to improperly controlling for possible selection on growth prospects. The subsample analysis produces estimates of similar magnitude and statistical significance to the main results. The growth in output, fixed assets and wages is present for foreign investment in both high and low growth industries, with the effect being particularly strong for high growth industries. Furthermore, in the case of FIIs, which are thought to be prone to selecting investment targets with high growth opportunities (Bushee, 2001), the estimates are similar across high and low growth industries. The main findings do not appear to be due to improper matching of high growth treated firms and low growth control group firms.

The results presented in this study are robust to alternative definitions of the foreign investment event. They are also robust to different specifications of the propensity score estimation, to the use of alternative measures of performance and to varying the sample time span. Foreign divestiture events are analyzed separately in order to explore whether the effect of foreign shareholding is symmetric. Foreign divestitures do not lead to significant differences in divested firm productivity and growth compared with foreign-owned firms, indicating that the gains from foreign investment do not dissipate with the switch to domestic ownership. Taken together, the evidence suggests that foreign shareholding does not lead to technology transfer but acts to relax credit constraints and has the greatest impact under favorable corporate governance conditions.

The rest of the paper is structured as follows. Section 1 explores hypotheses regarding the possible effects of foreign investment on firm operating performance and growth and the mechanisms for these effects. Section 2 gives a brief overview of India's foreign investment history and regulations, while Section 3 introduces the data. The difference-in-differences matching econometric approach and construction of variables are discussed in Sections 4 and 5 respectively. Section 6 presents the matching estimation results and Section 7 concludes.

2. Literature Review and Hypotheses

The following hypotheses are designed to establish whether foreign investment leads to real economic effects and to test the possible mechanisms for these effects.

Hypothesis 1: Foreign investment has a positive effect on firm performance and growth.

Although most foreign investors are minority rather than majority shareholders, they can still play a role in mitigating agency conflicts. Shleifer and Vishny's (1986) theoretical model suggests that the presence of a large shareholder could partially mitigate free riding endemic to dispersed ownership. Zwiebel (1995) extends the argument to multiple minority shareholders by showing that they could yield control through the formation of coalitions. Edmans and Manso (2011) suggest a framework, in which minority shareholders discipline management through the threat of exit. Because minority shareholders trade competitively, information gets impounded into prices, which leads managers to exert more effort. Furthermore, foreign shareholding might provide certification for the quality of the target firm and incentivize it to adhere to high governance and accounting standards (Lel and Miller, 2008; Leuz, Lins, and Warnock, 2009).

A factor moderating and potentially undoing the benefits from foreign investor monitoring is the physical distance between investors and the firm. Studies on home bias, informed investors and firm governance and performance view geographic proximity between the firm and its investors as a proxy for an informational advantage. The main finding in this literature is that blockholding by geographically proximate investors is correlated with improved governance and operating performance (Gaspar and Massa, 2007; Kang and Kim, 2008). This implies that cross-border investors are less likely to monitor effectively compared with domestic investors, suggesting that foreign-invested firms would have inferior operating performance.

Hypothesis 2: The effects of foreign direct investment are distinct from the effects of foreign institutional investment.

The corporate finance literature has established that recipients of foreign investment, particularly from FIIs, tend to be large firms with better governance, performance and integration

within the world economy (Ammer, Holland, Smith, and Warnock, 2012; Dahlquist and Robertson, 2001; Ferreira and Matos, 2008; Leuz, Lins, and Warnock, 2009). Similarly, the international trade literature has shown that FDI-targeted firms are relatively larger and more productive (Aitken and Harrison, 1999; Doms and Jensen, 1998; Javorcik, 2004; Guadalupe, Kuzmina, and Thomas, 2010). The evidence regarding the causal effect of FDI on operating performance is inconclusive, with studies finding improvement in performance (Aitken and Harrison, 1999; Girma, 2005; Arnold and Javorcik, 2009; Pérez-González, 2005; Guadalupe, Kuzmina, and Thomas, 2010), no change in performance (Barbosa and Louri, 2005; Benfratello and Sembenelli, 2006; Javorcik, 2004), and decline in performance (Harris and Robinson, 2002).⁴ The corporate finance literature has not explored the causal effect of FII on firm operating performance, although there exists some evidence that the presence of FIIs improves firm governance (Aggarwal, Erel, Ferreira, and Matos, 2011).

Foreign direct investors could exert a greater positive effect on firm operating performance compared with FIIs due to product market relationships (Allen and Phillips, 2000). Foreign-invested firms offer foreign direct investors a locational advantage, years of experience in the local market, and an ability to navigate the local institutional environment (Markusen, 2000). Combined with the technological know-how, managerial expertise and competitive advantage of foreign direct investors (Helpman, Melitz, and Yeaple, 2004), FDI-targeted firms could enjoy enhanced operating performance. Nocke and Yeaple (2007) formalize this intuition in a general equilibrium model, in which heterogeneous firms face the decision of serving foreign markets through exports, greenfield FDI or cross-border M&As.⁵ The prediction of the model is that target firm operating performance improves following cross-border M&As due to complementarities between the capabilities of foreign direct investors and target firms.

On the other hand, foreign direct investors are possibly worse monitors than FIIs, because the fear of damaging product market relationships undermines their ability to discipline manage-

⁴ The studies by Arnold and Javorcik (2009) and Guadalupe, Kuzmina, and Thomas (2010) are closest in research design to the present study, although the findings here refute the generality of their results.

⁵ Cross-border M&As refer to investment in pre-existing firms. This is the type of FDI examined here. On the other hand, greenfield investment denotes *de novo* investment.

ment. Furthermore, although all foreign investors could discipline management through the threat of exit, FIIs are more flexible than foreign direct investors in their trading strategies (Albuquerque, 2003). Therefore, the expected benefits from market discipline are greater with FII than with FDI (Edmans and Manso, 2011).

Hypothesis 3: Foreign investment has a greater impact in firms with better corporate governance.

Firm performance is potentially impacted by the state of corporate governance within the firm. Leuz, Lins, and Warnock (2009) document less investment in firms with ownership structures conducive to outside investor expropriation. Related to this point, Dahlquist and Robertsson (2001) find that foreign investors avoid firms with dominant owners. Ferreira and Matos (2008) find that FIIs have an affinity for better governed firms, while Aggarwal, Erel, Ferreira, and Matos (2011) go a step further to suggest that the presence of FIIs induces improvements in corporate governance. A proposed mechanism for the improvement in governance, both in the context of FII and FDI, is through a process of governance exports flowing from firms in countries with better governance to firms in countries with lower governance standards (Aggarwal, Erel, Ferreira, and Matos, 2011; Bris and Cabolis, 2008). Assuming that business group firms are more prone to expropriating minority shareholders and have more opaque corporate governance (Bertrand, Mehta, and Mullainathan, 2002) implies that the positive performance and growth effects resulting from foreign investment should be more pronounced in stand-alone firms than business group firms.

Hypothesis 4: Foreign investment has a larger impact in firms dependent on external financing.

Rajan and Zingales (1998) have documented that firms in industries more dependent on external financing grow more with improved access to financing compared with firms in sectors less dependent on external financing. To the extent that foreign-invested firms have less binding credit constraints, these firms should find it easier to raise capital and the effect should be larger in firms more dependent on external financing. Relaxed credit constraints would lead to foreign-invested firms of larger size, but not necessarily of higher efficiency. Furthermore, given

that business group firms provide a ready source of internal financing, which is inaccessible to stand-alone firms (Khanna and Palepu, 2005), foreign investment in stand-alone firms should yield larger effects.

3. Indian Institutions and Regulations

Large multinational companies (MNCs) dominated the Indian economy until political independence in 1947. In the subsequent decades, the Indian government adopted policies targeted at economic self-sufficiency. The Foreign Exchange Regulation Act (FERA) of 1973 introduced rules requiring foreign owners to reduce their holdings in Indian companies to 40% of shares or accept non-Indian company status and a correspondingly higher regulatory and tax burden (Athreya and Kapur, 1999). That stance was reversed in the 1990s. Prompted by the balance of payments crisis of 1991, the Indian government engaged in trade liberalization and revisited the regulations governing FDI and FII.⁶ As a result of the improvements in its foreign investment climate, India is increasingly host to both cross-border M&As and greenfield FDI, as well as FII. Although foreign investment into all developing countries has increased substantially over the last decade as illustrated in Table 1, half of the inflows are directed into the four largest emerging markets economies of Brazil, Russia, India and China (BRICs). India ranks as a top recipient of both foreign portfolio and foreign direct investment, with foreign portfolio investment inflows exceeding FDI inflows towards the end of the sample period.⁷ As seen in Table 2, the majority of Indian inflows originate in OECD countries and a significant portion are routed through tax havens such as Mauritius.

India's Foreign Investment and Promotion Board (FIPB) was created in 1997 to assist foreign direct investors and review applications for FDI requiring government approval. The 1991 Industrial Policy Statement governing FDI was relaxed several times over the last twenty years to

⁶ The data for this study span the period from 2001 to 2008 and thus begin 10 years after liberalization. Therefore, the results presented in this paper are likely not attributable to liberalization, because the effects of liberalization have been shown to attenuate over time (Bekaert, Harvey, and Lundblad, 2005; Henry, 2000; Henry and Sasson, 2008; Mitton, 2006). Furthermore, the use of a difference-in-differences estimator would eliminate any residual time-unvarying effects of liberalization.

⁷ Foreign portfolio investment is defined as investment in equity and debt securities, excluding direct investment or reserve assets. FII is a dominant component of foreign portfolio investment.

allow more flexibility for investors. Currently, foreign direct investment up to 100% is allowed automatically in all activities and sectors except in industries that require an industrial license, when the investor has an existing venture in India in the same industry, when a foreign company intends a takeover of an existing Indian financial services company, or when investing in certain strategic industries such as agriculture.

FII in India is regulated under the Foreign Exchange Management Act (FEMA) and the Securities and Exchange Board of India (SEBI) FII regulations. Foreign institutional shareholding without special permission cannot exceed 24% of paid up capital with multiple FIIs and 10% of paid up capital with a single FII (Government of India, 2000). These ceilings could be raised by resolution of the board of directors of the Indian company.

Many Indian firms are part of business groups, which are commonly under family control. Although family ownership is common in India, there is little persistence in the identity of the concentrated owners (Khanna and Palepu, 2005). This organizational form is assumed to arise in response to a poor regulatory environment and investor protection regime (Demsetz and Lehn, 1985; La Porta, Lopez-de Silanes, Shleifer, and Vishny, 2000; Villalonga and Amit, 2006). The reasons for the prevalence of concentrated ownership in India are not firmly established. One possibility is that business groups capitalize on their political connections and survive through rent extraction (Manos, Murinde, and Green, 2007). The alternative view is that business groups fill an institutional void and use their internal capital markets and managerial talent to create a competitive advantage (Khanna and Palepu, 2005). Over the last decade, SEBI has undertaken initiatives aimed at mitigating corporate governance problems in business group and stand-alone firms. The major recent corporate governance regulation is Clause 49 of the Listing Agreement for all Indian publicly traded companies, which became effective on January 1, 2006. Clause 49 mandates 50% independent directors or one third if the chairperson of the board is a non-executive director. It also stipulates independent audit committees, requires disclosure of information on subsidiary companies as well as related party transactions, and calls for CEO and CFO certification of publicly disclosed information (Securities and Exchange Board of India, 2004). Although the penalties for

non-compliance include up to 10 years in prison as well as fines up to 250 million rupees (about 5 million USD), compliance is incomplete. The most commonly cited hurdle is the limited supply of independent board members. Possibly in recognition of these challenges, enforcement has been lax and SEBI's first action against companies under the Clause 49 regulation did not come until almost two years after its adoption (Anon., 2007).

4. Data and Descriptive Statistics

The Center for Monitoring the Indian Economy (CMIE) Prowess database is an Indian firm-level panel data set of detailed accounting and financial information spanning twenty-one years (1988-2008) and close to 23,000 firms. The firms in Prowess generate the majority of private economic output in India and account for 75% of corporate taxes collected by the Indian Government. Although all sectors are represented, the majority of Prowess firms are from the manufacturing sector. Shareholding information is available for a subset of about 1600 publicly traded manufacturing firms, for the period 2001-2008 and as a result, this is the sample used for the purposes of the analysis. The shareholding information pinpoints the date of shareholding change from domestic to foreign or vice versa and thus offers a unique opportunity to study the causal relationship between foreign investment and firm operating performance and growth. Foreign shareholding is reported by foreign promoter holdings and FIIs holdings. Foreign promoter holdings are defined as the percentage of shares outstanding held by foreign parties with interest in managing the firm. The FIIs category includes a broad set of investors, such as mutual funds and pension funds, required under India's foreign investment regulations to register with SEBI.⁸ This institutional set-up facilitates the interpretation of foreign promoter holdings as FDI and FIIs holdings as FII, with foreign investment being the sum of the two. In addition, the data include information on each firm's business group affiliation. Furthermore, the extensiveness of the data allows for the construction of an India-specific measure of external financing dependence proxied by the amount of desired invest-

⁸ The list of FIIs includes asset management companies, pension funds, mutual funds, investment trusts as nominee companies, incorporated/institutional portfolio managers or their power of attorney holders, university funds, endowment foundations, charitable trusts and charitable societies.

ment that cannot be financed through internal sources (Rajan and Zingales, 1998). Data on global stock index constituents is collected from the 2008 issue of COMPUSTAT Global and Emerging Markets Database (EMDB). Information on Depository Receipts (DR) programs is derived from J.P. Morgan Chase's DR Universe comprehensive database.

