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**Anusha Chari**

**Wenjie Chen**

**Kathryn M. E. Dominguez**

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Anusha Chari\*  
University of North Carolina at Chapel Hill and NBER

Wenjie Chen\*\*  
George Washington University

Kathryn M.E. Dominguez\*\*\*  
University of Michigan and NBER

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**Abstract**

This paper examines the recent upsurge in foreign direct investment by emerging-market firms into the United States. Traditionally, direct investment flowed from developed to developing countries, bringing with it superior technology, organizational capital, and access to international capital markets, yet increasingly there is a trend towards “capital flowing uphill” with emerging market investors acquiring a broad range of assets in developed countries. Using transaction-specific information and firm-level accounting data we evaluate the operating performance of publicly traded U.S. firms that have been acquired by firms from emerging markets over the period 1980-2007. Our empirical methodology uses a difference-in-differences approach combined with propensity score matching to create an appropriate control group of non-acquired firms. The results suggest that emerging country acquirers tend to choose U.S. targets that are larger in size (measured as sales, total assets and employment), relative to matched non-acquired U.S. firms before the acquisition year. In the years following the acquisition, sales and employment decline while profitability rises, suggesting significant restructuring of the target firms.

Key words: foreign direct investment, capital flows, emerging markets, acquisitions, firm performance,

JEL Classification: F21, F37, G34

\*\*\* Corresponding Author: Professor of Public Policy and Economics, Gerald R. Ford School of Public Policy and Department of Economics, University of Michigan, 735 South State Street, Ann Arbor, MI 48109-3091, email: [kathrynd@umich.edu](mailto:kathrynd@umich.edu), phone: 734-764-9498.

\*Department of Economics, Gardner Hall, University of North Carolina at Chapel Hill, Chapel Hill NC 27576 email: [achari@unc.edu](mailto:achari@unc.edu), phone: 919-966-5346 .

\*\*International Business Department, George Washington University, School of Business, 2201 G Street, NW, Fonger Hall, Suite 401, Washington, D.C. 20052, email: [chenw@gwu.edu](mailto:chenw@gwu.edu), phone: 202.994.7130.

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## 1. Introduction

This paper examines the recent upsurge in foreign direct investment by emerging-market firms into the United States. Traditionally, foreign investment flowed from developed to developing countries, bringing with it superior technology, organizational capital, and access to international capital markets, yet increasingly there is a trend towards “capital flowing uphill” with emerging-market investors acquiring a wide variety of assets in the developed world.<sup>1</sup> In particular, the recent spate of cross-border acquisitions by Indian and Chinese companies is the subject of heated debate in policy circles. For example, the acquisition bid by CNOOC, the Chinese state-owned oil company, to takeover Unocal met with considerable resistance in Washington and was ultimately thwarted. Another example of a high profile emerging-market acquisition was the Indian Tata Motors 2008 purchase of Ford's Jaguar and Land Rover divisions. Using transaction-specific acquisition data and firm-level accounting data, this paper studies how U.S. firms that are acquired by firms from emerging markets fare relative to their non-acquired counterparts.

The first hypothesis we examine, based on evidence from developed-market foreign direct investment (FDI) flows to emerging markets, is whether foreign ownership is associated with improvements in firm-profitability or plant-productivity (Caves, 1996, Aitken and Harrison, 1999, Perez-Gonzales, 2005, Arnold and Javorcik, 2005, Petkova, 2007).<sup>2,3</sup> Antras,

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<sup>1</sup> According to estimates by the International Monetary Fund (IMF), the developing economies as a group had a current account surplus of \$640 billion in 2007 (IMF, 2007). Because the financial counterpart to this surplus is a deficit on the financial accounts, it represents the net capital outflow to the industrial economies. Just two years earlier, in 2005, net capital flowed in the other direction (the developing economies as a group reported a gross capital inflow of \$720 billion).

<sup>2</sup> Previous studies have focused on the effects of FDI on plant-level productivity measures such as total factor productivity (TFP) or labor productivity (output per worker). Using firm-level financial data, the focus of our paper is on an accounting measure of profitability (ROA) in line with operating performance studies that attempt to identify the sources of gains from acquisitions. The rationale in these studies is that if there are gains from acquisitions they should be eventually reflected in firms' cash flows.

Desai, and Foley (2008) document the productivity-improving role of U.S. multinational firms. They find that U.S. multinationals are able to exploit technologies abroad through FDI, especially in countries where monitoring is non-verifiable and financial frictions exist. Fukao et al. (2006) compare domestic to foreign M&A in Japan and find that Japanese target firms that receive foreign investment experience more rapid improvements in productivity and profitability than those that were acquired by domestic firms.<sup>4</sup>

In the case of recent emerging-market acquisitions, while the role of sovereign wealth funds and the build-up of U.S. dollar reserves in emerging-markets are seen as motivations for acquisitions in developed-markets, we recognize that the productivity-improving role of technology transfers from emerging to developed markets is not obvious, especially in light of the vast differences in capital-labor and output-labor ratios between these two sets of markets (as shown in Figure 1). In this context it is worth noting that Forbes (2008) finds evidence that foreigners hold greater shares of their investment portfolios in the United States if they have less developed financial markets, suggesting that our focus on FDI by emerging market firms may provide insights into the implications of broader investment trends into the U.S.<sup>5</sup>

The second hypothesis from traditional theories of FDI that we examine relies on comparative input costs as the motivating rationale for investment flows from developed to emerging markets. Whereas industrial country acquirers often seek lower labor costs in emerging-markets, we hypothesize that emerging-market acquirers may relocate (or in-source) manufacturing activity while keeping existing distribution networks in the host country of the

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<sup>3</sup> FDI includes “Greenfield” investment in new assets in a foreign country, and acquisition of pre-existing foreign assets (also termed “Brownfield” investment).

<sup>4</sup> Akben-Selçuk (2008) studies a similar issue using data on Turkish firms.

<sup>5</sup> Other common motivations for overseas expansions by emerging-market firms include: 1) entering new markets, 2) obtaining natural resources, and 3) acquiring advanced technology and related brand equity (see Wells (1983) and reports by Citigroup (2005) and Boston Consulting Group (2005)). For example, Lenovo's 2004 purchase of IBM's personal computer business, involved entry into the U.S. market, acquisition of technology, and of an established brand. CNOOC's bid for Unocal, points to emerging market demand for natural resources.

acquired business. The idea here is that emerging-market firms come from environments where labor costs are low and they may be in the position to in-source jobs by exploiting the low wages in their home countries by downsizing labor-intensive activities in the U.S. following the acquisition.

The transaction-specific data on cross-border Mergers and Acquisitions (M&As) used in this paper come from the Thomson Financial SDC Platinum database that records all M&As involving U.S. firms that were announced between January 1, 1980 and July 1, 2007. We focus on publicly traded U.S. targets both because open financial markets in the U.S. have led to a substantial number of cross-border M&As, and because public U.S. firms are required to disclose detailed accounting data. The work that follows complements the existing literature on post-acquisition firm performance. The focus on acquisitions made by emerging country firms allows us to test the general applicability of theories of FDI flows for firms in apparently capital scarce markets.

To evaluate the impact of emerging-country acquisitions on U.S. firm performance and restructuring we examine both stock market and accounting measures. The stock market measure, abnormal announcement returns, provides a forward-looking estimate of expected shareholder value creation. After the acquisition has taken place accounting measures of performance such as profitability, investment, sales and employment allow us to evaluate the changes in the of U.S. targets.

The first empirical challenge we face in estimating post-acquisition outcome variables is one of causality versus selection. Are emerging-market firms simply picking certain types of acquisition targets or do foreign acquisitions change target-firm performance? There is some evidence in the literature on how acquirers select targets. In particular, the Froot and Stein (1991)

model shows that asymmetric information could lead foreign firms to buy U.S. firms in times when the value of the U.S. dollar is low relative to the foreign currency. They provide empirical evidence of a negative relationship between the value of the dollar and FDI flows into the U.S. using aggregate FDI data, and this relationship is also explored in Chen (2008b) using more detailed firm-level data. Harris and Ravenscraft (1990) find evidence that foreign firms prefer technology-intensive industries, Rossi and Volpin (2004) find that targets are typically from countries with poorer investor protection than their acquirers' countries, and Haskel, Pereira and Slaughter (2007) describe how U.S. states differ in their incentive packages and taxes with regards to foreign acquirers.<sup>6</sup> We also find evidence of selection in that emerging-country firms tend to acquire public U.S. targets with relatively high levels of sales, employment and total assets.

Crucial to any comparison between pre-and post-acquisition operating performance of target firms is therefore the issue of selecting an appropriate expected performance benchmark in the absence of the acquisition (Andrade et. al., 2001). The fact is that some firms get acquired while others do not. Ideally, one would like to compare the performance of a firm that receives foreign investment to the performance of the firm's identical twin with no foreign investment.

Methodologically, an alternative design of the control group could involve the comparison of the post-acquisition performance of firms acquired by emerging-markets with those acquired by either other U.S. firms or other developed-market firms. For instance, Chen (2008a) explores the question of whether, given that a firm is acquired, the country of origin of the acquirer matters (so that the control group is other acquired firms rather than non-acquired firms). Chen finds that compared to domestic acquisitions, U.S. target firms acquired by foreign

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<sup>6</sup> At the Federal level there were few legal restrictions on FDI into the United States during the time period studied here, although more stringent laws were recently put into place in order to restrict FDI that threatens U.S. "national security"; these restrictions came into effect in 2007. See: <http://www.ustreas.gov/offices/international-affairs/cfius/>

firms (either from emerging markets or from industrialized countries) experience higher return on assets. However, these performance improvements stem from channels that differ depending on the type of foreign acquirer. Emerging market acquisitions lead to reductions in sales and employment, whereas acquisitions by industrial country firms increase sales and employment in U.S. targets. The results of this study reflect similar patterns in performance improvements and restructuring processes within the U.S. targets that are acquired by emerging market firms.

In this paper we ask the counterfactual question: what would have happened to those firms that did, in fact, receive foreign ownership, if they had not received it? While this exact counterfactual is not typically observable, propensity score matching, which involves selecting a “control” group of non-acquired firms closely matched to the “treatment” group of acquired firms, is one way to create sets of such twins artificially. Propensity score matching can then be combined with difference-in-differences estimates to eliminate time-invariant and unobservable differences between the acquired and non-acquired firms.

The methodology used here is widely used in the labor economics literature to evaluate the impact of social programs or schooling, on individual earnings or other measures of performance (Ashenfelter, 1978, Angrist and Krueger, 2000, Dahejia and Wahba, 2002). The use of these methods is, however, relatively recent in corporate finance (see Petkova, 2007, Bartram, Brown and Stulz, 2009, for examples)

In order to measure the profitability of U.S. target firms after they are acquired, we focus on the accounting measure of operating income before depreciation, amortization and taxes (OIBD). In order to control for the relative size of the target firm, we scale OIBD by total assets, thus focusing on return on assets (ROA). We also track changes in other aspects of target-firm

operations, such as property, plant and equipment, employment, and sales following the acquisition.

We find that the stock price response of target firms is positive and significant around the time of acquisition announcement. Average cumulative returns on the target stock price within a three-day window around the announcement date of the acquisition increase by 8%. This return remains significant and positive when we extend the window to ten and twenty-one business days.

Correspondingly, we find that after acquisition the profitability of acquired targets improves. The target firm's return on assets increases by 7% in the five years following acquisition. Further, there is strong evidence that acquiring firms undertake significant restructuring of target firms. Relative measures of employment, sales and plant, property and equipment (PP&E) in the target firms decrease in the years after acquisition. Increasing profitability is consistent with the hypothesis that foreign ownership is associated with improvements in plant productivity (Aitken and Harrison, 1999, Perez-Gonzales, 2005, Arnold and Javorcik, 2005, Petkova, 2007).