The percentage of foreign shareholding in foreign-invested Indian firms is clustered around 10%. Indian company law specifies 10% shareholding as necessary to exercise key shareholder privileges such as the right to bring complaints to the Company Law Board.⁹ This study defines foreign investment as a change in the percentage of foreign shareholding equal to or exceeding 10%, following the working definition of FDI suggested by the World Bank.¹⁰ Foreign divestitures are defined as declines in foreign shareholding causing total foreign holdings to fall below 10% of total shareholding. As observed in Figure 1, the majority of post-foreign-investment-event foreign holdings are concentrated around 10%. Foreign investment events occur due to increases in both FDI and FII, however FDI takes the leading role, as illustrated in Figure 2. Figure 2 reveals that firms that attract foreign direct investors are likely to attract FIIs and vice versa.

Table 4 presents the breakdown of manufacturing firms by 2-digit National Industry Classification (NIC) codes.¹¹ A significant portion of the changes in foreign shareholding occur in capital-intensive industries such as chemical products and fabricated metal products. Table 5 reports the number of foreign investment events by type and year. Consistent with the pattern of aggregate cross-border investment reported in Table 1, the number of events in the data increases over time with the greatest number of deals occurring in 2006 and 2007.¹²

⁹ The Company Law Board is an independent quasi-judicial body created by India's Central Government. The Second Amendment of the Companies Act (2002) sought to replace the Company Law Board with the National Company Law Tribunal and National Law Appellate Tribunal. This new framework was enacted in 2010 after prolonged court challenges.

¹⁰ "Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor". (World Development Indicator notes)

¹¹ India's NIC industry classification is similar to the SIC industry classification.

¹² The increase in 2006 and 2007 event numbers coincides with the adoption of the Clause 49 corporate governance regulations, but is likely attributable to the aggregate trend of increasing foreign equity inflows into developing countries reported in Table 1.

5. Econometric Model

5.1. Difference-in-Differences Matching Estimator

To gauge the operating performance implications of foreign investment, this study strives to estimate the causal effect of different types of foreign ownership on target firm operating performance and growth. However, foreign investors do not acquire shares in domestic firms at random, creating a selection bias problem. Differences between foreign-invested (treated firms) and non-foreign-invested firms (control group firms) are attributable to selection bias in addition to treatment. To isolate the treatment effect, the analysis combines a difference-in-differences estimator with a matching methodology based on propensity scores, which enables the comparison of treated firms with non-treated firms of similar characteristics.

Let $F_{i,t} \in \{0, 1\}$ indicate whether a domestic firm becomes foreign-invested at time t . $y_{i,t+u}^1$ is the outcome variable and denotes firm operating performance or size at time $t+u$, u periods after the foreign investment event, where $u \geq 0$. If the firm is not targeted for foreign investment at time t , its performance at time $t+u$ is equal to $y_{i,t+u}^0$. The effect of a change in foreign shareholding at time t on firm performance at time $t+u$ is measured by:

$$y_{i,t+u}^1 - y_{i,t+u}^0. \quad (1)$$

$y_{i,t+u}^1$ is readily observed for firms that experience foreign investment increases, but the counterfactual $y_{i,t+u}^0$ is not, creating a missing data problem. The counterfactual is constructed through the careful selection of a control group.

There are several time-invariant as well as time-varying characteristics that could make a control group firm a suitable match for a treated firm. Sorting and matching firms along all relevant characteristics simultaneously creates an intractable dimensionality problem. A solution to the dimensionality problem proposed by Rosenbaum and Rubin (1983) is to match firms based on an index capturing the information contained in the relevant variables. The index, also called a

propensity score, is the probability of treatment based on the vector of firm characteristics X :

$$P_i = Pr(F_{i,t} = 1) = F(X_{i,t-1}). \quad (2)$$

Firms are then matched based on their propensity scores.¹³

Matching eliminates differences between the matched foreign-investment-targeted and non-targeted firms due to the observable characteristics included in X . However, there might be other systematic differences between the treatment and control groups that are not captured by observable characteristics. The difference-in-differences matching estimator alleviates the issue of selection on unobservables by differencing away time-invariant unobservable characteristics. It differs from the standard difference-in-differences estimator by including only treated firms within the common support¹⁴ and weighting the control group firms according to the matching method rather than linearly (Heckman, Ichimura, and Todd, 1997; Smith and Todd, 2005). The difference-in-differences matching estimator is of the form:

$$\hat{\alpha}_{DDM} = \frac{1}{n_1} \sum_{i \in I_1 \cap S_P} [(y_{i,t+u}^1 - y_{i,t-1}^1) - \sum_{j \in I_0} W(P_i, P_j)(y_{j,t+u}^0 - y_{j,t-1}^0)]. \quad (3)$$

where $I_1 \cap S_P$ is the set of treated firms I_1 that fall within the common support S_P . I_0 is the set of control group firms and n_1 is the number of treated firms in the support set. W is a weighting function that depends on the propensity score distance between the treated and control group firms. The analysis in this paper uses a Gaussian kernel weighting function

$$W(P_i, P_j) = \frac{G\left(\frac{P_j - P_i}{a_n}\right)}{\sum_{k \in I_0} G\left(\frac{P_k - P_i}{a_n}\right)}, \quad (4)$$

where G is the Gaussian normal function $G(\alpha) = e^{-\frac{\alpha^2}{2}}$ and a_n is a bandwidth parameter. The key results discussed in the following sections are based on the difference-in-differences matching esti-

¹³ See Rosenbaum and Rubin (1983) for complete details on the necessary and sufficient conditions for propensity score matching.

¹⁴ The common support is the range of propensity scores excluding treated firm propensity scores higher or lower than the highest or lowest control group firm propensity score.

mator, using the Gaussian kernel weighting function with a bandwidth of .06. Following Smith and Todd (2005), a trim level of 2% is imposed, below which propensity score densities are excluded from matching.

5.2. *Timing Issue*

Typically, longitudinal matching studies analyze the effect of treatment when treatment occurs at the same point in time for all treated observations. However, foreign investment treatment occurs at different times for different firms. The varying event dates alleviate concerns that outcomes observed after treatment are caused by factors related to the time of treatment rather than to treatment itself. However, they pose the practical issue of how to assign counterfactual treatment dates to the firms in the potential control group, i.e. the domestic-owned firms that never receive treatment over the span of the data period. Following Eichler and Lechner (2002), counterfactual treatment dates are chosen by examining the percentage of foreign-investment-targeted firms that receive treatment in each calendar year and proportionally assigning at random hypothetical event dates to the firms that never receive treatment, making sure the assigned event date comes after the year of incorporation of each firm. The process is repeated for foreign investment events, FDI events and FII events. In this context the average treatment on the treated effect is interpreted as the difference in outcomes between firms that are targeted for foreign investment and firms that never are.

5.3. *Estimating Total Factor Productivity*

TFP is a measure of operating efficiency widely used in the international economics literature and more recently in the corporate finance literature (Maksimovic and Phillips, 1998, 2001, 2008; Schoar, 2002). TFP impounds all relevant and available information from the production process into the operating efficiency measure and thus is a measure of the effectiveness of the conversion of inputs into output.

The traditional ordinary least squares (OLS) approach of calculating TFP as the difference

between actual and predicted output leads to omitted variable bias since the firm's choice of inputs is potentially correlated with unobserved productivity shocks. Instead, to calculate the TFP of company i in industry j at time t , this study utilizes the Levinsohn and Petrin (2003) methodology, which is an instrumental variable approach relying on firms' energy consumption to correct for the part of the unobserved productivity shock correlated with firms' inputs. Assuming a Cobb Douglas production function and taking logs, TFP is estimated by:

$$y_{i,j,t} = \alpha + \beta_l l_{i,j,t} + \beta_p e_{i,j,t} + \beta_m m_{i,j,t} + \beta_k k_{i,j,t} + \omega_{i,j,t} + \epsilon_{i,j,t} \quad (5)$$

where y denotes output, l denotes labor, e denotes electricity consumption, m denotes raw material inputs, k denotes fixed assets, and ω denotes the unobservable part of the productivity shock that is correlated with the firm's inputs.

The residuals from the Levinsohn and Petrin (2003) procedure are the unbiased TFP measures. A multilateral TFP index is constructed by demeaning each firm's TFP using average industry TFP in order to compare productivity across firms in the cross-section as well as over time (Caves, Christensen, and Diewert, 1982). The TFP index is an important measure of operating performance used to examine the effect of foreign investment on firm performance.

6. Construction of Variables

6.1. TFP Estimation

TFP is estimated using data on firm sales, inventories, gross fixed assets, salaries and wages, energy and fuel expenses and raw material expenses. The value of output is calculated as the sum of sales and inventories. For lack of consistent data on the number of workers or worker hours, labor is proxied for with salaries and wages. Other studies report qualitatively similar results using either measure of labor inputs (Schoar, 2002) and the use of salaries and wages is advantageous to the extent that it reflects worker quality as well as quantity. The fixed assets variable is constructed from data on gross fixed assets and depreciation using a modified perpetual inventory methodology

(Srivastava, 1996). All variables are deflated using the appropriate 2-digit NIC industry deflators from India's National Accounts Statistics (Central Statistical Organization, 2001; Economic and Political Weekly Research Foundation, 2002; Ministry of Statistics and Programme Implementation, 2007). Value of output is deflated using the corresponding 2-digit NIC industry deflator. Energy and fuel expenses are deflated by a fuel and energy deflator. Salaries and wages as well as raw material expenses are deflated by the wholesale price index. Nominal fixed assets are deflated using a capital goods deflator. The Levinsohn and Petrin (2003) procedure is implemented by 2-digit NIC industry codes with energy and fuel consumption as the intermediate input proxying for unobserved productivity shocks.

6.2. Propensity Score

The time series data for each firm is aligned in event time, so that $t = 0$ in the year when foreign investment (actual or counterfactual) takes place. The propensity score is the probability of receiving treatment in period $t = 0$ based on firm characteristics in period $t = -1$. The probability of treatment is estimated using a probit model based on Equation 2. The dummy variable $F_{i,t}$ equals 1 in the year a firm experiences a foreign investment event and 0 otherwise.

Firms that experience a reduction in foreign shareholding are excluded from the sample. In the small number of cases, in which a firm experiences multiple events of the same type, only the last event is included in the sample. The control group is limited to the remaining firms that do not meet the foreign investment definition.

A number of firms experience reversals in foreign shareholding. These divestiture events are analyzed in order to explore whether foreign investment yields a symmetric effect on productivity and growth. Foreign divestitures are defined as foreign shareholding declines below 10%. $F_{i,t}$ equals 1 in the year a firm's foreign shareholding falls below 10%, and 0 otherwise. The control group consists of firms that remain foreign-invested for the span of the data.

The propensity scores are estimated separately by type of investment (foreign investment, FDI, and FII), by corporate governance context (foreign investment in business group and stand-

alone firms), and for divestitures.¹⁵

6.3. *Control Variables*

The vector of control variables X should include all factors expected to affect both treatment and outcome.¹⁶ The control variables can be grouped into five categories: measures of size and market power, productivity measures, measures of global engagement, corporate governance measures, and basic firm characteristics. All variables are in natural logs of billions of real 1993 Indian Rupees, are winsorized at the 2.5% level where relevant and are lagged one period. Table 3 contains all variable definitions.

The natural log of fixed assets controls for firm size and is a measure of the potential productive capacity of the firm. The growth in fixed assets variable accounts for the possibility that high growth firms might be disproportionately targeted for foreign investment and controls for the growth trajectory of the firm. Market share reflects the market power of the firm within its 2-digit NIC industry. Larger firms enjoy greater visibility and are therefore more likely targets for foreign investment (Kang and Kim, 2008). The TFP index controls for the efficiency of the firm. On the one hand, foreign investors might engage in "cherry-picking" the most productive domestic firms (Guadalupe, Kuzmina, and Thomas, 2010; Arnold and Javorcik, 2009). On the other hand, similarly to domestic M&As, cross-border M&As might be a manifestation of the disciplining effect of the market for corporate control and target less efficient firms (Marris, 1963). The TFP growth rate is included as a measure of the productivity growth trajectory of the firm.

Variables that control for the degree of global engagement also implicitly control for the quality of the firm (Helpman, Melitz, and Yeaple, 2004). The percentage of foreign shareholding, the spending on foreign capital goods relative to fixed assets, the foreign royalties payments dummy, the exports to sales ratio, the EMDB index dummy, and the DR dummy gauge the firm's integration within the world economy and could influence both foreign investment decisions and

¹⁵ Due to the low number of events, divestitures among FIIs and in business group firms cannot be analyzed.

¹⁶ This implies that while some variables appear inconsequential to determining treatment, they should still be included in the propensity score estimation if they are believed to affect the outcome variable.

performance outcomes. More globally engaged firms are potentially more attractive targets for foreign investment (Dahlquist and Robertsson, 2001; Kang and Stulz, 1997). Such firms are also more likely to have a higher absorptive capacity for foreign technology and know-how (Guadalupe, Kuzmina, and Thomas, 2010).

A government shareholding dummy and Indian business group affiliation dummy control for the state of corporate governance within the firm. The relationship between corporate governance and state and business group ownership is ambiguous. On the one hand, the presence of a large shareholder should reduce the manager-shareholder conflict, but on the other hand the potential for disenfranchisement of minority shareholders is higher (Villalonga and Amit, 2006). Khanna and Palepu (2005) point out that Indian business group enterprises tend to have higher foreign shareholding and seek out more global collaborations. Globalization in turn puts pressure on companies to conform to international governance standards. In addition to within firm corporate governance conditions, a regulation adoption dummy controls for the economy-wide move towards better corporate governance marked by the adoption of the Clause 49 corporate governance regulations in 2006. The regression specification also includes a set of year dummies.

The remaining control variables capture basic firm characteristics. Firm age controls for the life cycle of the firm and thus can potentially affect foreign investment decisions. Mature firms typically experience moderate growth rates relative to younger firms, but tend to be better connected and integrated within the home country economy. The cash flow to sales ratio variable captures how effectively the firm uses its cash position to generate revenue and is therefore a potential predictor of foreign investment treatment. The industry dummies are based on India's 2-digit NIC codes. To control for regional differences, the estimation includes a set of regional dummies indicating the province in which the firm is headquartered. All regressions include time dummies to control for contemporaneous economy-wide conditions.

7. Results

7.1. Foreign Investment

The empirical analysis begins with an examination of the differences between treated and non-treated firm characteristics *before* controlling for selection bias. Table 6 displays summary statistics of foreign investment as well as foreign divestitures. Differences between the treated and non-treated sample firms are assessed with a t-test. On average, firms that are recipients of foreign investment are larger in size, faster growing and command a larger industry market share, signaling the importance of visibility (Kang and Kim, 2008). Treated firms have lower productivity levels and productivity growth rates than non-treated firms, suggesting that less efficient firms are singled out for acquisition, consistent with the disciplining effect of the market for corporate control hypothesis (Marris, 1963). Foreign-invested firms are more globally engaged: they have more foreign capital goods spending relative to fixed assets, are more likely to make foreign royalties payments and export more as measured by the fraction of exports in total sales. Foreign-invested firms are slightly more likely to belong to business groups but the difference is only marginally statistically significant. Foreign investment is positively correlated with target firms being EMDB Investable Index constituents, in line with existing evidence (Dahlquist and Robertsson, 2001; Arnold and Javorcik, 2009). Echoing the findings in Khanna and Palepu (2005), foreign-invested firms are more likely to be crosslisted on a foreign exchange. State ownership appears to have little bearing on foreign investment decisions. There are no significant differences between foreign-invested and non-targeted firms' cash flow to sales ratio.

The last three columns of Table 6 report differences in the means of foreign-divested firms and firms that remain foreign-owned. Divested firms are younger, smaller as measured by their fixed assets and have less market share. However, the divested firms are faster growing and have higher productivity than their foreign-invested counterparts. The divested firms also tend to be less globally engaged by a number of measures: they spend less on imported capital goods, are less likely to license foreign technologies and are less likely to be included in the EMDB Investable In-

dex. Even though exporting firms have been shown to attract more attention from foreign investors (Arnold and Javorcik, 2009; Dahlquist and Robertsson, 2001; Kang and Stulz, 1997), the analysis here shows that exports account for a higher share of divested firms' sales. Indian business group affiliation is more common among the divested group of firms. The divested and foreign-invested firms do not differ significantly based on cash flow to sales ratio, government participation and crosslisting status. The summary statistics confirm that there are systematic differences between treated and control group firms, rendering direct comparisons of firm performance without correcting for selection bias inappropriate.

The propensity scores are constructed by estimating a probit model with the covariates discussed in Section 6.3. Although results for all types of foreign investment are reported in Table 7, this section discusses foreign investment events only. There is a positive correlation between firm size as measured by fixed assets and the probability of experiencing foreign investment, supporting the findings of Arnold and Javorcik (2009); Dahlquist and Robertsson (2001); Ferreira and Matos (2008) and Kang and Stulz (1997). Foreign shareholding is positively correlated with future foreign investment, suggesting a gradual process of investment. This finding is echoed in anecdotal evidence of MNCs in India acquiring small stakes in domestic-owned firms and subsequently adjusting their holdings depending on the quality of the investor-target experience. Most measures of global engagement appear to not affect foreign investment choice except for the export to sales ratio, which has a positive although only marginally statistically significant effect. Indian business group affiliation decreases the probability of being targeted for foreign investment, revealing investors' concerns related to corporate governance (Dahlquist and Robertsson, 2001; Leuz, Lins, and Warnock, 2009). Being an EMDB Investable Index constituent leads to a statistically significant decrease in the probability of foreign investment, indicating that given the visibility of such target firms, increases in foreign shareholding by 10% or more are not readily accomplished. Crosslisted firms are more likely to receive foreign investment. To the extent that crosslisting forces Indian firms to conform to international standards of corporate governance and accounting transparency, crosslisted firms send a positive signal to both domestic and foreign investors (Bailey,

Andrew Karolyi, and Salva, 2006; Doidge, Karolyi, Lins, Miller, and Stultz, 2009; Khanna and Palepu, 2005; King and Segal, 2009; Lel and Miller, 2008; Reese and Weisbach, 2002).

Turning to divestiture events, the probability of foreign divestitures declines the greater the foreign shareholding position in the firm, suggesting that divestitures are more likely when foreign investors lack control. Firms making foreign royalties payments are less likely to be divested indicating that foreign investors are more likely to remain invested in firms that license foreign technologies of presumably superior quality. Firms that export more as a fraction of sales are more likely to be divested, although the effect is only marginally statistically significant. EMDB Investable Index constituents are less likely to be divested by foreign shareholders.

The purpose of the matching procedure is to define an appropriate control group with which to compare the treated observations. Matching is performed based on the propensity scores, which summarize the relevant underlying firm characteristics. However, similarity based on a single summary statistic does not necessarily imply that treated and control group firms are comparable based on the underlying firm characteristics used to estimate the propensity score. The success of the matching procedure is measured by how close the treated and matched observations are to each other based on the observable characteristics included in X . As outlined in Appendix A and evidenced in Figure 3, the propensity score matching procedure achieves an outstanding quality of matches.

Figure 3 shows the paths of TFP, output, fixed assets, salaries and wages, energy expenses and raw material expenses. Treated firms are compared with three differently constructed control groups: a propensity-score-matched control group, a control group unadjusted for firm characteristics and a 2-digit NIC industry and productivity matched control group. Industry and performance matching is representative of the prevalent methodology in the finance literature (Barber and Lyon, 1996). Following the procedure outlined in Barber and Lyon (1996), for each treated firm, control group firms are chosen from the same 2-digit NIC industry code so that their pre-event TFP index falls within 90-110% of the TFP index of the treated firm. In the absence of a control group firm within the desired band of pre-event performance, the firm closest in performance to the treated

firm is chosen from within its 2-digit NIC industry.

Figure 3 demonstrates that failing to construct a careful counterfactual could lead to misleading conclusions. In particular, the gap between treated and unmatched control group estimates suggests significant productivity effects, which are absent when firm pre-event characteristics are taken into account using the propensity score matching procedure. Furthermore, the industry and performance matched estimates are alarmingly similar to the unadjusted difference-in-differences estimates, suggesting that the prevalent methodology in the literature delivers limited respite from selection bias issues. The propensity score matching technique ensures the construction of an appropriate counterfactual as evidenced by the proximity between the treatment and propensity-score-matched control group lines prior to the event date. The treated and propensity score matched paths are close even for variables that are not explicitly part of the propensity score estimation such as the value of output, salaries and wages, raw material expenses and power and fuel expenses. Even though the value of output increases disproportionately for treated firms following foreign investment, productivity remains unchanged because inputs to production keep up with the higher output level. The treated firms become bigger over time compared with the control group as measured by the value of output, fixed assets and salaries and wages.

Table 8 reports the difference-in-difference combined with propensity score matching estimates for the same variables whose paths are shown in levels in Figure 3. Foreign investment does not lead to significant changes in productivity when foreign-invested firms are compared with propensity-score-matched control group firms, except for a temporary dip in productivity two years after the investment event. Although foreign-invested firms do not experience major changes in productivity, they significantly expand in size. Foreign-invested firms grow faster than the propensity-score-matched control group firms based on three measures: fixed assets, salaries and wages and output. Treated firms accumulate fixed assets at a faster pace than the propensity-score-matched control group firms. Furthermore, treated firms have a faster growing wage bill than control group firms, indicative of employment growth or skill upgrading, or both. Importantly, the value of output increases at a faster pace in foreign-invested than non-invested firms. These effects

are both statistically and economically significant. The results suggest that foreign investment enables firms to grow, although it does not provide efficiency gains. This finding supports the notion that Asian firms focus on growth strategies rather than efficiency (Allen, Qian, and Qian, 2005). The pattern of growth is also consistent with foreign investment relaxing credit constraints since easier access to financing is likely to manifest itself in larger firm size, but not in improved productive efficiency.

Turning to the divestiture results presented in Table 8, there are no significant differences in productivity between treated and non-treated firms at the time of divestiture up to three years after treatment. As for size growth, divested firms do not alter their output or fixed assets in a significant and sustained manner but there is some evidence of a gradually declining wage bill, consistent with shedding labor and/or skill downgrading. Aside from wage growth, any productivity and growth changes accrued in the time span of foreign holding are not undone upon divestiture, i.e. there is no evidence for "unlearning" after the foreign shareholders divest.

Overall, the results show that even though there is no immediate or short run productivity effect attributable to foreign shareholding, foreign-invested firms experience dramatic growth by several measures. The neutral productivity effect suggests that any potential positive effect arising from governance exports (Lel and Miller, 2008; Leuz, Lins, and Warnock, 2009) and access to foreign know-how (Nocke and Yeaple, 2007) is lost due to distance and ineffective monitoring (Gaspar and Massa, 2007; Kang and Kim, 2008). Firm growth combined with an absence of operating performance improvements points to access to financing as a potential mechanism for the effects of foreign investment.

7.2. Foreign Direct Investment and Foreign Institutional Investment

Although as seen in Figure 2, foreign investment events occur as a result of joint changes in foreign direct investors' and institutional investors' holdings, suggesting that foreign direct investors and institutional investors have similar preferences with regards to firm characteristics, it is possible and likely that the two types of investors have distinct effects on firm operating per-

formance (Allen and Phillips, 2000). As reported in Table 4, there are more FII events than FDI events. There are dozens of foreign direct divestiture events while there is a negligible number of foreign institutional divestiture events. The majority of the FDI and FII events occur in capital intensive industries, with chemical products attracting the greatest number of investors. As shown in Table 5, the pace of both FDI and FII accelerates during the period of study, with the highest number of events occurring in 2006 and 2007. The growth in FII events dominates the growth in FDI events. The event count in the data is reflective of India's position as a top three foreign portfolio investment destination among developing countries as reported in Table 1.

The propensity score estimation results in Table 7 reveal important differences in the preferences of foreign direct investors in comparison with FIIs. The only similarity between the two types of investors is their mild preference for younger firms and their strong preference for large size firms as measured by firm fixed assets, a result consistently documented in the international and corporate finance literatures (Ferreira and Matos, 2008; Leuz, Lins, and Warnock, 2009; Aitken and Harrison, 1999; Javorcik, 2004). Foreign direct investors shy away from fast growing firms and are more likely to divest such firms, whereas the opposite is true for FIIs, consistent with the notion that institutional investors prefer high growth targets (Bushee, 2001). Foreign direct investors are more likely to invest in firms with higher foreign shareholding and less likely to divest such firms, whereas firms with high foreign shareholding are less likely to receive FII. Firms that make royalties payments to abroad are more likely to receive FDI and less likely to be divested, indicating that foreign direct investors value the use of foreign technology. Foreign direct investors also prefer to invest in firms that export a larger portion of their sales but bigger exporters are more likely to be divested. A favorable external corporate governance climate plays a positive role in encouraging FDI as reflected in the positive, although only marginally statistically significant Clause 49 Dummy coefficient. Furthermore business-group-affiliated firms are less likely to attract FDI, revealing investors' concerns about unfavorable corporate governance conditions and consistent with the findings of Dahlquist and Robertsson (2001); Ferreira and Matos (2008); Giannetti and Simonov (2006) and Leuz, Lins, and Warnock (2009). Foreign direct investors are more likely to

invest in EMDB Investable Index constituents, whereas this appears to play no role in FII decisions. Crosslisted firms are more likely to attract FII but foreign direct investors are more likely to divest such crosslisted firms.

As reported in Table 8, FDI does not lead to significant changes in the productivity of treated firms in comparison with the propensity-score-matched control group firms. On the other hand, a reduction in foreign direct shareholding leads to a temporary improvement in the productivity of the divested firms, aligned with the idea that the effectiveness of monitoring becomes attenuated with cultural and geographic distance (Gaspar and Massa, 2007; Kang and Kim, 2008). FII events do not lead to significant changes in the productivity of target firms except for a marginally significant decline 3 years after the event. The presence of some negative productivity effect due to FII indicates that FIIs' lack of product market experience could hinder productive efficiency.

Turning to the firm size effects, a striking difference between the two samples emerges: FII leads to statistically and economically significant growth in fixed assets, salaries and wages and output. On the other hand, FDI produces more moderate and less statistically significant output growth only. FDI divestitures do not have any discernable impact on firm growth. Since foreign direct investors do not have a sizeable productivity impact, technology transfer is likely not a key channel through which foreign investment affects firm operating performance. The results support the view that FIIs are more effective than foreign direct investors at disciplining management due to their greater flexibility to exit in response to negative signals (Albuquerque, 2003). Note that a higher threat of exit is not inconsistent with less exit events (Edmans and Manso, 2011).

7.3. Foreign Investment in Business Group Firms and Stand-Alone Firms

Corporate governance is an important factor in foreign investment decisions and has the potential to influence the degree to which foreign investment affects target firm performance and growth. To explore these issues, foreign investment is examined separately in the context of business group and stand-alone firms. Business group firms are assumed to be opaque and less friendly to outside investors whereas stand-alone firms are more transparent and have better internal corpo-

rate governance (Bertrand, Mehta, and Mullainathan, 2002).