In addition, the pattern of increasing profitability (income/assets) and declining sales is consistent with improvements in firm-efficiency following acquisition. For instance if firms shut down or get rid of unprofitable divisions, sales would go down but profits as a percent of assets would increase. Also, declining employment and net PP&E suggest downsizing of divisions to improve overall profitability as a percent of assets.

The downsizing of employment is consistent with the comparative input cost hypothesis where acquirers from emerging markets may be in a position to exploit the low wages in their home countries by downsizing labor-intensive activities in the U.S. following the acquisition.



The U.S. target experiences declining sales accompanied by improvements in profitability, suggesting more streamlined but efficient operations following restructuring by the emerging-market acquirer.

The remainder of the paper is structured as follows. Section 2 reviews the existing literature. Section 3 introduces the various datasets employed in the empirical analysis. The details of the difference-in-differences propensity score matching estimator are explained in Section 4. Section 5 presents the empirical results, section 6 presents robustness checks and Section 7 concludes.

## **2. Related Literature**

A large empirical literature compares the productivity of foreign-owned versus domestic-owned firms. Doms and Jensen (1995) find that foreign-owned companies in the U.S. are more productive than domestic-owned ones, but are on average less productive than U.S.-owned multinational companies. A number of studies have investigated the causal link between foreign ownership and plant performance, where the target firm is usually situated in an emerging market while the acquirer firm is from a developed market.

Aitkin and Harrison (1999) conclude from a sample of Venezuelan firms that foreign ownership is correlated with productivity improvements. Using detailed plant-level information from Mexico, Perez-Gonzales (2005) finds that multinational control leads to large improvements in total factor productivity, particularly in industries that rely on technological innovations from their parent companies. Arnold and Javorcik (2005) use plant-level data from Indonesia and find that foreign ownership leads to significant improvements in productivity in the year of acquisition as well as in subsequent years. Petkova (2008) conducts a similar study

using Indian plant level data and concludes that foreign owned plants experience improvements in productivity three years following foreign investment.

In the developed-market context, a series of papers concentrating on acquisition targets in the United Kingdom, Girma et al. (Girma, 2005; Girma et al., 2006, 2007) document improvements in growth rates of firm performance following foreign acquisitions. These studies, however, do not specifically differentiate between emerging and developed country acquirers. Antkiewicz and Whalley (2006) highlight several case studies of recent completed and failed attempts by Chinese companies to acquire firms in the OECD. They suggest that the recent wave of Chinese outbound M&A is driven by the necessity to acquire access to resources, new technology and distribution networks in the target country.

Our study is also related to studies analyzing the effects of foreign and domestic M&As on firm stock market outcomes. Harris and Ravenscraft (1991) examine the effects of inbound U.S. FDI on shareholder wealth over the period 1970-1987 and find that target firm wealth gains are significantly higher in cross-border takeovers than in domestic acquisitions. While they do not focus on the country of origin of the acquiring firms, over their sample period, there were very few emerging-market acquisitions of U.S. firms.<sup>7</sup>

Healy, Palepu and Ruback (1992) analyze the operating performance for the combined firm in domestic acquisitions relative to the industry median and show that the operating cash flows of merged firms actually drop from their pre-merger level on average, but that the non-merging firms in the same industry drop considerably more. Thus, the post-merger combined operating performance improves relative to the industry benchmark. Andrade et. al (2001) use an annual cross sections methodology similar in spirit to Fama and Macbeth (1973) and find that

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<sup>7</sup> Edward and Krugman (1995) provide a comprehensive empirical analysis of the growth of inward U.S. FDI from other industrial countries, focusing on economic and national security implications.

post-merger operating margins (cash flow to sales) improve, on average, relative to industry benchmarks. Using propensity score matching, we find that the return on assets for acquired firms increases significantly relative to the matched control group of non-acquired firms.

### **3. Data Description**

Our data sample contains all M&As involving U.S. firms initiated by firms in emerging markets that were announced between January 1, 1980 and July 1, 2007 reported by SDC Platinum, a database from Thomson Financial. The data include all public and private M&A transactions involving at least 5% ownership<sup>8</sup> of a target firm in the U.S.<sup>9</sup> SDC collates information from over 200 English and foreign language news sources, SEC filings and the filings from its international counterparts, trade publications, news wire reports, and proprietary surveys of investment banks, law firms, and other advisory firms.

For each transaction, the SDC database provides the date on which the transaction was first announced as well as the date on which the transaction became effective. The database provides characteristics of the target and acquiring firms including: name, nation, industry sector, and primary North American Industry Classification System (NAICS). The database also includes transaction-specific information on percent of shares acquired, the percent of shares owned before and after the transaction is completed, the percent of shares sought by the acquiring firm, and the method of payment.

Over the sample period, SDC covered 7,996 completed M&A transactions between a foreign acquirer and a U.S. target. Out of that total number, 2,368 M&A transactions (30%) were

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<sup>8</sup> The IMF and the OECD define FDI using a 10% threshold, though a broader definition of FDI is ownership of an amount of shares or voting power that allows participation in the management or control of the target firm.

<sup>9</sup> See Appendix A for a full list of the markets included in the database.

conducted between foreign firms and publicly traded U.S. targets. The focus of the analysis in the paper is on the subsample of 480 outbound M&A transactions by emerging country firms and U.S. target firms that remain publicly traded after acquisition. Furthermore, we eliminate countries that are tax havens, e.g. Bahamas, Bermudas<sup>10</sup>, etc. which leaves us with a sample of 259 M&A transactions. Among the remaining deals, 81 transactions involve multiple acquisitions of the same target. We only include the first of multiple acquisitions in our dataset as we are interested in what happens to a U.S. target when it is first acquired by an emerging-market firm. This trims our sample to 214 transactions. Where information is available, these observations cover M&A transactions that result in a change in majority control in the target firm as well as acquisitions of minority shares. Most of our observations include information on the method of payment, the value of the transaction, and the NAICS codes of the respective acquirer and target firms.

Data on the U.S. target firms come from Compustat and the Center for Research in Securities Prices (CRSP). Compustat reports financial statement data and CRSP contains stock return information. Information provided in SDC on our target firms allows matching across these databases. During this process, we lose observations because some of the target firms are renamed after acquisition or are delisted. The availability of data in Compustat varies significantly by year and by variable. For example, the employment variable is only reported on a voluntary basis in Compustat. Out of the original 214 transactions between emerging country acquirers and public U.S. targets in the SDC dataset, roughly 120 firms (56%) have accounting performance variables reported in Compustat over the five years post-acquisition and 175 firms (81%) have usable stock returns data in CRSP.

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<sup>10</sup> See Appendix A for a list of tax-haven markets as defined by the OECD (2008).

Table 1 presents information by country of origin on the number and value of acquisitions of U.S. firms. The top five emerging market countries whose firms acquired U.S. targets over the period 1980-2007 are: Hong Kong, Singapore, Mexico, South Korea, and Taiwan. Figure 2 displays the number of publicly traded U.S. firms that were acquired by emerging country firms by year; acquisitions occurred in each of the years in our sample. In about half of all M&As reported in SDC information is available on the value of the deal. Figure 3 presents this information together with the number of deals and the industry in which the target firm is located. In the figure the surface area of each bubble shows the total value of deals within each one-digit industry sector, while the location of the bubble is determined by the average value and the total number of deals within an industrial sector. The figure indicates that in about half of all transactions the target firm is in the manufacturing sector and the average value of acquisitions in the manufacturing sector is much larger than the value of acquisitions in other industries.

Table 2 displays the top 20 deals by acquisition value between emerging country firms and public U.S. targets. About half of the top twenty M&A transactions are horizontal, meaning that the acquirer and the target are in the same industry. In our full sample about one sixth of the deals involve horizontal M&As and about one third of the deals involve an acquisition of 50 percent or more of the target. Finally, Table 3 provides average accounting information (OIBD, sales and employment) for the target firms sorted by NAICS industry.

## 4. Empirical Strategy

### 4.1 Difference-in-Differences Matching Estimation

It seems unlikely that emerging-country firms acquire U.S. firms at random. As discussed in the introduction, ideally, in order to evaluate the impact of foreign ownership we would like to have information on the set of prospective firms from which the target was selected. In other words, we would like to compare the performance of a firm that receives foreign investment to the performance of the firm's identical twin (or multiple) with no foreign investment<sup>11</sup>. While this sort of twin or "runner-up" firm is not generally observable, we use propensity score matching techniques to identify a control group of non-acquired U.S. firms that closely match the U.S. targets.<sup>12</sup> A firm is "selected" into the control group if it is sufficiently similar to the acquired firms on the basis of the key determinants of the acquisition decision. In other words, our goal is to find a set of control firms that are a priori equally likely to be acquired by an emerging-market firm as those firms which ultimately are acquired. One of the main advantages of the method is that it allows matching without parametric assumptions or imposing a particular model specification, *ex ante*.

Let  $A_{i,t} \in \{0,1\}$  be a dummy variable indicating whether a U.S. firm is acquired by an emerging-market firm at time  $t$  and let  $y_{i,t+u}^1$  denote target-firm performance outcome variables  $u$  periods after the acquisition takes place, where  $u \geq 0$ . The outcome variable for the matched

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<sup>11</sup> Our control group consists of all U.S. target firms that did not receive investment by emerging market firms. This group includes firms that have received investment by non-emerging market firms or other U.S. domestic firms, as well as firms that never received outside investment throughout our sample period.

<sup>12</sup> Greenstone, Hornbeck and Moretti (2008) are able to identify "runners-up" directly in a different context, measuring agglomeration spillovers from the opening of a new manufacturing plant, using publicly available information on "losing counties". Since this sort of data on "potential runner-up targets" is not available, we construct the control group econometrically.

non-acquired U.S. firms is given by  $y_{i,t+u}^0$ . For a given U.S. firm, we will only observe performance outcome variables in one of the two states; foreign acquisition ( $y_{i,t+u}^1$ ), or not ( $y_{i,t+u}^0$ ). The average effect of an emerging-market firm acquisition of a U.S. target is the following:

$$\begin{aligned}
& E[y_{i,t+u}^1 - y_{i,t+u}^0 \mid A = 1] \\
& = E[y_{i,t+u}^1 \mid A = 1] - E[y_{i,t+u}^0 \mid A = 0] - \left\{ E[y_{i,t+u}^0 \mid A = 1] - E[y_{i,t+u}^0 \mid A = 0] \right\}
\end{aligned}$$

The term in the first line is the average treatment effect on the treated (ATET), and the term in braces in the second line is a “selection” term, which is zero if the assignment to the treatment and control groups is random. Our assumption is that firms have observable characteristics,  $\mathbf{X}$ , that make them attractive targets. Our approach is to match acquired and non-acquired firms on the basis of these  $\mathbf{X}$ s and then calculate the treatment differential (the effect of being acquired) on each of the outcome variables of interest. The average of the differential over all acquired firms and all  $\mathbf{X}$ s measures the average effect of foreign acquisition. Formally, Angrist and Krueger (2000) show that effect of the treatment on the treated is given by:

$$\begin{aligned}
& E[y_{i,t+u}^1 - y_{i,t+u}^0 \mid A = 1] = E \left\{ E[y_{i,t+u}^1 \mid X, A = 1] - E[y_{i,t+u}^0 \mid X, A = 0] \mid A = 1 \right\} \\
& = E[\Delta_x \mid A = 1],
\end{aligned}$$

where  $\Delta_x = E[y_{i,t+u}^1 \mid X, A = 1] - E[y_{i,t+u}^0 \mid X, A = 0]$ . The underlying assumption is that all the firms (whether acquired or not) have the same expected performance under domestic ownership. This is referred to as the conditional independence assumption (CIA):

$$E[y_{i,t+u}^0 \mid X, A = 1] = E[y_{i,t+u}^0 \mid X, A = 0] = E[y_{i,t+u}^0 \mid X].$$

For the CIA to be satisfied, the vector  $\mathbf{X}$  should contain all variables that affect both acquisition and performance outcomes. The choice of variables included in  $\mathbf{X}$  is described in more detail below. Another assumption required for matching is that it should not be possible to predict the probability of a foreign acquisition perfectly, i.e.  $0 < \Pr(A = 1 | X) < 1$ .