Table 4 reports a higher number of stand-alone firms receiving foreign investment compared with business group firms. There is an insignificant number of divestiture events in business group firms whereas there are 60 such events among stand-alone firms. The majority of foreign investment and divestiture events across business group and stand-alone firms occur in capital-intensive industries such as chemical products and fabricated metal products. The annual number of events reported in Table 5 follow the aggregate trends evident in Table 1, with the greatest number of events concentrated in 2006 and 2007.

The last three columns of Table 7 report propensity score estimation results for business group and stand-alone firms respectively. Among stand-alone firms, the likelihood of receiving foreign investment increases with firm size, but declines with firm age. Business group firms experiencing higher fixed assets growth are more likely to receive foreign investment treatment. Measures of global engagement play an instrumental role for selection. Crosslisting increases the likelihood of foreign investment in both business group and stand-alone firms, although the magnitude of the effect is twice as large for stand-alone firms. For stand-alone firms, being an EMDB Investable Index constituent decreases the likelihood of foreign investment since given the visibility of these firms, increases in foreign shareholding of 10% or more are not likely. Stand-alone firms that are more globally engaged as captured by the foreign royalties dummy and exports as a fraction of sales are more likely to receive foreign investment.

The effects of foreign investment on firm productivity and growth in business group and stand-alone firms are reported in Table 9. Among business group firms, the productivity effect estimates are not statistically significant. Foreign investment events in stand-alone firms lead to a significant decline in the productivity of treated firms, although the decline is temporary. Foreign equity divestitures in stand-alone firms do not lead to significant changes in the productivity or growth of foreign-divested firms. Turning to the growth results, there is a pronounced and statistically significant growth in fixed assets, salaries and wages and output among stand-alone firms and a more moderate, both in size and significance, output effect among business group firms.

Echoing the findings of Dahlquist and Robertsson (2001) and Leuz, Lins, and Warnock (2009), the results show that foreign investment leads to greater growth in settings with ownership structures conducive to good corporate governance. The results are further consistent with Aggarwal, Erel, Ferreira, and Matos (2011)'s idea that foreign investors engage in governance exports, but here the benefits of good governance are felt in the more favorable environment of stand-alone firms. Assuming credit constraints are more binding in stand-alone firms, which do not have access to the internal capital markets of business groups, the differential growth impact of foreign investment in stand-alone versus business group firms suggests that the likely mechanism for the effect is through relaxing credit constraints.

7.4. Foreign Investment in External Financing Dependent vs Less Dependent Firms

Next, the analysis turns to testing whether foreign investment has a differential impact depending on the target firms' dependence on external financing. Following Rajan and Zingales (1998), an India-specific external financing dependence measure is constructed using the fraction of investment not financed from internal sources. As stated in Hypothesis 4, foreign investment should tend to matter more in firms more dependent on external financing. Table 10 compares the effect of foreign investment by foreign investor type and business group versus stand-alone firms for industries more and less dependent on external financing. Foreign investment in industries more dependent on external financing leads to growth in fixed assets, salaries and wages and output. On the other hand, foreign investment in firms in industries less dependent on external financing does not lead to any fixed assets growth but results in delayed wage and output growth. The results indicate that access to financing is an important mechanism for the impact of foreign investment.

Allowing for different outcomes depending on the type of foreign investment, the sample is further divided into FDI and FII events. FDI does not impact size or productivity significantly. On the other hand, FII gives invested firms a boost in size, regardless of external financing dependence. These observations suggest that the differential effect of FDI compared with FII likely works through a channel different than access to financing. Otherwise outcomes would vary with

external financing dependence. Given these findings, the differing effects of FDI and FII appear to be due to the disciplining effect of the threat of exit, which is more powerful with FIIs (Albuquerque, 2003; Edmans and Manso, 2011).

The role of external financing in business group firms versus stand-alone firms is probed next. Foreign-invested business group firms in industries dependent on external financing grow more as measured by fixed assets and output compared with business group firms in industries less dependent on external financing. Stand-alone firms in industries dependent on external financing similarly expand more, and a lot more in fixed assets, compared with firms in industries less dependent on external financing. Furthermore, the magnitude and significance of the fixed assets growth effect is weaker for business group firms than for stand-alone firms in external financing dependent industries. The results support the idea that business group firms are less credit-constrained due to their access to internal capital markets and therefore stand-alone firms experience greater growth as a result of foreign investment.

7.5. *Robustness Checks*

7.5.1 *High Growth vs Low Growth Industries*

A lingering concern is that the results are driven by foreign investors, FIIs in particular, picking targets with high growth prospects. The propensity score probit regressions control for firm-specific fixed assets growth in addition to industry dummies. However, it is possible and likely that industries have shifting growth prospects over time. To account for this possibility, industries are sorted into high and low growth on an annual basis depending on their standing relative to average annual industry output growth. A subsample analysis of high and low growth industries restricts the treated and control group matches to the appropriate industry growth group in addition to the propensity score criteria. If the results documented in Tables 8 and 9 persist under this subsample analysis, then it is unlikely that they are driven by not adequately accounting for selection on growth and improperly matching high growth treated with low growth control group firms.

The evidence presented in Table 11 suggests that foreign investment in both high and low growth industries leads to significant fixed assets and output growth, with wage growth concentrated in high growth industries alone. In fact, the output growth in low growth industries is more statistically robust. Splitting the sample into FII flowing into high and low growth industries reveals that FII has a similar impact regardless of industry growth. Similarly, FDI generates comparable outcomes for treated firms in high growth or low growth industries. Foreign investment flowing into business group firms in low growth industries delivers higher output growth, while investment in stand-alone firms has similar outcomes in both high and low growth industries. The magnitudes of the effects are comparable to those reported in Tables 8 and 9. These findings suggest that the main results are unlikely to be a function of improperly accounting for selection on growth.

7.5.2 Additional Robustness Checks

The results are robust to different definitions of foreign investment such as defining the foreign investment event as crossing a 10% shareholding threshold. The results are also robust to different specifications of the propensity score regressions. A baseline specification including lagged values of company age, foreign shareholding, log fixed assets, TFP index and TFP growth yields results similar to the version presented here. Incremental inclusion of additional control variables, as well as combinations of control variables does not lead to qualitatively different outcomes. The results are also not sensitive to replacing the TFP measure of performance with return on assets (ROA), defined either as earnings before interest and taxes or earnings before interest, taxes, depreciation and amortization, scaled by total assets. Furthermore, the results are not sensitive to excluding years 2007 and 2008 from the sample.¹⁷

8. Conclusion

This study goes beyond documenting the correlation between foreign investment and firm characteristics to shed light on the causal relationship between foreign investment and firm per-

¹⁷ Due to space constraints, these results are not presented here, but are available from the author upon request.

formance and growth. A series of tests explore the mechanisms for the foreign investment effects. The analysis distinguishes between the performance and growth implications of FDI and FII and studies the interaction between corporate governance, external financing dependence and foreign investment. Rather than comparing firms targeted by foreign shareholders with the average of the whole population of domestic-owned firms, an appropriate control group is chosen using propensity score matching. Combining propensity score matching with a difference-in-differences estimator addresses concerns related to selection on observable as well as time-invariant unobservable firm characteristics. Importantly, this study provides evidence that standard matching methods lead to misleading results compared with the difference-in-differences propensity score matching estimator.

Increases in foreign shareholding do not affect productivity up to four years after the event. However, output, fixed assets and wage growth are positively affected, suggesting that even though firms do not improve in efficiency, they grow in size. Subsample analyses of FDI and FII show that FDI does not have any productivity or growth implications whereas FII leads to a delayed loss in productivity combined with a sustained economically and statistically significant increase in output, fixed assets, and salaries and wages. These findings indicate that the threat of exit, commonly associated with FII, leads to greater real effects than technology transfer, thought to accompany FDI. Studying the interaction between corporate governance and foreign ownership reveals that the positive growth effects resulting from foreign investment are present in stand-alone firms only, suggesting that corporate governance plays an important role in facilitating the benefits of foreign ownership. Firms in industries dependent on external financing are more affected by foreign investment, implying that the mechanism for the foreign investment effect is through access to financing rather than access to technology. Divested firms do not experience major changes in operating efficiency or growth after the foreign shareholders leave, suggesting that the effects of foreign ownership are not un-done upon divestiture. Subsample analysis of foreign investment in high growth and low growth industries leaves the estimates largely unchanged, suggesting that the results are not an artifact of improperly adjusting for selection on growth. Furthermore, results are

robust to different propensity score estimation specifications and to the use of ROA in place of TFP as a measure of operating performance. The evidence indicates that foreign investment does not lead to technology transfer, but encourages growth through improved access to external financing and management discipline through the threat of exit.

A Technical Appendix

Matching on a single summary statistic such as the propensity score could leave treated and control group firms significantly different based on individual firm characteristics. The goal of matching is to choose control group firms as close as possible to treated firms based on those underlying characteristics. This appendix discusses the quality of matches achieved in the study based on two related criteria: reduction in bias for individual variables and reduction in absolute standardized bias. The propensity score matching procedure is successful as evidenced by the % Reduction in Bias column of Tables A.1-A.2. The mean values of key variables are generally significantly closer for the treatment and propensity-score-matched control groups compared with the bias between the treatment and unmatched control groups.

The absolute standardized bias (ASB) is an alternative measure of the quality of matches. ASB is defined as the difference in the means of the control and treatment group covariates scaled by the square root of the averaged sample variances of the covariates (Rosenbaum and Rubin, 1985). The ASB before matching is given by:

$$ASB = 100 \frac{\frac{1}{n_1} \sum_{i \in I_1} X_i - \frac{1}{n_0} \sum_{j \in I_0} X_j}{\sqrt{\frac{Var_{i \in I_1}(X_i) + Var_{j \in I_0}(X_j)}{2}}} \quad (A1)$$

where n_1 is the number of treated firms and n_0 is the number of control group firms. After matching, ASB is defined as:

$$ASB = 100 \frac{\frac{1}{n_1} \sum_{i \in I_1} [X_i - \sum_{j \in I_0} W(P_i, P_j) X_j]}{\sqrt{\frac{Var_{i \in I_1}(X_i) + Var_{j \in I_0}(X_j)}{2}}} \quad (A2)$$

Median ASB values are reported in Tables A.1-A.2. In all cases, the median ASB decreases after matching. While there is no formal test of what value of ASB is appropriate, a value of under 20 is considered reasonable (Rosenbaum and Rubin, 1985). As reported at the bottom of Tables A.1-A.2, the median ASB values after matching are well below 10.

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Foreign Investment

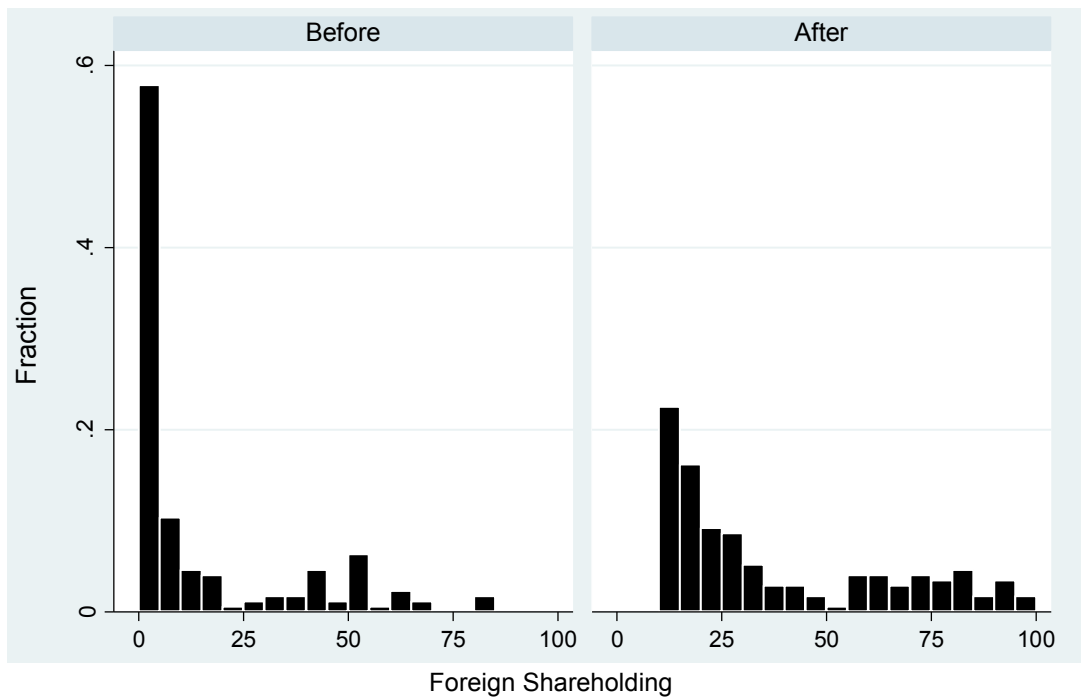


Figure 1. **Distribution of foreign shareholding before and after foreign investment events.**

Foreign investment is defined as a foreign shareholding increase by 10% or more. The left panel shows the percentage of foreign holdings *before* the foreign investment event and the right panel shows the percentage of foreign holdings *after* the foreign investment event. Each panel shows the pattern of foreign holdings overall for the period 2001-2008. The horizontal axis denotes the percentage of foreign shareholding. The vertical axis measures the frequency, where the sum of bar heights equals 1.

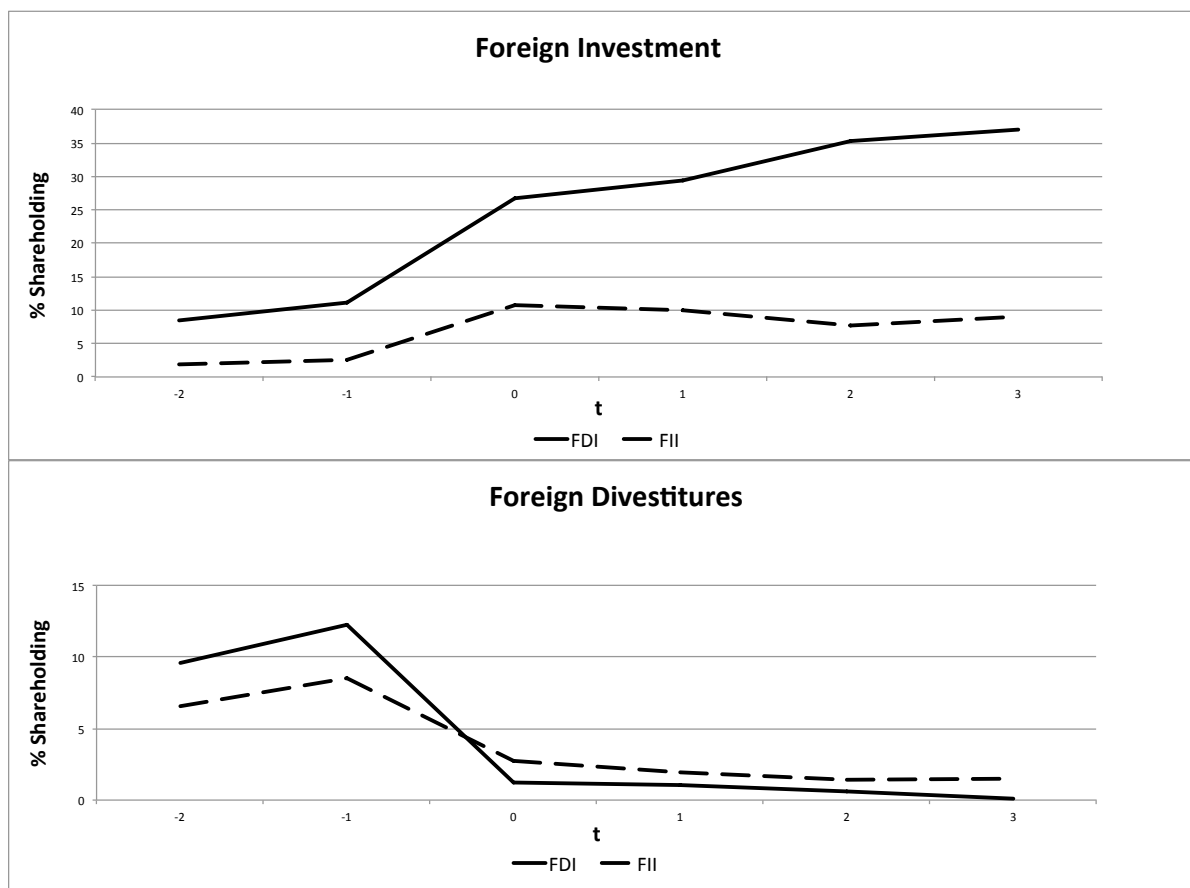


Figure 2. Contribution of Foreign Direct Investment (FDI) and Foreign Institutional Investment (FII) to the incidence of Foreign Investment and Divestiture Events.

Foreign investment is defined as the sum of FDI and FII. The top panel captures the evolution of FDI and FII holdings around foreign shareholding increases by 10% or more. The bottom panel traces FDI and FII in the years around foreign divestiture events, where foreign divestitures are defined as drops in foreign shareholding below 10%. In both panels, the solid line denotes FDI while the dashed line represents FII. The horizontal axis denotes time, where $t=0$ is the time of the event, $t=1$ is one year after the event, etc.

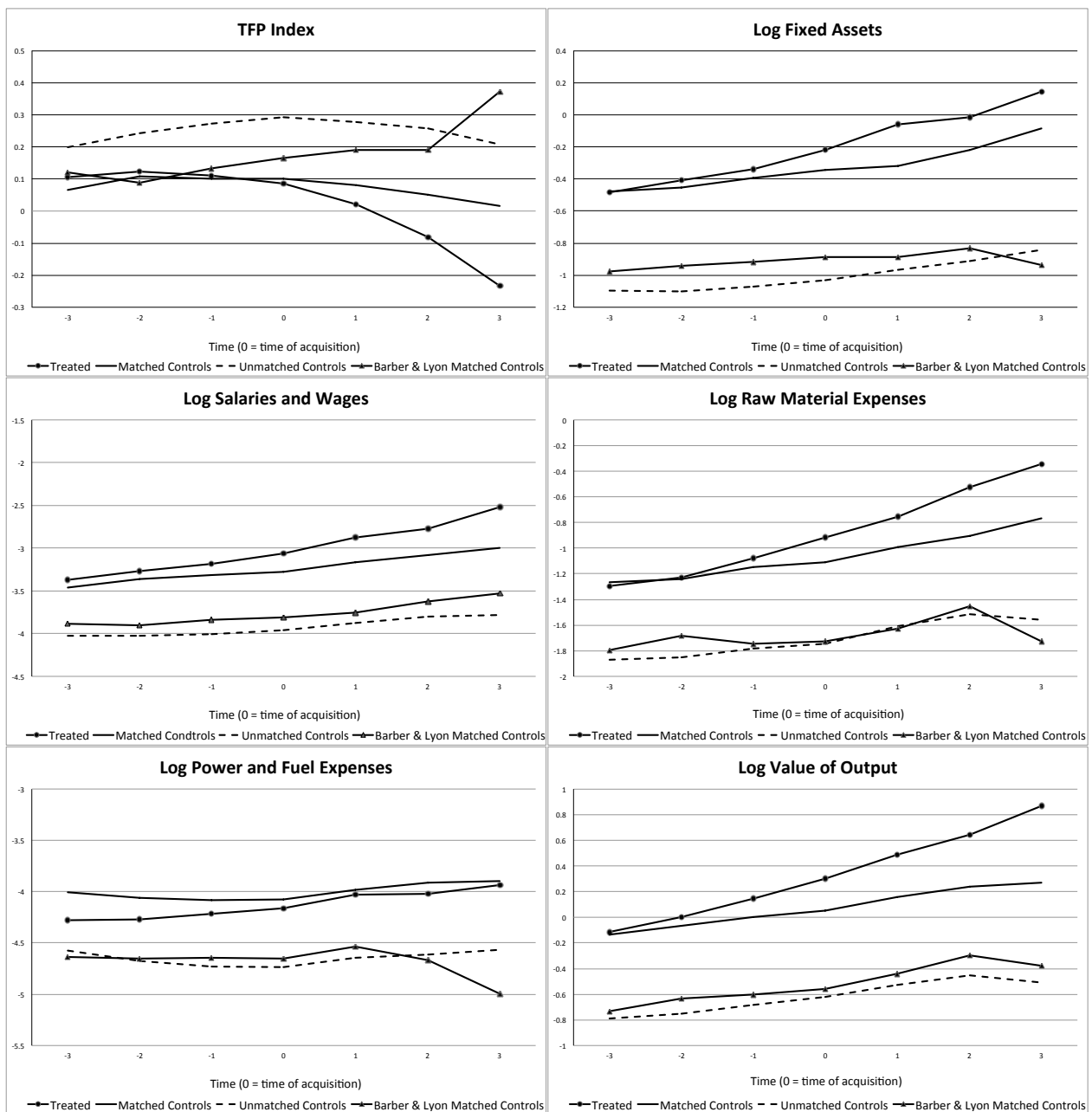


Figure 3. Means of variables by treatment, unmatched, propensity-score-matched and 2-digit industry and performance matched control groups before and after foreign investment.

Foreign investment is defined as foreign shareholding increases by 10% or more. The connected circles line represents the treatment group, the solid line represents the propensity-score-matched control group, the connected triangles line represents the 2-digit industry and performance matched control group (Barber and Lyon, 1996) and the dashed line represents the unweighted control group. The horizontal axis denotes time, where $t=0$ is the time of the foreign investment event, $t=1$ is one year after the foreign investment event, etc. The vertical axis is in natural logs of billions of real 1993 Indian Rupees, except for the TFP Index Panel where the vertical axis measures the percentage difference between firm TFP and 2-digit National Industrial Classification (NIC) industry mean TFP. See Table 3 for variable definitions.

Table 1

Foreign equity inflows.

The table summarizes foreign equity inflows data and decomposes them into foreign direct investment (FDI) inflows and portfolio equity inflows. Foreign institutional investment (FII) accounts for the majority of portfolio inflows. The top panel shows inflows into all developing countries, the middle panel focuses on inflows into Brazil, Russia, India and China (BRICs), while the bottom panel reports inflows into India along with India's rank as FDI destination and portfolio investment among developing countries. All variables are measured in billions of U.S. dollars.

	2000	2001	2002	2003	2004	2005	2006	2007e
<i>Developing Countries</i>								
Equity Inflows	179.0	178.6	166.2	186.0	265.9	357.4	472.3	615.9
FDI inflows	165.5	173.0	160.7	161.9	225.5	288.5	367.5	470.8
Portfolio Equity Inflows	13.5	5.6	5.5	24.1	40.4	68.9	104.8	145.1
<i>BRICs</i>								
Equity Inflows	90.0	81.6	82.9	88.8	116.6	152.6	211.5	302.1
FDI inflows	77.5	74.9	75.0	69.5	94.3	113.9	145.2	192.1
Portfolio Equity Inflows	12.5	6.7	7.9	19.3	22.3	38.7	66.3	110.0
<i>India</i>								
Equity Inflows	5.9	8.4	6.6	12.5	14.8	18.8	27.0	55.0
FDI inflows	3.6	5.5	5.6	4.3	5.8	6.7	17.5	21.0
Portfolio Equity Inflows	2.3	2.9	1.0	8.2	9.0	12.1	9.5	34.0
India FDI destination rank among developing countries	6	5	4	7	8	10	7	6
India Portfolio Investment destination rank among developing countries	4	1	4	1	2	2	3	2

Sources: IFS, World Bank Debtor Reporting System and World Bank Staff Estimates.

Note: BRICs=Brazil, Russia, India and China; e = estimate; FDI = foreign direct investment.

Table 2

Countries of origin for Foreign Direct Investment (FDI) and Foreign Institutional Investment (FII) into India, 2001-2008.

The top 10 countries of origin for FDI and foreign equity portfolio investment are determined by ranking countries based on their contribution to total FDI and FII respectively over 2001-2008.

Rank	Country of Origin	
	FDI	FII
1	Mauritius	Mauritius
2	Singapore	United States
3	United States	Luxembourg
4	United Kingdom	United Kingdom
5	Netherlands	Singapore
6	Japan	Spain
7	Germany	Japan
8	Cyprus	France
9	France	Netherlands
10	United Arab Emirates	Ireland

Sources: IMF CPIS database and India's Ministry of Commerce and Industry, Department of Industrial Policy & Promotion.

Table 3
Variable definitions.

Variable Name	Definition
Fixed Assets	Fixed assets, revalued using a perpetual inventory method. Reported in billions of real 1993 Indian Rupees.
Fixed Assets Growth	Year over year growth in fixed assets.
Fixed Assets to Sales Ratio	Fixed assets, revalued using a perpetual inventory method, divided by sales.
Cash Flow to Sales Ratio	Operating cash flow divided by sales. Operating cash flow is the amount of cash generated during the year from operating activities after meeting working fixed assets changes.
Clause 49 Dummy	Indicator variable equal to 1 after 2006, and 0 otherwise. It marks the passage of Indian legislative change aimed at increasing investor protection.
Company Age	Number of years since incorporation.
Divestiture Dummy	Indicator variable equal to 1 if the firm's foreign shareholding ever decreases below the 10% foreign shareholding threshold, and 0 otherwise.
DR Dummy	Indicator variable equal to 1 if the firm has a Depository Receipt (DR) listing on any foreign exchange, and 0 otherwise.
EMDB Index Constituent Dummy	Indicator variable equal to 1 if the firm is part of the International Financial Corporation (IFC) Emerging Markets Database (EMDB) Investable Index as of January 2009, and 0 otherwise.
Exports to Sales Ratio	Fraction of annual firm sales that are exported.
Foreign Fixed Assets Spending to Fixed Assets Stock Ratio	Annual purchases of foreign fixed assets goods as a percentage of revalued fixed assets.
Foreign Investment Dummy	Indicator variable equal to 1 if the firm has ever experienced an increase in foreign shareholding by 10% or more, and 0 otherwise.
Foreign Royalties Payments Dummy	Indicator variable equal to 1 if the firm pays royalties and technical know-how fees abroad in a given year, and 0 otherwise.
Foreign Share %	Percentage of foreign shareholding in total outstanding shares.
Government Interest Dummy	Indicator variable equal to 1 if the central government or state governments have ownership stakes in the firm, and 0 otherwise.
Indian Business Group Affiliation Dummy	Indicator variable equal to 1 if the firm is part of an Indian business group, and 0 otherwise.
Industry Market Share	Annual share of firm's sales in 2-digit National Industrial Classification (NIC) industry sales.
Power and Fuel Expenses	Energy costs. Reported in billions of real 1993 Indian Rupees.
Raw Material Expenses	Consumption of commodities in the process of manufacturing or rendering services or transformation into product. Reported in billions of real 1993 Indian Rupees.
Salaries and Wages	Total expenses incurred on all employees, including the management, comprehensive of bonuses and benefits. Reported in billions of real 1993 Indian Rupees.
TFP Index	Operating performance measure defined as a firm's Total Factor Productivity (TFP) relative to the 2-digit NIC industry mean TFP. TFP is estimated by 2-digit NIC industry using the Levinsohn and Petrin (2003) methodology.
TFP Growth	Year over year growth in firm productivity as measured by TFP.
Value of Output	The sum of sales and the change of stock of finished and semi-finished goods. Reported in billions of real 1993 Indian Rupees.