Matching on a vector of variables is difficult because it requires weighting differences in one dimension against another. Rosenbaum and Rubin (1983) provide a solution to this dimensionality problem by matching firms on propensity scores, which in our context is the conditional probability of being acquired by an emerging-county firm given  $\mathbf{X}$ :

$$P_i = \Pr(A_{i,t} = A(X_{i,t-1})).$$

This matching technique allows us to take into account differences in observable characteristics across the firms in our database. We then combine matching with difference-in-differences analysis to eliminate the differences between the acquired and control firms that are unobservable and time invariant.

Rather than treating each of our firms linearly and with the same weight, our difference-in-differences estimator paired with propensity score matching allows us to include only acquired firms within the common support and picks control firms according to the metric function specific to the matching method. The common support refers to treated firms that do not lie above the maximum or below the minimum propensity score for the matched control group.

In our analysis, after we generate the propensity scores using a probit estimation, we apply propensity score reweighting paired with difference-in-differences. The second step of the estimation procedure allows us to control for other covariates that might also impact a firm's



performance as well as controlling for industry, year and states fixed effects.<sup>13</sup> The combined propensity score reweighting and difference-in-differences estimator for the average treatment effect on the treated is as follows:

$$\frac{1}{n} \sum_{i=1}^n \hat{p}(X_i) \left[ \frac{y_{t+u}^1 - y_{t'}^1}{\hat{p}(X_i)} - \frac{y_{t+u}^0 - y_{t'}^0}{1 - \hat{p}(X_i)} \right],$$

where  $\hat{p}(X_i)$  is the predicted probability of U.S. firm being acquired by an emerging market acquirer and  $y_t^1(y_t^0)$  is the performance of a U.S. firm in period  $t'$  that is acquired at time  $t$  (1) or not acquired (0).

#### 4.2 Evidence of Selection

In order to examine whether our assumption that firms are not randomly selected for acquisition is justified we check whether firm characteristics prior to acquisition are correlated with subsequent foreign ownership. The test involves a regression of the various accounting performance measures on two dummy variables. The first dummy variable indicates those U.S. firms with foreign ownership in year  $t$ . The second dummy variable is switched on three years prior to the ownership change, for those U.S. firms that were eventually foreign acquisition targets. We also control for industry, region and year fixed effects in the regression. The estimation results, presented in Table 4, illustrate that future foreign acquisition targets are larger in size, measured by log sales and log total assets, than non-acquired domestic firms up to three years before acquisition.<sup>14</sup> Furthermore, the regression estimates indicate that acquired firms have more employees and higher debt than non-acquired firms. These systematic differences

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<sup>13</sup> See Ho et al. (2007) for an excellent overview of the benefits of combining propensity score matching with standard parametric methods.

<sup>14</sup> Karolyi and Liao (2009) examine cross-border acquisitions by government-controlled acquirers and find that they are more likely to pursue larger targets than corporate acquirers. In our sample 22 of our 214 emerging market country acquirers (10%) are government controlled.

indicate that foreign investors do not choose target firms at random. Our analysis of the post-acquisition performance of U.S. firms takes this selection into account.

#### *4.3 Timing Issues*

Unlike longitudinal matching studies, where treatment occurs uniformly at one point in time, the firms in our data set are targets of acquisition at varying times. This variation in treatment timing poses the challenge of how to assign counterfactual treatment dates to the firms that are not acquired by emerging-market firms. We follow Petkova's (2008) approach of proportional-random acquisition time assignment. We determine the fraction of the total number of acquisitions that occur in each calendar year during our sample period, and then assign the hypothetical treatment year to the firms in the control group in the same proportion as their occurrences in the acquisition group. For example, if one-tenth of all acquisitions occurred in 1995 in our sample of targets, then one-tenth of all firms in the control group receive the hypothetical treatment year 1995. Before assigning the date, we make sure that the control firm's year of incorporation precedes the treatment year and that the firm remains non-acquired throughout the entire span of our data.

#### *4.4 Propensity Score Matching Estimation*

After assigning the hypothetical foreign acquisition dates to the control firms that are not acquired (do not receive treatment) over our sample period, we need to realign the time series data for each firm. More specifically, in the year of acquisition (actual or hypothetical), we set  $t=0$ , in the year following the acquisition  $t=1$ , and in the year prior to the acquisition,  $t=-1$ , etc. The propensity score is the estimated probability of being acquired in period  $t=0$  based on firm

characteristics in period  $t=-1$ . We estimate this probability using a probit model, where the dummy variable  $A_{i,t}$  equals 1 in the year a firm is the actual target of acquisition and zero otherwise<sup>15</sup>.

#### *4.4.1 Choice of Covariates*

We select our control group of non-acquired firms based on a set of observable characteristics that comprise the vector  $\mathbf{X}$ . It is important to select covariates that affect the acquisition decision as well as the operating performance of the firm. Theory, institutional details, and earlier work in this field guide our choice of covariates. The control variables include factors that drive both the acquisition and performance of the firm, such as: age, size (measured by log of total assets, log of sales and log of employment), operating income, debt, cash, net income, and net property, plant, and equipment. In the estimation, the values of each of these variables are from the year prior to the actual or hypothetical acquisition year. In choosing the year preceding the acquisition, there arises a concern of an “Ashenfelter Dip.” This term is based on the finding in Ashenfelter (1978) that in job program evaluations, participants tend to experience a temporary decline in earnings prior to enrolling in a program. In this data set of target firms, however, there is no visible decline in target firm accounting performance in the year prior to acquisition. As a robustness check we also use variables in three or five years prior to the acquisition and the results remain unchanged.

The age of a firm indicates the maturity of a potential target. Variables such as total assets and sales convey information about the market size of the target firm as well as its productive capacity. Operating income before depreciation (OIBD) and net income describe the

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<sup>15</sup>Alternatively, we could also assign zero to a target firm where there has been an acquisition announcement that eventually fell through. Due to the limited number of such cases, however, this analysis was not feasible.

profitability of the target firm. Debt and cash variables are financing variables. Property, plant and equipment (PP&E) measures the physical capital stock of a firm.

Lastly, year, region and industry dummies are in the vector of control variables, where industry dummies are based on 2-digit NAIC codes and regional dummies are based on the U.S. state where the target firm is located. Industry dummies are critical variables of acquiring firms' preferences as well as controls for industry specific performance. Year dummies control for business cycle fluctuations that impact both selection and performance of the target firm. State dummies control for the different tax laws where the target firm is located that have an impact on selection and performance. These fixed effects are of particular importance because existing papers in the area of FDI show that foreign firms select their target firms in certain industries and states (Harris and Ravenscraft, 1990, Haskel, Pereira and Slaughter, 2007).

We also use a range of alternative covariates in our estimation including a 4-digit industry market share constructed using all firms in Compustat, and Research and Development (R&D) expenses. The results using these covariates are not significantly different from those we obtain without the addition of these variables, though their inclusion reduces our sample size considerably.<sup>16</sup>

## **5. Results**

### *5.1 Preliminary Evidence: Stock Market Reaction to Acquisition Announcements*

If capital markets are semi-strong form efficient with respect to public information, stock prices will quickly adjust following an acquisition announcement, incorporating any expected value changes (Andrade et al, 2001). The two commonly used event windows are the three days

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<sup>16</sup> Other potential candidates for the covariates, such as firm-level imports and exports, the number of patents held, or major brands owned, are unfortunately not available for most of the firms in our sample..

immediately surrounding the acquisition announcement, and a longer window beginning several days prior to the announcement and ending at the close of the acquisition. As a first step, we examine the abnormal stock return for the acquired targets around various different windows of time surrounding the announcement of the acquisition.

We calculate the mean cumulative return of the target stock price within a one, three, and twenty day window of the announcement date. We assume that stock prices follow a single factor market model. Our estimation period is 280 days before and up until 30 days preceding the event date. Using a standardized value of the cumulative abnormal return, we test the null hypothesis that the return is equal to zero.<sup>17</sup>

Table 5 displays announcement period abnormal returns for U.S. targets that are acquired by emerging country firms. The announcement period cumulative abnormal return over the three-day window is 8.9% for 175 completed acquisitions. When the event window is expanded to three days prior to the acquisition announcement and ending three days after the announcement, the mean abnormal return is essentially identical. Over an even longer window of twenty days, the mean abnormal return increases to 9.7%. In comparison to domestic U.S. M&As, where target firms' average three-day abnormal return is around 16% for the three-day window and rises to 24% over the longer event window of 20 days (Andrade et al. (2001)), acquisitions of U.S. targets by emerging-country firms tend to have lower abnormal returns.

### *5.2 Propensity Score Matching Estimates*

Our approach to constructing an appropriate comparison group of non-acquired firms involves a two-step matching process. The first step, a probit regression, estimates the

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<sup>17</sup> In future work we plan to also compare target firm returns to both their matched control firm returns and their industry average return on the announcement date.

probability of foreign acquisition based on past values of various measures of firm performance (age, OIBD, cash, sales, assets, employment, debt, income) as well as state, year and industry fixed effects. The results of the probit indicate that the target firm industry and state as well as the year of the acquisition are important factors in determining the likelihood that a U.S. firm is acquired. In particular, target firms in manufacturing are more likely to be acquired than firms in other industries. This result corroborates findings in previous work that industry and taxes play major roles in acquisition decisions. In terms of financial characteristics, we find that firms with more cash are more likely to be acquired. In our sensitivity checks, we perform tests using subsamples of firms in similar industries to take this heterogeneity into account, and find that the results are robust.

As mentioned in the methodology section, we impose a common support by dropping treatment observations (firms that are acquired) whose propensity score is higher than the maximum or less than the minimum propensity score of the non-acquired (control) firms. The second step involves using the propensity scores as weights to create the control groups and combining it with a difference-in-differences approach. This second step involves running a weighted difference-in-differences regression, using the propensity score as weights. Due to the parametric nature of the second step, we can also include other covariates that explain firm performance as well as control for industry, year, and state fixed effects.

Figure 4 provides an illustration of the effects of our two-step propensity score reweighting approach. The three densities plotted in the figure depict the predicted probability, i.e. propensity score, of acquisition for the acquired firms (red), the non-matched and non-acquired firms (black), and the propensity score reweighted matched non-acquired firms (blue). The matching estimator performs extremely well as evidenced by the proximity between the

density of the acquired firms and that of the reweighted matched non-acquired firms.<sup>18</sup> In terms of our two step procedure, if we did not “select” our control group, this group would include all U.S. firms that are not acquired (the blue line). Our two-step matching involves constructing an appropriate counterfactual for each acquired firm given the set of observable covariates available for the firms. The propensity score provides a summary index of all the covariates combined, so that matching essentially brings the group of control firms closer to the acquired firms on all available dimensions.

The density plot in Figure 3 reveals that among the non-acquired firms a large proportion have almost zero probability of being acquired. A simple difference-in-difference estimator would treat these firms the same as those non-acquired firms that are more likely to be acquired. The propensity score matching estimator, in contrast, assigns more weight to control firms that are similar to the acquired firms in terms of propensity scores. In other words, propensity score matching in this context ensures that our comparisons involve firms that are very similar prior to acquisition. One could argue that this approach reduces the chances of finding differences in post-acquisition performance (given that the firms are so similar prior to acquisition), but it also ensures that our tests will not simply be picking up differences in acquired and non-acquired firm performance that are unrelated to acquisition.

### *5.2.1 Balancing Tests*

One way to assess the performance of our propensity score matching is to calculate the standardized differences for the covariates in our probit regression. Specifically, for each covariate, we take the average difference between the acquired firms and the matched control

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<sup>18</sup> We also used alternative matching estimators, including the Mahalanobis distance metric and kernel matching. Results are qualitatively similar to those reported using propensity score reweighting, and are available upon request.

firms and normalize it by the pooled standard deviation of the covariate in the acquired and control group samples. Based on Rosenbaum and Rubin (1985), we calculate the following measure:

$$SDiff(X_k) = 100 \frac{\frac{1}{n_1} \sum_{i \in \{A_i=1\}} [X_{ki} - \sum_{j \in \{A_j=0\}} W(P_i, P_j) X_{kj}]}{\sqrt{\frac{\text{var}_{i \in \{A_i=1\}}(X_{ki}) + \text{var}_{j \in \{A_j=0\}}(X_{kj})}{2}}},$$

where  $n_1$  is the number of acquired firms and  $n_0$  is the number of non-acquired firms in the control group.

Table 6 shows that our propensity score method does a good job of matching a set of control group firms that were not acquired to the set of firms that were acquired by emerging-market firms along the dimensions of the observable covariates. The balancing test results indicate that the differences in our matched parameters are all well below 20 indicating that our approach is capable of grouping together relatively similar firms.<sup>19</sup> In particular, the covariates log cash, log sales, log employment, and log of net property, plant and equipment before matching show significant differences in means between acquired and non-acquired firms. After matching, however, the means of the covariates between the two groups are not significantly different.

Consider the firm-size characteristic as measured by log sales in table 6. The first row of coefficients for log sales compares the acquired (treated) firms with the non-acquired (control, unmatched) firms. In other words, the “unmatched control” refers to the set of firms that would

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<sup>19</sup> A value for the standardized difference between treated and matched control mean values suggested by Rosenbaum and Rubin (1983).



have otherwise comprised the control group had we not undertaken propensity score matching. The coefficients for log sales in the first row suggest that the acquired firms are significantly larger, on average, than the unmatched set of control firms. The difference in size is statistically significant as evidenced by the t-statistic and p-values in the final two columns. The second row presents mean log sales numbers for the acquired firms along with the “matched control” firms that were not acquired. In stark contrast, the variation in log size is not significantly different across the treated and control groups when matching takes place. The reduction in bias as a result of propensity score matching along the dimension of log sales is about 98%. The reduction in bias for other observable covariates ranges from 47% for the firm-age variable to 99% for the log assets variable.

### *5.3 Post-Acquisition Performance and Restructuring*

Tables 7, Panels A-D present our difference-in-differences propensity score reweighting results for various measures of post-acquisition firm performance.  $t=\{0,5\}$  denotes the post-acquisition year. The second column presents the matched coefficient estimate. Estimates in bold indicate statistical differences in measured post-acquisition performance for acquired and matched non-acquired firms. Common support refers to the set of firms for whom the propensity score range overlaps across control (non-acquired) and treated (acquired) firms. Off support refers to the number of treated (acquired) firms whose propensity score lay above the maximum value or below the minimum value for the control (non-acquired) firms. Note that changes in post-acquisition performance are calculated relative to year  $t=-1$ , prior to the acquisition.

Panel A presents results for OIBD scaled by total assets, or return on assets (ROA). These estimates indicate that the ROA for acquired firms declines significantly compared to the

firms in the “propensity score matched” control sample in the year of acquisition. It appears that profits start to increase in years 1-4 following the acquisition but the increase is not statistically significant. In the fifth year post-acquisition the ROA increases significantly for acquired firms (relative to the non-acquired firms in our control group). In particular, the ROA increases by 7% in year five for the acquired firms relative to the control sample and also relative to the year prior to the acquisition. The time-series pattern in the ROA numbers is consistent with restructuring in the early years following the acquisition leading to improved profitability in later years. We also conducted an F-test of joint significance that shows that the post-acquisition increase in profitability is jointly significant across the five years following acquisition.

The advantage of our methodology is that we can identify the timing of the profitability improvements. Propensity score matching also requires large samples with substantial overlap between groups of the treated (acquired) and control (matched non-acquired) firms. From Table 7a, we see that the sample size of control firms under “common support” are an order of magnitude higher than the treated group suggesting that our estimates are measured with high precision. Moreover, the numbers under “off-support” suggest that there is substantial overlap in the treated and control samples; there are only two firm-years of treated observations excluded from the estimation. A caveat remains that while propensity score matching attempts to identify matched twins in the control group and difference-in-differences estimation accounts for time-invariant, unobservable differences across treated and matched firms, hidden bias may remain because matching only controls for observed variables to the extent that they are perfectly measured (Shadish, Cook and Campbell, 2002). Also, to the extent that there are unobservable time-varying differences in firm characteristics across the treated and control samples, we are unable to account for them.

The results in Panels B-D in Table 7 indicate that employment, net property, plant, and equipment (PP&E), and sales all decrease significantly for acquired firms (again, relative to matched control non-acquired firms) in the year of and the five years after acquisition. While the decline in net PP&E is significant in all years except for the year of acquisition, the decline in employment and sales appears to persist across the five years following acquisition. Moreover, for all our outcome variables, the results are jointly statistically significant over the entire sample period.

The pattern of increasing profitability (income/assets) and declining sales is consistent with improvements in firm-efficiency following acquisition.<sup>20</sup> For instance if firms shut down or get rid of unprofitable divisions, sales would go down but profits as a percent of assets would increase. Also, declining employment and net PP&E suggest downsizing of divisions to improve overall profitability as a percent of assets.

In sum, we find evidence in support of the two hypotheses we set out to test. First, increasing profitability is consistent with the hypothesis that foreign ownership is associated with improvements in plant productivity. Second, declining sales in the target firms along with the downsizing of employment are consistent with the comparative input cost hypothesis. Acquirers from emerging markets come from environments where labor costs are low and they may be in the position to in-source jobs by exploiting the low wages in their home countries by downsizing labor-intensive activities in the U.S. following the acquisition. The U.S. target experiences

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<sup>20</sup> Another factor that might impact firm performance is business cycle fluctuations. We devised several ways to control for these effects. The first way is to use the proportional time assignment for the untreated group of firms. Secondly, the year dummies in the probit specification also control for time-specific selection that is related to business cycle fluctuations. In addition, we ran separate tests for particular years in the sample. For example, for all target firms that were acquired in 1995 we only assigned control firms that did not receive acquisition up until 1995 and followed their respective performances. This setup is called dynamic matching, and it focuses on one particular year at a time. The downside to this method is that for several years, there are not enough treated firms for the analysis.

improvements in profitability with more streamlined but efficient operations following restructuring by the emerging-market acquirer.

## **6. Robustness Checks**

### *6.1 Simple Difference-in Differences Estimation*

To highlight the importance of constructing an appropriate benchmark for comparison to evaluate post-acquisition performance we report two sets of difference-in-difference estimates that use progressively more sophisticated rules to select the control group. We start with random selection of a comparator for each acquired firm, and next compare acquired firms to their industry mean. We then compare the magnitude of the estimated treatment effects across our three sets of estimators (simple difference-in-differences, industry-based difference-in-differences, and propensity score matching with difference-in-differences). If our propensity score matching approach is superior in fixing the selection problem, we would expect that the estimated treatment effects get smaller as we incorporate more sophisticated matching techniques.<sup>21</sup>

The simple difference-in-differences estimates essentially compare the post-acquisition performance of targets to the performance of all non-acquired U.S. firms. We include the same covariates as in our probit estimation as control variables in the difference-in-differences estimation. Table 8 (Panels A-D) present the results. The coefficient estimates for our four performance measures, (OIBD/assets, employment, sales, and net property, plant and equipment) are often larger in magnitude and always of the same sign and similarly statistically significant, as compared to the corresponding propensity score matching estimates. Quite apart from the selection issue, we would expect these estimates to differ from those produced using propensity

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<sup>21</sup> We are grateful to Aart Kraay for suggesting this exercise.

score matching for two reasons: 1) the underlying functional form is restricted to be linear in the simple difference-in-differences approach, whereas the propensity score method is semi-parametric, and 2) the difference-in-differences approach does not take into account the common support problem, whereas propensity score matching ensures that far lying outliers are excluded.

Our next set of estimates compares the post-acquisition performance of U.S. targets to the performance of all non-acquired firms in the same industry. These estimates can be considered as an intermediate case between simple difference-in-differences and the full-blown propensity score matching approach. Table 9 (Panels A-D) shows the results of simple difference in mean tests on the four performance measures for the acquired firms compared to non-acquired control firms that are in the same 6-digit NAICS industry. The coefficient estimates using this approach are generally smaller than those found using simple difference-in-differences, but larger in magnitude than those reported in table 7 based on the propensity score matching approach. Matching only on industries is essentially a one-dimensional version of matching on an index of various firm characteristics. By using propensity scores, we are able to solve the curse of dimensionality that arises in matching on each characteristic individually. Moreover, propensity score reweighting paired with difference-in-differences allows us to control for time-invariant unobservables as well as other covariates that impact performance including year, state and industry fixed effects.

## 6.2 *Additional Tests*

SDC Platinum provides information about acquisitions that are announced but not completed or withdrawn. Using this sample of failed transactions we can examine whether the firms that were potential acquisition targets differ from their non-acquired counterparts. If it is

foreign ownership that drives the post-acquisition performance of the acquired firms, we expect that following propensity score matching, the firms that were “potential” targets should perform similarly to the firms that are in the matched control sample but not the subject of foreign interest, since the foreign acquisition was never successfully completed. Although it is not possible to test this hypothesis formally given the limited number of failed acquisitions, Table 10 provides suggestive evidence; the eighteen potential targets in our sample experience declines in employment and increases in sales in the year the M&A transaction is announced and are similar to a group of matched non-acquired firms in the years after the failed acquisitions, suggesting that post-acquisition performance of acquired firms is driven by the transfer of ownership to foreign hands. However, given the small number of failed acquisitions in our sample, more formal statistical analysis is not possible.

We also perform a number of additional robustness checks that involve dividing our sample of acquired firms into various subgroups consisting of: 1) majority and minority control acquisitions, 2) acquisitions financed solely by cash, 3) only manufacturing firms, 4) acquiring firms located in East Asia, and lastly, 5) firms not in the same industry as the acquiring firm. The estimates are shown in Table 11 (Panels A-G). The statistical significance of the results varies due to sample sizes. For example, for the group of horizontal acquisitions, in which both acquiring and target firms share the same industry, the sample size is much smaller than that for diversifying acquisitions. Thus, although the magnitudes of the estimates are similar to those of the whole sample, the statistical significance is not. Overall, the robustness checks confirm the results in the main analysis when using the full sample.

## **7. Conclusion**

This paper undertakes a systematic analysis of the performance of U.S. firms that are acquired by firms located in emerging markets. To do so, we examine both stock market and accounting-based measures of firm performance following the announcement of an acquisition of a U.S. firm by an emerging-market firm. In particular, we use transaction-level M&A information along with firm-level financial statement data to examine the post-acquisition operating performance of publicly listed U.S. targets.

Our results suggest that emerging country firms tend to acquire public U.S. targets with relatively high levels of sales, employment and total assets. The selection of acquisition target is therefore non-random. To address the issue of selection, we employ propensity score matching to carefully construct a matched sample of control firms that were not acquired. The matching methodology is combined with difference-in-differences estimation to eliminate time-invariant unobservable firm characteristics.

We find evidence for both the profitability improvement hypothesis and the comparative input cost hypothesis. The stock price response of these U.S. targets is positive and significant around the time of the acquisition announcement. Following the acquisition, the performance of target firms tends to improve. In particular, the return on assets in target firms increases by 7% in the five years following the acquisition. The evidence also suggests that U.S. target firms undergo significant restructuring after acquisition by an emerging-market firm. In particular, employment and capital decrease, suggesting that divisions may be sold off or closed down. This conjecture is also supported by the fact that sales decline after acquisition.