Table 4

Manufacturing industries, number of foreign investment and divestiture events and industry characteristics.

The table shows the distribution of foreign investment and divestiture events by industry and by type of investment: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), investment in business group firms, and investment in stand-alone firms. Industries are classified at the 2-digit level using India's National Industrial Classification (NIC). The Firms column reports the number of unique treated firms per industry. The N column reports the number of firm-year observations. Foreign investment is defined as a foreign shareholding increase by 10% or more. Divestitures denote events when a firm's foreign shareholding falls below 10%. The last three columns provide average values of the log level of sales, log level of fixed assets, and fixed assets to sales ratio. The sales and fixed assets variables are in natural logs of billions of real 1993 Indian Rupees. All variables are winsorized at the 2.5% level. See Table 3 for variable definitions.

2-Digit NIC Industry Classification	Firms	N	Foreign Invest.		FDI	FII	Group Firms		Stand-Alone Firms		Mean	Mean	Mean
			Invest.	Divest.			Invest.	Divest.	Invest.	Divest.			
15 Food and Beverages	109	2289	7	7	1	2	11	3	4	2	-0.588	-1.106	4.814
17 Textiles	184	3864	19	10	7	2	14	5	12	3	-0.718	-0.809	2.343
18 Wearing apparel	2	42	0	1	0	1	1	0	0	0	-3.597	-2.055	18.176
19 Leather & leather products	13	273	1	0	0	0	1	0	1	0	-1.026	-1.522	1.504
21 Paper & paper products	35	735	1	0	0	0	1	0	1	0	-0.942	-0.631	12.471
23 Coke, refined petroleum products & nuclear fuel	7	147	0	1	0	0	0	0	0	1	1.575	1.515	1.007
24 Chemical products	265	5565	30	20	19	8	19	10	17	11	-0.858	-0.979	4.720
25 Rubber & plastics products	129	2709	10	10	6	5	5	5	4	7	-1.234	-1.273	2.865
26 Other non-metallic mineral products	70	1470	9	7	4	3	2	2	5	4	-0.256	-0.012	2.250
28 Fabricated metal products	149	3129	18	12	7	7	17	8	9	6	-0.612	-0.956	3.630
29 Machinery & equipment	95	1995	7	7	5	6	3	0	7	3	-1.216	-1.533	1.715
30 Office, accounting & computing machinery	6	126	1	0	1	0	0	0	0	0	0.112	-1.513	0.297
31 Electrical machinery & apparatus	82	1722	9	8	3	3	11	3	6	5	-0.361	-1.194	0.983
32 Radio, television and communication equipment & apparatus	44	924	11	9	8	4	6	1	9	6	-0.673	-1.400	1.495
35 Other transport equipment	98	2058	16	10	5	5	14	11	5	2	-0.497	-0.895	0.975
36 Furniture	18	378	1	0	0	0	3	1	0	0	-1.109	-2.306	1.110
TOTAL	1306	27426	140	102	66	46	108	49	80	50			

Table 5

Foreign investment and divestiture events in manufacturing industries by year.

The table shows the distribution of foreign investment and divestiture events by year and by type of investment: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), investment in business group firms, and investment in stand-alone firms. The Investment column documents the number of annual events where foreign shareholding increases by 10% or more. The Divestitures column tracks the annual number of events where foreign shareholding drops below 10%.

Year	Foreign Investment		FDI		FII	Group Firms		Stand-Alone Firms	
	Invest.	Divest.	Invest.	Divest.		Invest.	Divest.	Invest.	Divest.
2002	12	13	11	7	0	1	10	5	
2003	18	6	8	7	14	8	10	1	
2004	7	9	5	5	8	1	5	5	
2005	17	10	7	10	26	8	8	4	
2006	51	17	24	8	34	21	24	7	
2007	31	37	10	9	23	10	19	22	
2008	4	10	1	0	3	0	4	6	
Total	140	102	66	46	108	49	80	50	

Table 6

Summary statistics. Foreign investment and foreign divestiture events.

Foreign investment is defined as a foreign shareholding increase by 10% or more. Foreign divestiture is defined as decline in foreign shareholding below 10%. The Control Group and and Treatment Group columns summarize key characteristics for firms that never receive treatment and firms that receive treatment respectively. The t-statistic columns report t-test statistics of the differences in variable means between the non-treated and treated firms. All variables except growth rates and ratios are measured in natural logs of billions of real 1993 Indian Rupees. All variables except company age, foreign holding, and dummy variables are winsorized at the 2.5% level. See Table 3 for variable definitions. * significant at 10%; ** significant at 5%; *** significant at 1%.

	Foreign Investment		Foreign Divestitures	
	Non-treated	Treated	Non-treated	Treated
Company Age	29.323	29.547	35.436	25.429
Log Fixed Assets	-0.985	-0.239	-0.232	-0.609
Fixed Assets Growth	0.029	0.076	0.019	0.060
Industry Market Share	0.007	0.009	0.017	0.008
TFP Index	0.226	0.050	-0.026	0.100
TFP Growth	0.018	-0.012	0.007	0.000
Foreign Holding	5.918	22.416	43.092	9.547
Foreign Capital Spending Ratio	0.012	0.024	0.030	0.020
Foreign Royalties Dummy	0.156	0.261	0.486	0.188
Exports to Sales Ratio	0.149	0.177	0.138	0.202
Cash Flow to Sales Ratio	0.083	0.082	0.107	0.081
Government Interest Dummy	0.018	0.024	0.027	0.024
Indian Business Group Affiliation Dummy	0.428	0.399	0.317	0.459
EMDB Index Constituent Dummy	0.059	0.129	0.212	0.046
DR Dummy	0.028	0.151	0.072	0.079
Firms	1062	140	167	102
Observations	7058	922	1134	671
Unbalanced Panel	Yes	Yes	Yes	Yes

Table 7

Probit estimation of the propensity score by type of investment: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), investment in business group firms, and investment in stand-alone firms.

Control group firms are assigned a counterfactual time of foreign investment or divestiture event at random following the distribution of actual events in the data. The dependent variable is an indicator variable equal to 1 if an event occurs, and 0 otherwise. For each type of investment, the Investment column defines the foreign investment event as a foreign shareholding increase by 10% or more, and where present, the Divestiture column defines the divestiture event as a foreign shareholding drop below 10%. The table reports the marginal effect, i.e. the change in the probability of an event for an infinitesimal change in each independent continuous variable and the change in the probability for discrete changes in independent dummy variables while the rest of the independent variables are set at their means. All variables except ratios, growth rates, and company age are measured in natural logs of billions of real 1993 Indian Rupees. All variables except company age, foreign holding, and dummy variables are winsorized at the 2.5% level. Time varying variables are lagged one period. All regressions contain industry, region and time dummies. Standard errors are in brackets. See Table 3 for variable definitions. * significant at 10%, ** significant at 5%, *** significant at 1%.

	Foreign Investment		FDI		FII	Group Firms		Stand-Alone Firms	
	Invest.	Divest.	Invest.	Divest.	Invest.	Invest.	Invest.	Invest.	Divest.
Company Age	-0.001 [0.001]	-0.002 [0.002]	-0.001* [0.000]	-0.001 [0.002]	-0.001** [0.000]	0.001 [0.001]	-0.002** [0.001]	-0.006 [0.103]	
Log Fixed Assets	0.033*** [0.009]	-0.016 [0.041]	0.014*** [0.005]	-0.042 [0.031]	0.021*** [0.006]	0.024 [0.018]	0.032*** [0.011]	-0.041 [0.715]	
Fixed Assets Growth	0.046 [0.048]	0.141 [0.277]	-0.167*** [0.043]	0.572** [0.248]	0.114*** [0.031]	0.231** [0.114]	0.019 [0.051]	-0.077 [1.375]	
Industry Market Share	0.121 [0.191]	-2.414 [10.03]	-0.517 [1.152]	-9.905 [7.991]	0.014 [0.615]	-0.219 [3.313]	0.665 [1.047]	-15.500 [272.4]	
Relative TFP	0.007 [0.012]	-0.087 [0.0529]	0.008 [0.007]	-0.081* [0.046]	-0.001 [0.008]	0.005 [0.027]	0.016 [0.016]	-0.082 [1.448]	
TFP Growth	-0.002 [0.034]	0.163 [0.163]	-0.013 [0.020]	0.129 [0.117]	0.031 [0.022]	-0.096 [0.088]	0.008 [0.046]	0.059 [1.043]	
Foreign Share %	0.001*** [0.001]	-0.016*** [0.002]	0.001*** [0.000]	-0.009*** [0.002]	-0.001** [0.000]	-0.001 [0.002]	0.002** [0.001]	-0.013 [0.232]	
Foreign Cap. Spend. to Cap. Stock Ratio	0.126 [0.238]	-0.059 [0.497]	0.171 [0.171]	-0.577 [0.708]	0.077 [0.135]	-0.860 [0.558]	0.306 [0.283]	0.240 [4.252]	
Foreign Royalty Payments Dummy	0.029 [0.027]	-0.225*** [0.076]	0.040* [0.021]	-0.140** [0.067]	-0.009 [0.015]	-0.038 [0.032]	0.101** [0.050]	0.009 [0.182]	
Exports to Sales Ratio	0.065* [0.037]	0.287* [0.157]	0.050** [0.020]	0.260** [0.128]	0.028 [0.024]	0.059 [0.082]	0.088* [0.045]	0.284 [4.992]	
Cash Flow to Sales Ratio	-0.002 [0.028]	-0.105 [0.069]	0.000 [0.012]	-0.052 [0.035]	0.014 [0.018]	0.141 [0.132]	-0.080 [0.067]	-0.188 [3.298]	
Clause 49 Dummy	0.006 [0.037]	0.037 [0.191]	0.042* [0.022]	-0.029 [0.096]	-0.011 [0.021]	0.002 [0.046]	-0.002 [0.046]	0.044 [0.801]	
Government Interest Dummy	-0.026 [0.045]	0.385 [0.310]			0.024 [0.053]		-0.042 [0.040]	0.753 [1.678]	
Indian Business Group Affiliation Dummy	-0.050** [0.020]	-0.003 [0.082]	-0.030*** [0.011]	0.013 [0.066]	-0.013 [0.013]				
EMDB Index Constituent Dummy	-0.052*** [0.020]	-0.287*** [0.065]	-0.034*** [0.007]	-0.120* [0.066]	0.006 [0.023]	-0.003 [0.051]	-0.069*** [0.0187]	-0.104 [2.140]	
DR Dummy	0.278*** [0.081]	0.109 [0.188]	0.017 [0.034]	0.684*** [0.230]	0.217*** [0.061]	0.260** [0.117]	0.547*** [0.171]	0.481 [3.327]	
Observations	1204	271	1082	203	1377	392	695	153	
Pseudo R2	0.159	0.412	0.256	0.400	0.218	0.222	0.237	0.592	

Table 8

Foreign investment, Foreign Direct Investment (FDI) and Foreign Institutional Investment (FII).

The table is divided into five panels: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), foreign divestitures, and FDI divestitures. The TFP, Fixed Assets, Wages, Raw Material Expenses, Power and Fuel Expenses and Value of Output columns report the propensity score matched difference-in-differences estimates. Bootstrapped standard errors are reported in brackets. The Common Support columns report the number of firms from the control and treatment groups respectively that have propensity scores on the common support. * significant at 10%; ** significant at 5%; *** significant at 1%.

	t	Difference in Differences Matching Estimates					On Support		
		TFP	Fixed Assets	Wages	Raw Materials	Energy	Output	Controls	Treated
Foreign Investment	0	-0.027 [0.026]	0.068*** [0.024]	0.072** [0.032]	0.128*** [0.039]	0.044 [0.048]	0.108*** [0.033]	1062	138
	1	-0.022 [0.039]	0.152*** [0.044]	0.147*** [0.055]	0.151** [0.069]	0.051 [0.070]	0.198*** [0.053]	933	120
	2	-0.096** [0.046]	0.255*** [0.060]	0.261*** [0.071]	0.303*** [0.074]	0.134 [0.101]	0.333*** [0.064]	641	82
	3	-0.077 [0.070]	0.210** [0.083]	0.273*** [0.096]	0.206** [0.104]	0.260** [0.118]	0.383*** [0.091]	326	42
FDI	0	-0.019 [0.040]	0.029 [0.035]	0.000 [0.034]	0.084 [0.060]	0.067 [0.044]	0.053 [0.046]	1012	65
	1	0.038 [0.066]	0.072 [0.054]	-0.021 [0.060]	0.051 [0.101]	0.000 [0.123]	0.110 [0.072]	901	56
	2	-0.009 [0.072]	0.136 [0.101]	0.043 [0.076]	0.259** [0.117]	0.046 [0.137]	0.238** [0.111]	690	41
	3	0.028 [0.118]	0.019 [0.137]	0.023 [0.118]	0.161 [0.129]	0.041 [0.132]	0.237** [0.101]	393	17
FII	0	-0.003 [0.034]	0.120*** [0.030]	0.090** [0.040]	0.118** [0.051]	-0.028 [0.060]	0.129*** [0.040]	1266	106
	1	-0.021 [0.050]	0.254*** [0.049]	0.274*** [0.058]	0.195** [0.082]	0.134* [0.081]	0.289*** [0.068]	1094	97
	2	-0.098 [0.081]	0.365*** [0.066]	0.402*** [0.083]	0.307*** [0.093]	0.229* [0.118]	0.391*** [0.095]	772	71
	3	-0.190* [0.098]	0.434*** [0.117]	0.507*** [0.129]	0.232** [0.112]	0.431*** [0.142]	0.381*** [0.127]	404	38
Foreign Divestitures	0	0.002 [0.046]	0.029 [0.033]	-0.037 [0.048]	-0.043 [0.065]	-0.133* [0.071]	-0.053 [0.063]	167	100
	1	0.016 [0.046]	0.130*** [0.050]	-0.041 [0.077]	-0.027 [0.102]	-0.164 [0.102]	0.010 [0.088]	137	75
	2	0.072 [0.071]	0.063 [0.064]	-0.165* [0.091]	-0.131 [0.129]	-0.315*** [0.120]	-0.069 [0.116]	76	48
	3	0.016 [0.110]	0.016 [0.110]	-0.325** [0.163]	-0.217 [0.245]	-0.204 [0.141]	-0.246 [0.237]	59	32
FDI Divestitures	0	0.019 [0.052]	0.001 [0.018]	-0.015 [0.051]	-0.016 [0.118]	-0.155 [0.097]	-0.036 [0.107]	150	46
	1	0.054 [0.053]	0.050 [0.056]	-0.095 [0.068]	0.004 [0.125]	-0.376*** [0.111]	-0.022 [0.139]	129	41
	2	0.170*** [0.054]	0.040 [0.080]	-0.090 [0.124]	-0.032 [0.192]	-0.246 [0.174]	0.086 [0.180]	103	31
	3	0.031 [0.126]	0.099 [0.115]	-0.146 [0.142]	-0.106 [0.234]	-0.154 [0.168]	-0.021 [0.185]	69	23

Table 9

Foreign investment in business group vs stand-alone firms.