In conclusion, our results indicate that (i) acquisitions by firms from emerging markets influence post-acquisition performance of target firms (sales and employment decline, profits

rise); and (ii) there is selection along observable characteristics based upon which emerging market firms choose acquisition targets in the U.S. (higher sales, assets, employment). In the paper we attempt to control for (ii) using propensity score matching combined with difference-in-differences estimation. There remains the possibility that selection based on time-variant unobservable characteristics (that are orthogonal to the observable characteristics used in our propensity score matching) may be driving our results. However, the evidence presented in the paper suggests that emerging market firm acquisitions impact the performance of U.S. target firms. More generally, the results in the paper serve to illustrate the importance of constructing careful benchmarks from which to evaluate post-acquisition performance and the advantage of propensity score matching in this context.



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## **Appendix A**

Acquiring Countries in the sample:

Algeria, Argentina, Bahrain, Brazil, China, Costa Rica, Croatia, Ecuador, Egypt, Hong Kong, India, Indonesia, Kuwait, Malaysia, Mexico, Nigeria, Papua N Guinea, Russian Fed, Saudi Arabia, Singapore, South Africa, South Korea, Taiwan, Thailand, Trinidad & Tobago, Uganda, Uzbekistan, Venezuela

Tax Haven Countries (as defined by the OECD, 2008) excluded from the sample:

Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Cyprus, Netherland Antilles, Panama

## **Appendix B**

Steps followed in our propensity score matching methodology:

1. Run Probit regression where:
  - (a) Dependent variable:  $Y=1$ , if a firm is acquired by an emerging-market firm;  $Y = 0$ , otherwise.
  - (b) Choose appropriate conditioning variables, covariates which are observable firm characteristics such as age, size, profitability, financing-mix, etc.
  - (c) Obtain propensity score: predicted probability ( $p$ ) or  $\log[p/(1-p)]$ .
2. Generate weights using propensity scores:
  - a) for acquired firms, assign weight = 1.
  - b) for non-acquired firms, assign weight =  $p/(1-p)$  using predicted probability in 1c).
3. Run multivariate difference-in-difference regression with the generated weights in 2) and covariates that were used in the initial probit along with industry, year, and state fixed effects to eliminate time-invariant, unobservable differences between acquired (treated) and non-acquired (matched control) firms to examine post-acquisition firm performance.

## Appendix C

### Details of Sample Construction:

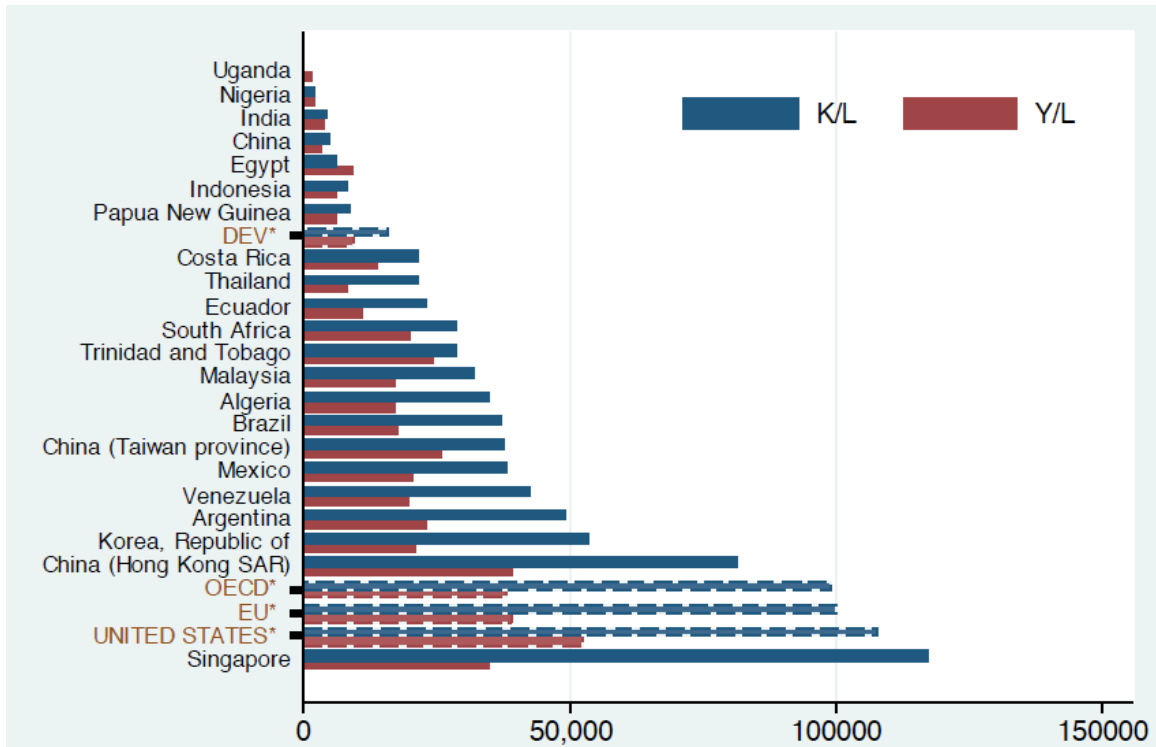
	N	Percent
Number of Transactions with a Foreign Acquirer and U.S. Target	7,996	
Number of transactions with a Foreign Acquirer and a Public U.S. Target	2,368	29.60%
Number of Completed Transactions with Emerging-Market Acquirer and public U.S. Target	480	20%
Number of Transactions with Tax Haven Country <sup>22</sup> as domicile of Acquirer	221	46%
Number of Firms with Multiple Acquisitions	45	17%

Source: SDC Thomson M&A database.

<sup>22</sup> Countries are listed in Appendix A.

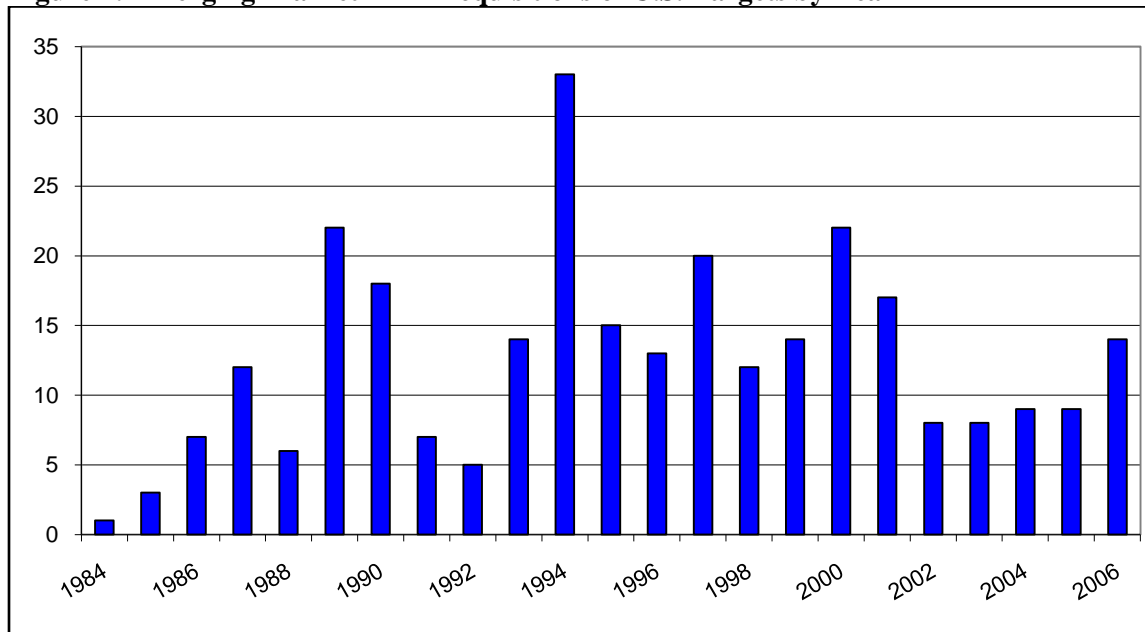
**Figure 1: Capital/Labor and Income/Labor Average Ratios, 1979-2000**

Notes: The United States, OECD, EU, and developing (DEV) country averages as defined by UNIDO are included for comparison.



Source: United Nations Industrial Development Organization (UNIDO).

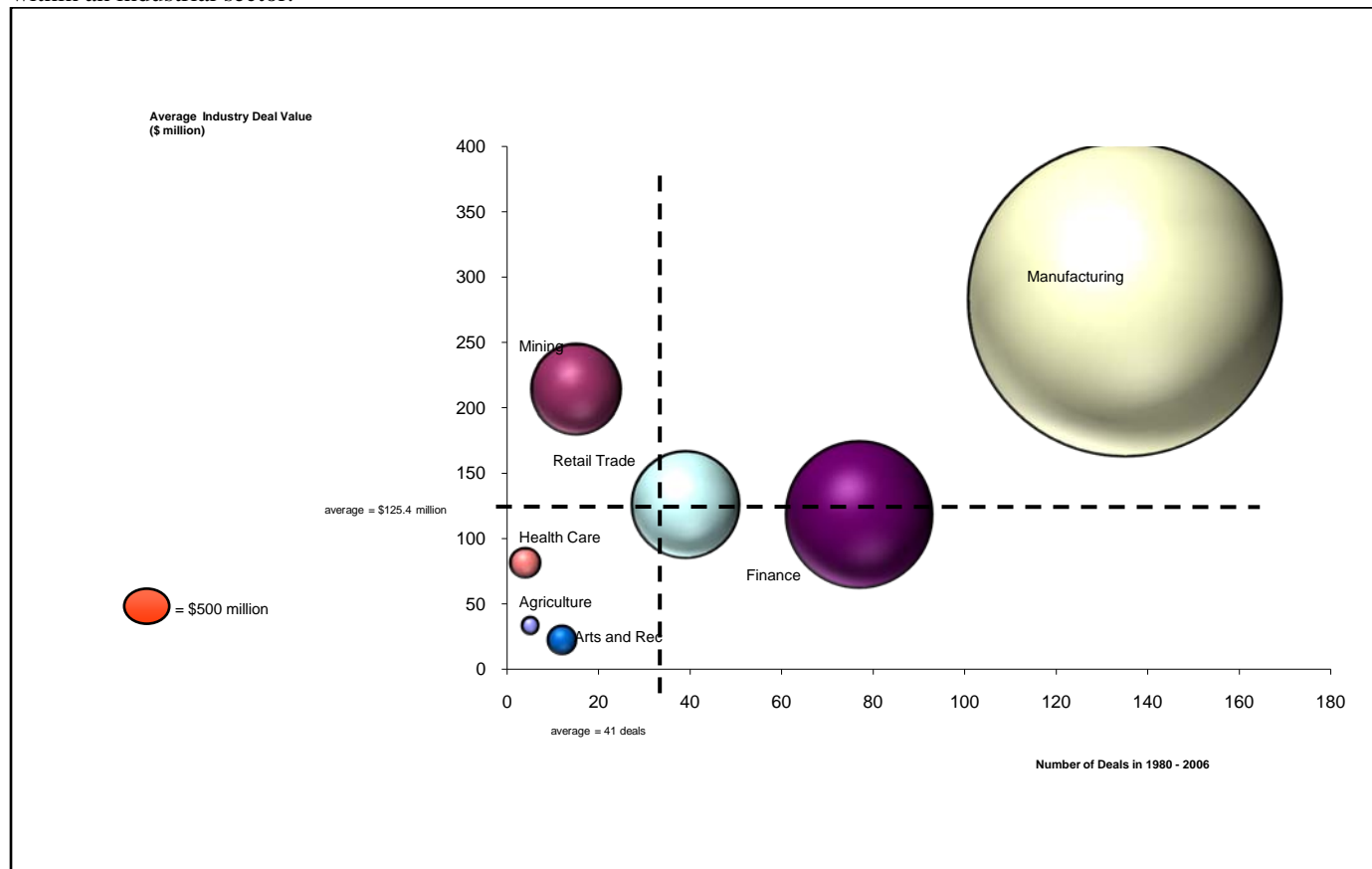
**Figure 2: Emerging-Market Firm Acquisitions of U.S. Targets by Year**



Source: SDC Thomson M&A database. This figure shows the number of acquisitions of U.S. firms by emerging-market firms in each year of our sample 1980-2007.