The table is divided into three panels: foreign investment in business group firms, foreign investment in stand-alone firms, and foreign divestitures in stand-alone firms. The TFP, Fixed Assets, Wages, Raw Material Expenses, Power and Fuel Expenses and Value of Output columns report the propensity score matched difference-in-differences estimates. Bootstrapped standard errors are reported in brackets. The Common Support columns report the number of firms from the control and treatment groups respectively that have propensity scores on the common support. * significant at 10%; ** significant at 5%; *** significant at 1%.

	t	Difference in Differences Matching Estimates					On Support		
		TFP	Fixed Assets	Wages	Raw Materials	Energy	Output	Controls	Treated
Group Firms	0	-0.038 [0.038]	0.041 [0.046]	0.100* [0.051]	0.126** [0.060]	-0.008 [0.097]	0.100** [0.047]	341	49
	1	-0.034 [0.064]	0.069 [0.053]	0.105 [0.080]	0.164* [0.089]	-0.059 [0.161]	0.152* [0.081]	318	45
	2	-0.056 [0.097]	0.101 [0.079]	0.176 [0.108]	0.296*** [0.114]	-0.055 [0.203]	0.247*** [0.082]	221	31
	3	-0.059 [0.126]	0.119 [0.105]	0.189 [0.219]	0.321* [0.173]	0.009 [0.329]	0.289 [0.225]	117	13
Stand-alone Firms	0	-0.021 [0.038]	0.088*** [0.030]	0.063 [0.041]	0.126** [0.054]	0.096* [0.057]	0.127*** [0.047]	606	79
	1	-0.028 [0.067]	0.237*** [0.059]	0.164** [0.075]	0.179* [0.107]	0.160* [0.085]	0.248*** [0.070]	524	63
	2	-0.137** [0.069]	0.394*** [0.108]	0.210** [0.098]	0.338*** [0.122]	0.253*** [0.096]	0.351*** [0.102]	353	40
	3	-0.035 [0.103]	0.229 [0.154]	0.132 [0.103]	0.074 [0.150]	0.214* [0.127]	0.285 [0.177]	175	22
Stand-alone Firms Divestitures	0	-0.009 [0.044]	0.036 [0.047]	0.012 [0.066]	-0.047 [0.181]	-0.029 [0.079]	0.005 [0.134]	102	50
	1	-0.047 [0.061]	0.058 [0.079]	0.097 [0.134]	-0.097 [0.211]	-0.007 [0.078]	0.006 [0.139]	81	35
	2	0.229 [0.166]	0.061 [0.241]	0.105 [0.294]	0.165 [0.349]	-0.201 [0.155]	0.305 [0.334]	47	18
	3	0.257 [0.200]	-0.047 [0.223]	0.192 [0.359]	0.581 [0.523]	-0.076 [0.266]	0.563 [0.558]	36	13

Table 10: Foreign investment in external financing dependent vs less external financing dependent industries.

The table is divided into ten panels by foreign investment type and financing dependence: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), investment in business group firms, and investment in stand-alone firms. The TFP, Fixed Assets, Wages, Raw Material Expenses, Power and Fuel Expenses and Value of Output columns report the propensity score matched difference-in-differences estimates. Bootstrapped standard errors are reported in brackets. The Common Support columns report the number of firms from the control and treatment groups respectively that have propensity scores on the common support. * significant at 10%; ** significant at 5%; *** significant at 1%.

		Difference in Differences Matching Estimates					On Support		
	t	TFP	Fixed As-sets	Wages	Raw Ma-terials	Energy	Output	Controls	Treated
External Financing Dependent	0	-0.029 [0.035]	0.109*** [0.035]	0.076** [0.035]	0.105*** [0.038]	0.048 [0.051]	0.109*** [0.034]	678	80
	1	-0.029 [0.060]	0.192*** [0.057]	0.163*** [0.054]	0.141* [0.084]	0.066 [0.071]	0.217*** [0.071]	592	70
	2	-0.200*** [0.066]	0.333*** [0.077]	0.241*** [0.084]	0.282*** [0.086]	0.123 [0.096]	0.253*** [0.075]	401	47
	3	-0.100 [0.123]	0.312** [0.134]	0.046 [0.133]	0.132 [0.096]	0.074 [0.149]	0.236** [0.105]	197	21
Less External Financing Dependent	0	0.000 [0.029]	-0.003 [0.030]	0.101 [0.074]	0.178** [0.090]	0.053 [0.114]	0.152 [0.096]	384	55
	1	0.002 [0.044]	0.078 [0.075]	0.148* [0.090]	0.185 [0.120]	-0.004 [0.167]	0.193* [0.111]	341	41
	2	0.063 [0.078]	0.133 [0.101]	0.397** [0.160]	0.501*** [0.175]	0.193 [0.214]	0.578*** [0.147]	240	32
	3	-0.061 [0.106]	0.073 [0.095]	0.643*** [0.186]	0.429** [0.209]	0.476** [0.203]	0.752*** [0.284]	129	16
FII External Financing Dependent	0	0.005 [0.046]	0.117*** [0.040]	0.062 [0.055]	0.098 [0.068]	-0.059 [0.078]	0.114** [0.057]	793	76
	1	-0.023 [0.070]	0.242*** [0.067]	0.233*** [0.076]	0.163 [0.104]	0.111 [0.101]	0.263*** [0.081]	686	68
	2	-0.067 [0.110]	0.347*** [0.092]	0.317*** [0.093]	0.258** [0.115]	0.130 [0.142]	0.350*** [0.099]	480	51
	3	-0.204 [0.126]	0.349** [0.144]	0.372** [0.153]	0.244 [0.172]	0.355** [0.169]	0.336** [0.164]	251	26
FII Less External Financing Dependent	0	-0.035 [0.047]	0.142*** [0.043]	0.143** [0.068]	0.176*** [0.068]	0.031 [0.137]	0.148** [0.069]	473	29
	1	-0.066 [0.048]	0.287*** [0.063]	0.409*** [0.103]	0.305*** [0.094]	0.247** [0.114]	0.368*** [0.111]	408	26
	2	-0.166*** [0.060]	0.421*** [0.096]	0.542*** [0.162]	0.384*** [0.129]	0.410*** [0.147]	0.411*** [0.159]	292	18
	3	-0.211** [0.087]	0.621*** [0.198]	0.539** [0.215]	0.128 [0.123]	0.643*** [0.185]	0.221 [0.172]	153	11
FDI External Financing Dependent	0	-0.004 [0.058]	0.002 [0.025]	-0.04 [0.052]	-0.012 [0.059]	0.015 [0.041]	-0.006 [0.051]	620	28
	1	0.044 [0.121]	0.025 [0.051]	-0.067 [0.090]	-0.071 [0.140]	0.019 [0.095]	0.045 [0.074]	549	22
	2	-0.173 [0.125]	0.062 [0.119]	-0.045 [0.134]	0.179 [0.133]	0.068 [0.145]	0.119 [0.115]	414	14
	3	0.124 [0.172]	0.011 [0.184]	-0.324* [0.193]	0.028 [0.148]	-0.230 [0.201]	0.133 [0.131]	239	7

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	t	Difference in Differences Matching Estimates					On Support		
		TFP	Fixed As-sets	Wages	Raw Ma-terials	Energy	Output	Controls	Treated
FDI Less External Financing Dependent	0	-0.008 [0.037]	0.033 [0.058]	0.017 [0.070]	0.169 [0.105]	0.092 [0.082]	0.111 [0.089]	392	35
	1	0.055 [0.068]	0.085 [0.085]	0.003 [0.088]	0.152 [0.126]	-0.017 [0.212]	0.190* [0.114]	352	31
	2	0.116 [0.099]	0.164 [0.118]	0.113 [0.129]	0.430* [0.235]	0.060 [0.233]	0.433** [0.176]	276	24
	3	-0.186 [0.152]	0.076 [0.189]	0.322** [0.146]	0.418** [0.209]	0.349** [0.166]	0.316 [0.201]	154	9
Business Group External Financing Dependent	0	-0.036 [0.053]	0.085 [0.054]	0.111* [0.059]	0.155** [0.067]	0.025 [0.087]	0.137*** [0.053]	216	36
	1	-0.043 [0.070]	0.116* [0.060]	0.086 [0.062]	0.235*** [0.074]	0.021 [0.098]	0.207*** [0.065]	202	33
	2	-0.088 [0.110]	0.162* [0.089]	0.156 [0.106]	0.328*** [0.095]	-0.041 [0.178]	0.225*** [0.078]	139	22
	3	0.051 [0.196]	0.073 [0.185]	-0.222 [0.237]	0.085 [0.263]	-0.383 [0.406]	-0.007 [0.196]	62	7
Business Group Less External Financing Dependent	0	-0.080 [0.067]	-0.083 [0.095]	0.078 [0.055]	0.041 [0.111]	0.144 [0.091]	0.002 [0.056]	125	11
	1	0.004 [0.171]	-0.046 [0.124]	0.050 [0.245]	-0.129 [0.271]	-0.204 [0.753]	-0.048 [0.235]	116	10
	2	0.094 [0.290]	-0.122 [0.133]	-0.001 [0.195]	-0.006 [0.173]	-0.156 [0.703]	0.115 [0.143]	82	7
	3	-0.193* [0.115]	0.134 [0.155]	0.434** [0.217]	0.294** [0.150]	0.681* [0.354]	0.294 [0.253]	55	5
Stand-alone Firms External Financing Dependent	0	-0.007 [0.061]	0.094** [0.046]	0.05 [0.056]	0.087 [0.068]	0.064 [0.081]	0.119** [0.055]	398	38
	1	0.023 [0.099]	0.242** [0.099]	0.184* [0.097]	0.066 [0.181]	0.077 [0.114]	0.229* [0.127]	344	30
	2	-0.339*** [0.096]	0.494*** [0.146]	0.245* [0.125]	0.265 [0.196]	0.312** [0.123]	0.268* [0.138]	229	21
	3	-0.113 [0.174]	0.400* [0.241]	0.028 [0.159]	-0.027 [0.174]	0.15 [0.205]	0.248 [0.159]	117	11
Stand-alone Firms Less External Financing Dependent	0	0.001 [0.038]	0.035 [0.046]	0.037 [0.061]	0.165** [0.079]	0.058 [0.076]	0.122 [0.078]	208	37
	1	-0.013 [0.058]	0.150 [0.092]	0.088 [0.086]	0.251* [0.132]	0.134 [0.097]	0.223* [0.120]	180	32
	2	0.070 [0.086]	0.284* [0.153]	0.184 [0.143]	0.493*** [0.185]	0.188 [0.193]	0.474*** [0.177]	124	18
	3	0.002 [0.167]	0.057 [0.157]	0.240 [0.160]	0.409 [0.361]	0.253 [0.199]	0.398 [0.415]	58	9

Table 11: Foreign investment in high growth vs low growth industries.

The table is divided into ten panels by foreign investment type and industry growth: foreign investment, foreign direct investment (FDI), foreign institutional investment (FII), investment in business group firms, and investment in stand-alone firms. The TFP, Fixed Assets, Wages, Raw Material Expenses, Power and Fuel Expenses and Value of Output columns report the propensity score matched difference-in-differences estimates. Bootstrapped standard errors are reported in brackets. The Common Support columns report the number of firms from the control and treatment groups respectively that have propensity scores on the common support. * significant at 10%; ** significant at 5%; *** significant at 1%.