**Figure 3: Number and Value of M&A deals by Target Sector**

Notes: The figure presents information on the industries in which the target firms belong along with the number (horizontal axis) and average value of the transaction (vertical axis). The surface area of each bubble shows the total value of deals within each one-digit industry sector, while the location of the bubble is determined by the average value and the total number of deals within an industrial sector.

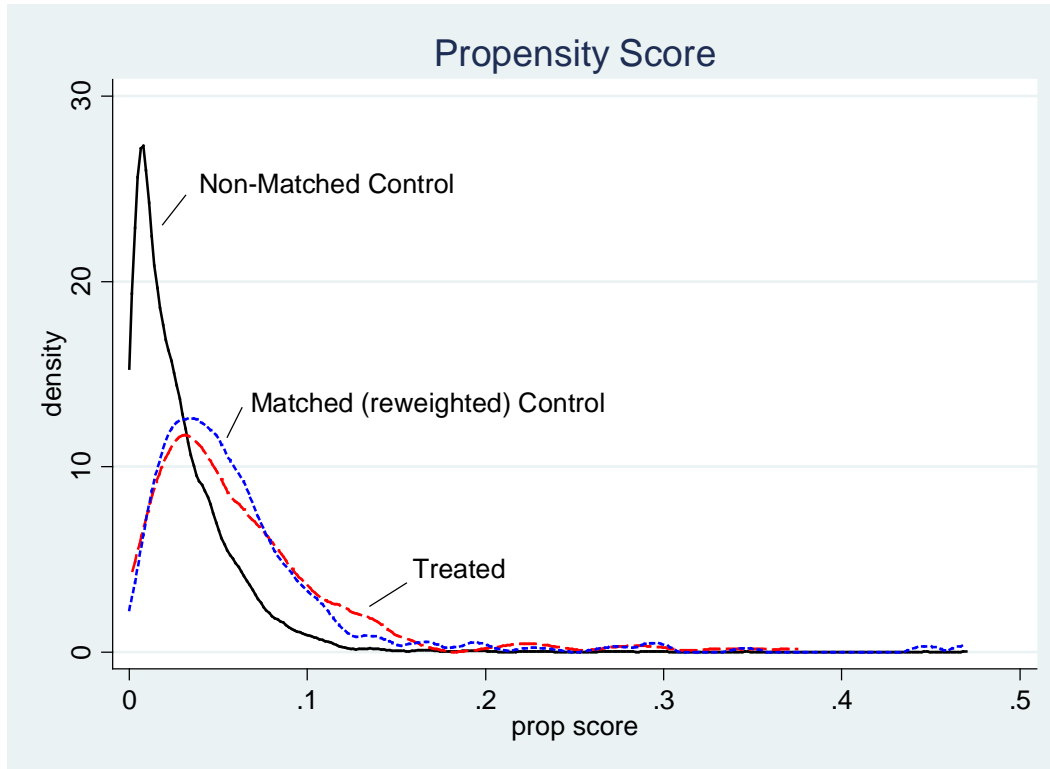


Source: SDC Thomson M&A Database.



**Figure 4: Propensity Scores for Acquired (treated), Control (matched non-treated) and Non-treated non-weighted firms**

Notes: This figure provides an illustration of the effects of our two-step propensity score matching approach. The three densities plotted in the figure depict the predicted probability, i.e. propensity score, of acquisition for the acquired firms (red), the non-weighted and non-acquired firms (black), and the reweighted propensity score matched non-acquired firms (blue).



Source: Authors' calculations based on SDC Thomson M&A Database and Compustat North America 1980 – 2006.

**Table 1: Number and Value of Acquisitions of U.S. targets by firms in Emerging Markets, 1980-2007.**

Notes: This table provides a break down of transactions by acquiring country. The first column lists the name of the acquiring country. The second column presents the number of transactions. The third column presents the fraction of total transactions accounted for by the acquiring country. The final column presents the total nominal transaction value in millions of USD by acquiring country.

Acquiring Country	Number of Transactions	% of Total Transactions	Nominal Transaction Value (\$ mil)
Hong Kong	57	26.64	3309.572
Singapore	36	16.82	6412.92
Mexico	26	12.15	9346.126
Taiwan	13	6.07	731.567
Saudi Arabia	11	5.14	1463.797
South Korea	11	5.14	319.409
India	10	4.67	154.346
Russian Fed	7	3.27	932.947
Argentina	5	2.34	5035.794
China	5	2.34	44.83
Bahrain	4	1.87	1478.356
Kuwait	4	1.87	5.745
Malaysia	4	1.87	38.11
Brazil	3	1.4	4.313
Egypt	2	0.93	8.905
South Africa	2	0.93	1900.151
Thailand	2	0.93	27.12
Venezuela	2	0.93	63.27
Algeria	1	0.47	0
Costa Rica	1	0.47	12.5
Croatia	1	0.47	1
Ecuador	1	0.47	0
Indonesia	1	0.47	23
Nigeria	1	0.47	6
Papua N Guinea	1	0.47	2.7
Trinidad & Tob	1	0.47	0.6
Uganda	1	0.47	0.68
Uzbekistan	1	0.47	30.8
<b>Total</b>	<b>214</b>	<b>100%</b>	

Source: SDC Thomson M&A Database.

**Table 2: Transaction Characteristics of the Top Twenty Emerging Country Firm Acquisitions of U.S. Targets, 1980-2007.**

Notes: The table displays the top 20 deals by acquisition value between emerging country firms and public U.S. targets based on the 214 completed transactions in our sample. The transaction characteristics include target and acquirer names, nations and industries, the announcement date, the percent acquired, transaction value and method of payment. Source: SDC Thomson –M&A Database.

Date announced	Target Name	Target Industry	Acquirer Name	Acquirer Industry	% acquired	Deal Value (\$mil)	Acquirer Nation	Payment Method
6/12/2006	Maverick Tube Corp	Mfg. steel tubular prod	Tenaris SA	Mfg. seamless steel pipe prod	100	3095.57	Argentina	Cash
9/29/2000	Southdown Inc	Mfg. cement; limestone mining	CEMEX SA DE CV	Mfg.,whl cement,ready-mix prod	100	2846.18	Mexico	Cash Liabilities
11/22/1999	DII Group	Mfg. electronic components	Flextronics International Ltd	Mfg. electn components	100	2591.41	Singapore	Common Stock
2/12/2007	Hydril Co LP	Mfg. oil,gas drilling equip	Tenaris SA	Mfg. seamless steel pipe prod	100	2212.17	Argentina	Cash
11/20/2006	Oregon Steel Mills Inc	Mfg. steel prod	Evrz Group SA	Mfg. whl steel	90.87	2087.97	Russian Fed	Cash
2/28/1995	Maxus Energy Corp	Oil and gas exploration, prodn	YPF SA	Oil and gas exploration,prodn	100	1843.82	Argentina	Cash Liabilities
2/10/2004	ChipPAC Inc	Mfg. semiconductors	ST Assembly Test Services Ltd	Mfg. semiconductor testing	100	1458.68	Singapore	Amer. Dep. Receipt
6/19/2000	United Asset Mgmt. Corp	Investment management services	Old Mutual South Africa	Insurance company	100	1456.67	South Africa	Cash
9/24/1999	ASARCO Inc	Mine, smelt, refine metals	Nueva Grupo Mexico SA de CV	Mining invt. holding co.	90.48	1073.27	Mexico	Cash
6/23/1999	VoiceStream Wireless Corp	Provide cellular services	Hutchison Whampoa Ltd	Pvd telecom svcs	6.03	957	Hong Kong	Cash

Date announced	Target Name	Target Industry	Acquirer Name	Acquirer Industry	% acquired	Deal Value (\$mil)	Acquirer Nation	Payment Method
4/14/1997	APL Ltd	Shipping, trucking company	Neptune Orient Lines Ltd	Shipping company	100	878.48	Singapore	Cash
1/25/2000	CompU.S.A Inc	Own, operate computer stores	Grupo Sanborns SA de CV	Mgmt hldg cia	85.5	805.261	Mexico	Cash
7/15/1987	Marine Midland Banks	Bank holding company	HSBC HK	Bank (foreign)	48.42	752	Hong Kong	Cash
8/9/1989	Anchor Glass Container Corp	Manufacture glass containers	Vitro SA de CV	Mfg. glass containers	96.89	737	Mexico	Cash Liabilities
1/30/1997	AST Research Inc	Mfg. computers; dvlp software	Samsung Electronics Co Ltd	Mfg., whl electn prod	55.28	495.8	South Korea	Cash Liabilities
5/7/2001	Proxicom Inc	Pvd e-bus consulting, dvlp svc	Dimension Data PLC	Pvd info tech svcs	100	443.481	South Africa	Cash
4/15/2005	Brookstone Inc	Own, op novelty stores	OSIM Brookstone Holdings LP	Investment company	100	429.656	Singapore	Cash
9/24/1999	CMGI Inc	Pvd direct mail advg svcs	Pacific Century CyberWorks Ltd	Internet Service Provider (ISP)	3.4	377.952	Hong Kong	Newly Issued Ordinary Shares
11/20/2002	Stillwater Mining Co	Platinum mining company	OAo MMC Norilsk Nickel Group	Mfg. metal prod	51.12	340.9	Russian Fed	Cash, Other Consideration
11/30/1993	Motor Coach Industries Intl	Mfg. railroad cars, equipment	Consorcio G Grupo Dina'l'ads	Manufacture trucks	100	334.64	Mexico	Dep. Share Convert. Deb.

**Table 3: Number of Acquisitions of U.S. Targets by Emerging-Market Firms & Industry Characteristics, 1980-2007.**

Notes: This table presents summary statistics for U.S. target by industry from Compustat North America. The first column presents the industry code. Column 2 presents the industry description followed by the number of firm-year observations, the total number of firms in the industry and the number of firms acquired by emerging-market firms. OIBD/Assets presents the average operating income before depreciation, amortization and taxes (\$ million). The last two columns present average sales (\$ million) and employment (million) by industry.

NAICS	Industry	Firm-Year Observations	Total number of firms	Number of Firms Acquired	OIBD (Mean) \$million	Total Assets (Mean) \$million	Sales (Mean) \$million	Employment (Mean) million
11	Agriculture	2,015	81	5	78.64	1,025.18	1,540.33	22.12
21	Natural Resources	13,486	1,287	12	61.62	483.75	296.16	1.68
22	Utilities	10,085	495	2	24.12	247.60	184.01	0.40
23	Construction	3,733	315	1	34.46	384.54	198.72	1.90
31-33	Manufacturing	92,935	7,604	118	94.72	824.18	1,000.49	6.74
42	Wholesale Trade	9,217	805	8	101.75	1,243.46	1,509.49	7.02
44-45	Retail Trade	10,802	978	16	77.87	743.30	1,475.87	7.76
48-49	Transportation & Warehousing	6,417	576	10	251.86	2,886.27	2,441.86	14.35
51	Information	22,753	2,627	30	201.39	1,754.11	737.93	3.21
52	Finance & Insurance	30,786	4,828	20	2,244.27	65,056.48	8,545.27	18.72
53	Real Estate	6,042	531	8	5.35	147.09	41.96	0.18
54	Professional Services	10,097	1,050	6	31.94	200.14	168.12	1.07
56	Administrative Services	4,743	492	1	-1.67	20.90	17.80	0.09
62	Health Care & Social Assistance	4,049	441	2	16.42	121.52	131.32	2.03
71	Arts, Entertainment, & Recreation	1,848	193	2	0.83	14.33	11.88	0.18
72	Accommodation & Food Services	5,245	469	10	17.36	159.18	167.09	2.59
81	Other Services	1,126	115	8	NA	NA	NA	NA

**Table 4: Evidence of Selection in the Three Years Preceding Acquisition**

Notes: These regressions test whether U.S. firm performance prior to acquisition is correlated with subsequent foreign ownership. The dependent variables are sales, assets, OIBD, cash, debt and employment and the independent variables include:  $D\_foreign_t$  (a dummy variable which indicates those U.S. firms with foreign ownership at time  $t$ ),  $D\_futureacq$  (a dummy variable which indicates those U.S. firms that become acquisition targets of emerging-market firms three years prior to the ownership change), and industry, region and year fixed effects. The dependent variables are expressed in log terms. All significant coefficients are in bold and indicate that foreign investors do not choose target firms at random. \* indicates significance at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Standard errors are in parentheses.

	Sales	Assets	OIBD	Cash	Debt	Employment
$D\_foreign_t$	<b>0.906***</b> (0.19)	<b>0.952***</b> (0.19)	0.281 (0.21)	<b>0.815***</b> (0.20)	<b>0.896***</b> (0.24)	<b>0.737***</b> (0.20)
$D\_futureacq_t$	<b>0.898***</b> (0.10)	<b>0.897***</b> (0.10)	<b>0.553***</b> (0.11)	<b>0.925***</b> (0.11)	<b>0.753***</b> (0.13)	<b>0.790***</b> (0.10)
Observations	236223	244249	182936	217800	197547	161948
R-squared	0.172	0.231	0.193	0.197	0.203	0.186

**Table 5: Cumulative Abnormal Stock Returns for Acquisition Targets**

Notes: The sample covers acquisitions of U.S. targets by emerging-market firms between January 1, 1980 and July 1, 2007. The day of first mention of the acquisition in SDC Thomson is taken as day '0'. Abnormal gain to the U.S. target is computed as the cumulative abnormal return based on a single factor market model. The estimation period is 280 days before and up until 30 days before the event day. The CAR is the cumulative average abnormal return and is described in detail in section 4 of the paper. The Patell Z statistic is based on the Patell (1976) test that assumes cross-sectional independence. It is constructed by standardizing CAR by the respective standard errors. It follows a standard normal distribution under the null hypothesis.

Days	N	Mean CAR	Patell Z
(-3,+3)	175	8.87%	13.669***
(-1,+1)	175	8.53%	20.068***
(-10,+10)	175	9.71%	8.537***
(-20,+20)	175	11.13%	6.466***
(-30,+30)	175	11.44%	4.871***

**Table 6: Balancing Tests**

Notes: These tests check whether our matching approach is capable of grouping together relatively similar firms. The table presents the average difference in each of the covariates between the: (1) acquired firms and the unmatched non-acquired firms, and (2) the acquired firms and the matched (reweighted) non-acquired firms. Differences are normalized by the pooled standard deviation of the covariate in the two samples.

Variable	Sample	Mean		%bias	%reduction in bias	t-test	
		Treated	Control			t	p> t
Age	Unmatched	24.640	23.915	5.8		0.6	0.548
	Matched	24.717	24.333	3	47.1	0	0.996
OIBD	Unmatched	216.690	292.840	-6.9		-0.66	0.507
	Matched	217.930	230.040	-1.1	84.1	-0.43	0.668
Log Cash	Unmatched	2.378	1.884	19.7		1.99	<b>0.047</b>
	Matched	2.367	2.345	0.9	95.6	0.48	0.632
Log Sales	Unmatched	5.367	4.883	21.4		2.09	<b>0.037</b>
	Matched	5.360	5.368	-0.4	98.3	0.34	0.733
Log Assets	Unmatched	5.558	5.261	12.9		1.27	0.205
	Matched	5.548	5.549	-0.1	99.5	0.39	0.698
log Employment	Unmatched	0.484	0.140	16		1.66	<b>0.097</b>
	Matched	0.463	0.527	-3	81.3	0.25	0.799
Log Debt	Unmatched	3.280	3.041	7.7		0.8	0.424
	Matched	3.261	3.353	-3	61.4	0.27	0.789
Net Income	Unmatched	4.240	79.807	-20		-1.83	<b>0.068</b>
	Matched	4.135	41.769	-9.9	50.2	-0.44	0.66
Log Net PPE	Unmatched	3.961	3.601	14		1.41	0.16
	Matched	3.950	4.052	-4	71.8	0.41	0.684

**Table 7: Post-Acquisition Performance Characteristics (Propensity Score Matching and Difference-in-Differences)**

Notes: This table documents difference-in-difference estimates for the post-acquisition performance between acquired and "matched control" firms that were not acquired. Panels A-D report post-acquisition OIBD/Assets, log employment, log net PP&E and log sales, respectively.  $t=\{0,5\}$  denotes the post-acquisition year. The second column presents the matched coefficient estimate. Estimates in bold indicate statistical differences in measured post-acquisition performance for acquired and matched non-acquired firms. Common support refers to the set of firms for whom the propensity score range overlaps across control (non-acquired) and treated (acquired) firms. Off support refers to the number of treated (acquired) firms whose propensity score lay above the maximum value or below the minimum value for the control (non-acquired) firms.

**Panel A: Post-Acquisition Performance (OIBD/Asset)\***

t	Matching Estimate	Bootstrapped Std. Err.	Z-Stat	P> z	<u>Common Support</u>		<u>Off Support</u>	
					Untreated	Treated	Untreated	Treated
Difference-in-Differences combined with propensity score reweighting estimates								
0	<b>-0.042</b>	0.009	-4.66	0.000	5,027	128	0	0
1	0.042	0.134	0.31	0.755	4,440	115	0	1
2	0.082	0.191	0.43	0.668	3,992	102	0	0
3	0.045	0.033	1.39	0.165	3,598	86	0	1
4	0.138	0.094	1.46	0.143	3,203	74	0	0
5	<b>0.070</b>	0.024	2.95	0.003	2,861	69	0	0

\*Joint significance between year 0 and year 5

**Panel B: Post-Acquisition Employment\***

t	Matching Estimate	Bootstrapped Std. Err.	Z-Stat	P> z	<u>Common Support</u>		<u>Off Support</u>	
					Untreated	Treated	Untreated	Treated
Difference-in-Differences combined with Propensity Score Matching estimates								
0	<b>-0.069</b>	0.014	-4.77	0.000	3,102	94	0	0
1	<b>-0.119</b>	0.020	-6.06	0.000	2,718	82	0	0
2	<b>-0.167</b>	0.029	-5.74	0.000	2,370	74	0	0
3	<b>-0.223</b>	0.041	-5.47	0.000	1,919	60	0	0
4	<b>-0.230</b>	0.045	-5.16	0.000	1,640	50	0	0
5	<b>-0.464</b>	0.056	-8.29	0.000	1,414	45	0	0

\*Joint significance between year 0 and year 5



**Panel C: Post-Acquisition Net PP&E\***

t	Matching Estimate	Bootstrapped Std. Err.	Z-Stat	P> z	<u>Common Support</u>		<u>Off Support</u>	
					Untreated	Treated	Untreated	Treated
Difference-in-Differences combined with Propensity Score Matching estimates								
0	-0.162	0.032	-5.14	0.000	5,039	128	0	0
1	<b>-0.133</b>	0.043	-3.12	0.002	4,439	115	0	1
2	<b>-0.137</b>	0.051	-2.68	0.007	3,980	103	0	0
3	<b>-0.202</b>	0.052	-3.87	0.000	3,599	87	0	1
4	<b>-0.265</b>	0.060	-4.4	0.000	3,198	75	0	0
5	<b>-0.412</b>	0.075	-5.5	0.000	2,860	69	0	0

\*Joint significance between year 0 and year 5

**Panel D: Post-Acquisition Sales\***

t	Matching Estimate	Bootstrapped Std. Err.	Z-Stat	P> z	<u>Common Support</u>		<u>Off Support</u>	
					Untreated	Treated	Untreated	Treated
Difference-in-Differences combined with Propensity Score Matching estimates								
0	<b>-0.064</b>	0.011	-5.95	0.000	5,039	128	0	0
1	<b>-0.186</b>	0.017	-11	0.000	4,439	115	0	1
2	<b>-0.218</b>	0.020	-10.87	0.000	3,980	103	0	0
3	<b>-0.217</b>	0.026	-8.4	0.000	3,599	87	0	1
4	<b>-0.308</b>	0.034	-8.96	0.000	3,198	75	0	0
5	<b>-0.301</b>	0.035	-8.55	0.000	2,860	69	0	0

\*Joint significance between year 0 and year 5

**Table 8: Post-Acquisition Performance Characteristics (Simple Difference-in-Differences with Controls)**

Notes: This table documents simple difference-in-difference estimates for the post-acquisition performance between acquired and non-acquired firms. We use the same covariates as in the probit estimation as control variables. Panels A-D report post-acquisition OIBD/Assets, log employment, log net PP&E and log sales, respectively.  $t=\{0,5\}$  denotes the post-acquisition year. The second column presents the simple difference-in-differences coefficient estimate. Estimates in bold indicate statistical differences in measured post-acquisition performance for acquired and non-acquired firms.

**Panel A: Post-Acquisition Performance (OIBD/Asset)**

t	Coefficient Estimate	Std. Error	Z-Stat	P> z	Untreated	Treated
Simple Difference-in-Differences						
0	-0.055	0.065	-0.85	0.397	5,027	128
1	0.180	0.953	0.19	0.850	4,440	115
2	0.376	1.252	0.3	0.764	3,992	102
3	0.089	0.275	0.32	0.747	3,598	86
4	0.248	0.539	0.46	0.645	3,203	74
5	0.127	0.236	0.54	0.590	2,861	69

**Panel B: Post-Acquisition Employment**

t	Coefficient Estimate	Std. Error	Z-Stat	P> z	Untreated	Treated
Simple Difference-in-Differences						
0	-0.002	0.063	-0.02	0.981	3,102	94
1	-0.076	0.073	-1.04	0.300	2,718	82
2	<b>-0.186</b>	0.087	-2.13	0.033	2,370	74
3	<b>-0.182</b>	0.095	-1.92	0.055	1,919	60
4	<b>-0.214</b>	0.099	-2.15	0.031	1,640	50
5	<b>-0.276</b>	0.113	-2.44	0.015	1,414	45

**Panel C: Post-Acquisition Net PP&E**

t	Coefficient Estimate	Std. Error	Z-Stat	P> z	Untreated	Treated
Simple Difference-in-Differences						
0	-0.188	0.143	-1.31	0.190	5,039	128
1	<b>-0.275</b>	0.153	-1.8	0.072	4,439	115
2	<b>-0.326</b>	0.162	-2.01	0.044	3,980	103
3	<b>-0.372</b>	0.174	-2.14	0.033	3,599	87
4	<b>-0.441</b>	0.185	-2.39	0.017	3,198	75
5	<b>-0.592</b>	0.193	-3.06	0.002	2,860	69

**Panel D: Post-Acquisition Sales**

t	Coefficient Estimate	Std. Error	Z-Stat	P> z	Untreated	Treated
Simple Difference-in-Differences						
0	<b>-0.080</b>	0.043	-1.88	0.061	5,039	128
1	<b>-0.213</b>	0.059	-3.59	0.000	4,439	115
2	<b>-0.274</b>	0.068	-4.02	0.000	3,980	103
3	<b>-0.305</b>	0.081	-3.76	0.000	3,599	87
4	<b>-0.331</b>	0.091	-3.64	0.000	3,198	75
5	<b>-0.327</b>	0.093	-3.5	0.000	2,860	69

**Table 9: Post-Acquisition Performance Characteristics (Difference in Means for Firms in Same Industry)**

Notes: This table documents simple mean test results for acquired and non-acquired firms in the same 6-digit NAICS industry. Panels A-D report post-acquisition OIBD/Assets, log employment, log net PP&E and log sales, respectively.  $t=\{0,5\}$  denotes the post-acquisition year. The second column presents the difference in means coefficient estimate. Estimates in bold indicate statistical differences in measured post-acquisition performance for acquired and non-acquired firms that are in the same industry.