		Difference in Differences Matching Estimates						On Support	
	t	TFP	Fixed As- sets	Wages	Raw Ma- terials	Energy	Output	Controls	Treated
High Growth	0	-0.038 [0.028]	0.066** [0.031]	0.091** [0.043]	0.124** [0.053]	0.039 [0.076]	0.098* [0.051]	638	81
	1	-0.046 [0.044]	0.149** [0.062]	0.163*** [0.059]	0.170* [0.090]	-0.020 [0.091]	0.162* [0.083]	574	68
	2	-0.095 [0.078]	0.309*** [0.088]	0.304*** [0.095]	0.319*** [0.118]	0.078 [0.133]	0.319*** [0.096]	401	48
	3	-0.016 [0.086]	0.276** [0.126]	0.293** [0.135]	0.197 [0.147]	0.139 [0.143]	0.354** [0.143]	212	24
Low Growth	0	0.010 [0.042]	0.065* [0.038]	0.023 [0.045]	0.142** [0.058]	0.012 [0.051]	0.125*** [0.045]	424	57
	1	0.039 [0.082]	0.165** [0.071]	0.092 [0.072]	0.163* [0.087]	0.075 [0.091]	0.258*** [0.063]	359	50
	2	-0.084 [0.067]	0.183** [0.085]	0.167* [0.089]	0.342*** [0.091]	0.190** [0.092]	0.371*** [0.092]	240	32
	3	-0.120 [0.161]	0.101 [0.136]	0.132 [0.160]	0.296* [0.151]	0.246 [0.211]	0.402** [0.166]	114	14
FII High Growth	0	0.010 [0.043]	0.101*** [0.035]	0.078 [0.056]	0.087 [0.066]	-0.045 [0.101]	0.101** [0.051]	752	63
	1	-0.021 [0.064]	0.205*** [0.068]	0.234*** [0.083]	0.190 [0.121]	0.068 [0.118]	0.236*** [0.088]	667	56
	2	-0.052 [0.088]	0.321*** [0.105]	0.370*** [0.106]	0.297** [0.128]	0.142 [0.144]	0.365*** [0.112]	475	44
	3	-0.053 [0.125]	0.463*** [0.162]	0.458** [0.193]	0.180 [0.137]	0.328 [0.213]	0.432** [0.182]	257	23
FII Low Growth	0	-0.029 [0.046]	0.163*** [0.056]	0.104* [0.054]	0.164** [0.066]	0.018 [0.083]	0.165** [0.066]	514	41
	1	-0.029 [0.099]	0.296*** [0.089]	0.334*** [0.107]	0.233** [0.096]	0.263*** [0.097]	0.404*** [0.095]	427	36
	2	-0.208* [0.124]	0.399*** [0.115]	0.413*** [0.154]	0.365*** [0.098]	0.359** [0.169]	0.461*** [0.121]	297	24
	3	-0.433** [0.201]	0.376 [0.311]	0.512* [0.274]	0.298* [0.175]	0.519* [0.298]	0.283 [0.178]	147	11
FDI High Growth	0	-0.033 [0.030]	0.008 [0.039]	0.033 [0.046]	0.076 [0.067]	0.097* [0.057]	0.052 [0.070]	640	39
	1	0.015 [0.060]	0.067 [0.073]	0.038 [0.100]	0.072 [0.119]	-0.062 [0.191]	0.089 [0.116]	580	33
	2	0.008 [0.101]	0.146 [0.134]	0.137 [0.137]	0.204 [0.166]	-0.006 [0.240]	0.215 [0.144]	451	24
	3	0.139 [0.150]	0.065 [0.189]	0.132 [0.094]	0.236 [0.224]	-0.029 [0.124]	0.321** [0.156]	272	7

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		Difference in Differences Matching Estimates					On Support		
t	TFP	Fixed As- sets	Wages	Raw Ma- terials	Energy	Output	Controls	Treated	
FDI Low Growth	0	-0.011 [0.076]	0.082 [0.075]	-0.074 [0.068]	0.087 [0.116]	0.031 [0.085]	0.032 [0.074]	372	22
	1	0.066 [0.136]	0.125 [0.160]	-0.113 [0.078]	-0.029 [0.153]	0.099 [0.104]	0.123 [0.093]	321	21
	2	-0.043 [0.106]	0.114 [0.154]	-0.122 [0.136]	0.306 [0.200]	0.113 [0.142]	0.237 [0.146]	239	15
	3	0.031 [0.161]	-0.028 [0.201]	-0.201 [0.208]	0.143 [0.125]	-0.054 [0.279]	0.219 [0.190]	121	8
Business Group High Growth	0	-0.017 [0.048]	0.039 [0.056]	0.052 [0.058]	0.019 [0.055]	-0.087 [0.169]	0.039 [0.055]	216	28
	1	-0.034 [0.085]	0.044 [0.076]	0.092 [0.128]	0.062 [0.136]	-0.167 [0.268]	0.079 [0.115]	201	24
	2	-0.033 [0.136]	0.078 [0.112]	0.124 [0.159]	0.173 [0.145]	-0.124 [0.306]	0.192 [0.135]	143	17
	3	0.066 [0.157]	0.104 [0.145]	0.239 [0.349]	0.513** [0.212]	-0.142 [0.526]	0.441 [0.336]	79	7
Business Group Low Growth	0	-0.006 [0.068]	0.016 [0.081]	0.072 [0.055]	0.238** [0.095]	-0.01 [0.079]	0.140*** [0.053]	125	20
	1	0.022 [0.085]	0.07 [0.102]	0.046 [0.091]	0.287** [0.118]	-0.015 [0.112]	0.242** [0.096]	117	20
	2	-0.064 [0.137]	0.127 [0.107]	0.162 [0.193]	0.499*** [0.146]	0.024 [0.227]	0.338** [0.149]	78	13
	3	-0.421*** [0.145]	0.221 [0.187]	0.357 [0.274]	0.338 [0.374]	0.449 [0.422]	0.275 [0.286]	38	3
Stand-alone Firms High Growth	0	-0.026 [0.027]	0.077* [0.041]	0.075 [0.051]	0.148** [0.072]	0.09 [0.075]	0.133** [0.066]	359	46
	1	-0.033 [0.050]	0.228** [0.101]	0.189* [0.105]	0.245* [0.138]	0.117 [0.103]	0.259** [0.116]	319	37
	2	-0.174** [0.087]	0.494*** [0.141]	0.346** [0.135]	0.375** [0.172]	0.251* [0.144]	0.362** [0.147]	216	26
	3	-0.020 [0.095]	0.327 [0.237]	0.206 [0.130]	0.078 [0.189]	0.117 [0.145]	0.256 [0.182]	112	12
Stand-alone Firms Low Growth	0	0.001 [0.083]	0.094* [0.050]	0.043 [0.073]	0.109 [0.091]	0.049 [0.075]	0.139* [0.075]	247	26
	1	-0.008 [0.186]	0.252** [0.121]	0.149 [0.125]	0.113 [0.193]	0.201 [0.157]	0.276** [0.134]	205	22
	2	-0.062 [0.139]	0.181 [0.154]	-0.027 [0.118]	0.312* [0.167]	0.176 [0.138]	0.361** [0.165]	137	13
	3	-0.063 [0.323]	0.082 [0.233]	0.031 [0.268]	0.139 [0.267]	0.210 [0.286]	0.440 [0.271]	63	7

Table A.1

Balancing Tests from Propensity Score Matching. Foreign Investment.

Foreign investment is defined as a foreign shareholding increase by 10% or more. Control group firms are assigned a counterfactual time of treatment following the distribution of actual events in the data. The Treated and Control Columns report variable means for the treatment and control groups respectively. The % Bias column reports the percent difference between the treatment and control group means. The % Reduction in Bias records the percent drop in bias after matching. The t-test columns report difference in means t-test statistics. For each variable the treatment and control groups are compared twice: once unmatched and once matched. All variables except company age, foreign holding, and dummy variables are winsorized at the 2.5% level. Variable definitions are found in Table 3. * significant at 10%; ** significant at 5%; *** significant at 1%.

		Mean		%Bias	%Reduct. in Bias	t-test	
		Treated	Control			t	$p > t $
Lag Company Age	Unmatched	29.113	28.943	0.9		0.1	0.922
	Matched	29.300	30.773	-7.6	-766.1	-0.63	0.526
Lag Log Fixed Assets	Unmatched	-0.282	-1.071	52.5		5.72***	0
	Matched	-0.315	-0.365	3.3	93.7	0.27	0.79
Lag Fixed Assets Growth	Unmatched	0.071	0.031	20.9		2.5**	0.013
	Matched	0.067	0.058	4.5	78.3	0.36	0.72
Lag Industry Market Share	Unmatched	0.007	0.004	17.3		2.2**	0.028
	Matched	0.006	0.006	-0.6	96.7	-0.07	0.946
Lag Relative TFP	Unmatched	0.060	0.272	-21.3		-2.51**	0.012
	Matched	0.081	0.095	-1.4	93.5	-0.11	0.91
Lag TFP Growth	Unmatched	-0.017	0.029	-18.9		-2.01**	0.044
	Matched	-0.012	-0.007	-2.3	87.9	-0.16	0.87
Lag Foreign Share %	Unmatched	14.094	5.851	46		5.91***	0
	Matched	14.138	12.675	8.2	82.2	0.58	0.564
Lag Foreign Capital Spend. Ratio	Unmatched	0.024	0.011	29.2		4.11***	0
	Matched	0.021	0.021	1.2	96	0.1	0.921
Lag Foreign Royalties Dummy	Unmatched	0.310	0.155	37.1		4.6***	0
	Matched	0.307	0.276	7.4	80	0.57	0.571
Lag Exports to Sales Ratio	Unmatched	0.186	0.148	15.8		1.81*	0.07
	Matched	0.177	0.170	2.9	81.8	0.24	0.808
Lag Cash Flow to Sales Ratio	Unmatched	0.078	0.074	1.3		0.12	0.907
	Matched	0.076	0.072	1.5	-16	0.15	0.878
Clause 49 Dummy	Unmatched	0.613	0.615	-0.5		-0.05	0.96
	Matched	0.614	0.634	-4	-792.9	-0.34	0.735
Government Interest Dummy	Unmatched	0.021	0.017	3.1		0.36	0.721
	Matched	0.021	0.031	-6.9	-124.7	-0.49	0.624
Indian Business Group Dummy	Unmatched	0.373	0.412	-8		-0.89	0.373
	Matched	0.379	0.407	-5.8	28.1	-0.48	0.631
EMDB Index Constit. Dummy	Unmatched	0.120	0.053	24		3.15***	0.002
	Matched	0.114	0.131	-5.9	75.6	-0.42	0.678
ADR Dummy	Unmatched	0.155	0.026	45.8		7.37***	0
	Matched	0.143	0.134	3.1	93.2	0.21	0.832
Number of Firms		142	1062				
Number of Firms on Support		140	1062				
Median ABS	Unmatched	9.01					
	Matched	3.27					

Table A.2

Balancing Tests from Propensity Score Matching. Foreign Divestitures.

Foreign divestitures are defined as a foreign shareholding drop below 10%. Control group firms are assigned a counterfactual time of divestiture following the distribution of actual events in the data. The Treated and Control Columns report variable means for the treatment and control groups respectively. The % Bias column reports the percent difference between the treatment and control group means. The % Reduction in Bias records the percent drop in bias after matching. The t-test columns report difference in means t-test statistics. For each variable the treatment and control groups are compared twice: once unmatched and once matched. All variables except company age, foreign holding, and dummy variables are winsorized at the 2.5% level. Variable definitions are found in Table 3. * significant at 10%; ** significant at 5%; *** significant at 1%.

		Mean		%Bias	%Reduct. in Bias	t-test	
		Treated	Control			t	$p > t $
Lag Company Age	Unmatched	25.125	35.15	-52.1		-4.02***	0
	Matched	25.049	22.683	12.3	76.4	1.13	0.259
Lag Log Capital	Unmatched	-0.622	-0.277	-23.4		-1.89*	0.06
	Matched	-0.655	-0.510	-9.8	58.2	-0.68	0.499
Lag Fixed Assets Growth	Unmatched	0.072	0.030	28.7		2.32**	0.021
	Matched	0.071	0.068	1.9	93.3	0.14	0.891
Lag Industry Market Share	Unmatched	0.004	0.007	-12.8		-0.95	0.342
	Matched	0.003	0.004	-1.3	90.1	-0.28	0.781
Lag Relative TFP	Unmatched	0.134	0.013	11.8		0.95	0.342
	Matched	0.160	0.165	-0.5	96.1	-0.03	0.972
Lag TFP Growth	Unmatched	0.014	-0.002	7.6		0.61	0.539
	Matched	0.016	0.055	-18.1	-138	-1.37	0.172
Lag Foreign Share %	Unmatched	20.398	43.425	-126.4		-9.7***	0
	Matched	20.56	22.986	-13.3	89.5	-1.26	0.211
Lag Foreign Capital Spend. Ratio	Unmatched	0.031	0.033	-2.3		-0.18	0.86
	Matched	0.029	0.031	-1.3	42.8	-0.14	0.889
Lag Foreign Royalties Dummy	Unmatched	0.163	0.503	-76.9		-5.96***	0
	Matched	0.167	0.153	3.2	95.9	0.27	0.787
Lag Exports to Sales Ratio	Unmatched	0.219	0.134	35.1		2.91***	0.004
	Matched	0.214	0.161	21.6	38.5	1.4	0.164
Lag Cash Flow to Sales Ratio	Unmatched	0.080	0.130	-9.1		-0.66	0.51
	Matched	0.080	0.111	-5.5	39	-0.62	0.538
Clause 49 Dummy	Unmatched	0.635	0.605	6.1		0.49	0.625
	Matched	0.627	0.455	35.3	-476.6	2.49**	0.014
Government Interest Dummy	Unmatched	0.019	0.024	-3.2		-0.26	0.798
	Matched	0.020	0.035	-10.5	-225	-0.67	0.504
Indian Business Group Dummy	Unmatched	0.452	0.305	30.4		2.46**	0.015
	Matched	0.441	0.521	-16.6	45.3	-1.14	0.254
EMDB Index Constit. Dummy	Unmatched	0.038	0.198	-50.7		-3.79***	0
	Matched	0.039	0.037	0.8	98.5	0.09	0.93
ADR Dummy	Unmatched	0.077	0.066	4.3		0.35	0.73
	Matched	0.078	0.020	22.6	-428.9	1.94	0.054
Number of Firms		104	167				
Number of Firms on Support		102	167				
Median ABS	Unmatched	9.99					
	Matched	8.55					