**Panel A: Post-Acquisition Performance (OIBD/Asset)**

t	Coefficient Estimate	Std. Error	T-Stat	P> t	Untreated	Treated
Difference in Means within same industry						
0	-0.464	0.462	-1.003	0.317	3,341	151
1	-0.313	0.504	-0.620	0.536	2,928	135
2	-0.382	0.518	-0.739	0.461	2,630	119
3	-0.251	0.668	-0.376	0.708	2,355	101
4	0.394	0.310	1.272	0.205	2,075	87
5	0.530	0.430	1.232	0.220	1,808	79

**Panel B: Post-Acquisition Employment**

t	Coefficient Estimate	Std. Error	T-Stat	P> t	Untreated	Treated
Difference in Means within same industry						
0	<b>-0.121</b>	0.044	-2.324	0.021	1,719	112
1	<b>-0.231</b>	0.062	-1.952	0.053	1,485	95
2	<b>-0.019</b>	0.095	-2.426	0.016	1,305	85
3	<b>-0.244</b>	0.111	-2.206	0.028	1,036	70
4	<b>-0.214</b>	0.108	-1.976	0.049	873	59
5	<b>-0.208</b>	0.119	-1.746	0.083	734	50

**Panel C: Post-Acquisition Net PP&E**

t	Coefficient Estimate	Std. Error	T-Stat	P> t	Untreated	Treated
Difference in Means within same industry						
0	<b>-0.038</b>	0.021	-1.793	0.073	3,259	154
1	<b>-0.104</b>	0.030	-3.502	0.001	2,856	135
2	<b>-0.145</b>	0.035	-4.100	0.000	2,562	121
3	<b>-0.195</b>	0.036	-5.371	0.000	2,288	104
4	<b>-0.221</b>	0.041	-5.415	0.000	2,016	90
5	<b>-0.215</b>	0.044	-4.905	0.000	1,753	79

**Panel D: Post-Acquisition Sales**

t	Coefficient Estimate	Std. Error	T-Stat	P> t	Untreated	Treated
Difference in Means within same industry						
0	<b>-0.106</b>	0.042	-2.519	0.013	3,381	154
1	<b>-0.294</b>	0.068	-4.327	0.000	2,955	138
2	<b>-0.297</b>	0.078	-3.807	0.000	2,656	122
3	<b>-0.304</b>	0.102	-2.985	0.003	2,385	105
4	<b>-0.358</b>	0.126	-2.848	0.005	2,101	91
5	<b>-0.345</b>	0.124	-2.777	0.006	1,826	81

**Table 10: Failed Transactions**

Notes: This table enumerates M&A transactions that were announced but failed to be completed. Columns 1-3 present the target name, acquirer name and acquirer nation. Columns 4 and 5 present the dates the transactions were announced and withdrawn. Columns 6 and 7 present the announced target's change in employment and sales in the year the transaction was announced.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Target Name	Acquirer Name	Acquirer Nation	Date Announced	Date Withdrawn	Target Change in Employment	Target Change in Sales
Wits Basin Precious Minerals	Easyknit Enterprises Hldgs Ltd	Hong Kong	11/29/2006	11/1/2007	NA	NA
KDI Corp	Impala Pacific Corp	Hong Kong	4/28/1986	8/21/1986	-0.538	-0.033
SSMC Inc	Berjaya Corp Bhd	Malaysia	2/6/1989	3/22/1989	NA	NA
Aeronca Inc	Korean Airlines Co Ltd	South Korea	6/10/1986	10/7/1986	NA	NA
AT&T Latin America Corp	Southern Cross Latin America	Argentina	1/7/2003	9/3/2003	NA	NA
American Maize-Products Co	Usaha Tegas Sdn Bhd	Malaysia	2/27/1995	7/14/1995	NA	NA
Bear Stearns Cos Inc	Jardine Strategic Holdings Ltd	Hong Kong	9/30/1987	10/23/1987	-0.046	0.009
Cole National Corp	Moulin Intl Hldgs Ltd	Hong Kong	4/15/2004	7/25/2004	NA	0.173
CalMat Co	Investor Group	Hong Kong	10/19/1987	10/30/1987	0.220	0.402
FNB Rochester Corp, NY	Cukurova Holding AS	Turkey	5/9/1990	9/4/1990	NA	NA
Friedman Industries Inc	Investor	Venezuela	11/7/1986	5/5/1987	NA	NA
Emerson Radio Corp	Semi-Tech Co Ltd	Hong Kong	3/15/1991	4/1/1992	NA	NA
Metromedia International Group	Investor Group	UAE	10/2/2006	12/31/2006	-0.370	-0.008
Phoenix Medical Technology Inc	MBf International	Hong Kong	8/8/1990	10/4/1990	NA	NA
Builders Transport Inc	TriSun Medical America Inc	China	3/19/1990	10/4/1990	NA	0.053
Tesoro Petroleum Corp	Oakville NV (Kuo Invt Ltd)	Hong Kong	5/31/1990	12/20/1990	-0.057	0.268
Unocal Corp	CNOOC	China	6/22/2005	8/2/2005	NA	0.224
Union Texas Petroleum Holdings	Chinese Petroleum	Taiwan	9/28/1990	12/19/1990	NA	NA

**Table 11: Robustness Checks (Propensity Score Matching and Difference-in-Differences)**

Notes: This table documents difference-in-difference estimates for the post-acquisition performance between acquired and matched non-acquired control firms. Each panel reports post-acquisition OIBD/Assets, log sales and log employment.  $t=\{0,5\}$  denotes the post-acquisition year. Each column presents the propensity score matched difference-in-differences coefficient estimate and bootstrapped standard errors based on reps=100 in parentheses. Estimates in bold indicate statistical differences in measured post-acquisition performance for acquired and matched non-acquired firms.

Panel A: Majority Acquisitions (sample size)						
t	OIBD/Asset (12)		Log Sales (12)		Log Employment (7)	
0	<b>-0.195</b>	(0.025)	<b>-0.146</b>	(0.027)	<b>-0.350</b>	(0.039)
1	0.140	(0.421)	<b>-0.433</b>	(0.043)	<b>-0.277</b>	(0.061)
2	0.546	(0.730)	<b>-0.728</b>	(0.059)	<b>-0.383</b>	(0.089)
3	-0.155	(0.126)	<b>-0.508</b>	(0.081)	<b>-0.559</b>	(0.103)
4	0.184	(0.412)	<b>-0.668</b>	(0.114)	<b>-0.695</b>	(0.130)
5	<b>0.156</b>	(0.099)	<b>-0.864</b>	(0.125)	<b>-0.882</b>	(0.154)

Panel B: Minority Acquisitions (sample size)						
t	OIBD/Asset (104)		Log Sales (104)		Log Employment (80)	
0	-0.004	(0.008)	<b>-0.034</b>	(0.011)	<b>-0.034</b>	(0.014)
1	0.032	(0.142)	<b>-0.111</b>	(0.017)	<b>-0.111</b>	(0.020)
2	0.055	(0.201)	<b>-0.240</b>	(0.020)	<b>-0.240</b>	(0.029)
3	0.053	(0.034)	<b>-0.264</b>	(0.026)	<b>-0.264</b>	(0.041)
4	0.133	(0.098)	<b>-0.201</b>	(0.034)	<b>-0.201</b>	(0.047)
5	<b>0.064</b>	(0.025)	<b>-0.423</b>	(0.035)	<b>-0.423</b>	(0.060)

Panel C: Cash Acquisitions (sample size)						
t	OIBD/Asset (102)		Log Sales (102)		Log Employment (80)	
0	<b>-0.040</b>	(0.010)	<b>-0.074</b>	(0.011)	<b>-0.118</b>	(0.014)
1	0.043	(0.144)	<b>-0.171</b>	(0.017)	<b>-0.120</b>	(0.020)
2	0.081	(0.206)	<b>-0.218</b>	(0.020)	<b>-0.201</b>	(0.030)
3	<b>0.063</b>	(0.035)	<b>-0.220</b>	(0.027)	<b>-0.302</b>	(0.042)
4	0.148	(0.102)	<b>-0.290</b>	(0.036)	<b>-0.229</b>	(0.047)
5	<b>0.068</b>	(0.026)	<b>-0.261</b>	(0.036)	<b>-0.483</b>	(0.059)

Panel D: Manufacturing Acquisitions (sample size)

t	OIBD/Asset (53)		Log Sales (53)		Log Employment (43)	
0	-0.001	(0.011)	-0.021	(0.015)	<b>-0.072</b>	(0.016)
1	0.060	(0.208)	<b>-0.142</b>	(0.022)	<b>-0.191</b>	(0.025)
2	0.071	(0.296)	<b>-0.239</b>	(0.026)	<b>-0.267</b>	(0.035)
3	<b>0.118</b>	(0.050)	<b>-0.234</b>	(0.034)	<b>-0.351</b>	(0.046)
4	0.122	(0.144)	<b>-0.417</b>	(0.048)	<b>-0.350</b>	(0.058)
5	<b>0.078</b>	(0.036)	<b>-0.348</b>	(0.049)	<b>-0.564</b>	(0.071)

Panel E: East Asian Acquirers (sample size)

t	OIBD/Asset (70)		Log Sales (71)		Log Employment (56)	
0	<b>-0.093</b>	(0.011)	<b>-0.089</b>	(0.012)	<b>-0.100</b>	(0.016)
1	0.052	(0.169)	<b>-0.208</b>	(0.019)	<b>-0.151</b>	(0.023)
2	0.153	(0.243)	<b>-0.265</b>	(0.024)	<b>-0.230</b>	(0.035)
3	0.053	(0.041)	<b>-0.290</b>	(0.030)	<b>-0.341</b>	(0.045)
4	0.137	(0.117)	<b>-0.467</b>	(0.041)	<b>-0.391</b>	(0.051)
5	0.040	(0.029)	<b>-0.469</b>	(0.042)	<b>-0.635</b>	(0.059)

Panel F: Horizontal Acquisitions (sample size)

t	OIBD/Asset (20)		Log Sales (20)		Log Employment (13)	
0	-0.021	(0.016)	<b>-0.055</b>	(0.021)	-0.025	(0.025)
1	-0.038	(0.306)	<b>-0.075</b>	(0.032)	<b>-0.313</b>	(0.041)
2	-0.114	(0.447)	<b>-0.198</b>	(0.038)	<b>-0.654</b>	(0.055)
3	0.039	(0.072)	<b>-0.260</b>	(0.047)	<b>-0.558</b>	(0.067)
4	-0.046	(0.217)	<b>-0.418</b>	(0.060)	<b>-0.830</b>	(0.077)
5	0.057	(0.055)	<b>-0.516</b>	(0.069)	<b>-1.205</b>	(0.096)

Panel G: Diversifying Acquisitions (sample size)

t	OIBD/Asset (106)		Log Sales (95)		Log Employment (81)	
0	<b>-0.048</b>	(0.009)	<b>-0.070</b>	(0.011)	<b>-0.104</b>	(0.015)
1	0.051	(0.143)	<b>-0.221</b>	(0.017)	<b>-0.104</b>	(0.021)
2	0.113	(0.205)	<b>-0.243</b>	(0.021)	<b>-0.108</b>	(0.031)
3	0.049	(0.035)	<b>-0.224</b>	(0.028)	<b>-0.135</b>	(0.043)
4	<b>0.166</b>	(0.101)	<b>-0.261</b>	(0.036)	<b>-0.086</b>	(0.046)
5	<b>0.071</b>	(0.025)	<b>-0.255</b>	(0.037)	<b>-0.305</b>	(0.058)