

Suppliers, Investors, and Equity Market Liberalizations*

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Abstract

Existing research about the impact of equity market liberalizations on real economy emphasizes the transmission channel working via industries dependent on external investors. This paper shows that financial liberalization promotes also industries dependent on a different corporate stakeholder – suppliers. Results from panel-data and event-study estimations confirm that equity market liberalizations boost output growth particularly in suppliers-dependent industries that require a high share of specialized inputs in their production process. This new channel from financial liberalization to real economy is empirically at least as robust as the well-established channel working via industries dependent on external finance.

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1 Introduction

The event of equity market liberalization occurs when the government allows foreign investors to acquire equity securities issued by domestic firms. An influential scholarly work has utilized these liberalization events as quasi-natural experiments in order to explore the impact of financial liberalization on real economy (Bekaert and Harvey, 2000; Henry 2000a, 2000b; Bekaert et al., 2005; Henry, 2006; Gupta and Yuan, 2009; Levchenko et al., 2009). This literature established a strong empirical case for the overall beneficial effect of cross-border equity flows on private investment (Henry, 2000a) and economic growth (Bekaert et al., 2005) in the recipient countries. So far, the search for the economic mechanism behind this cross-country evidence has looked mostly into the interactions between firms and external financial investors. In particular, Gupta and Yuan (2009) and Levchenko et al. (2009) showed that equity market liberalizations disproportionately benefit those industries that require a lot of external finance for their operations.

This paper shows that financial liberalization affects the real economy not exclusively by promoting industries dependent on external investors but also by helping industries dependent on a different corporate stakeholder – suppliers. The main interest of this stakeholder is to receive payment for the manufactured or already delivered intermediate goods. A forward-looking supplier (upstream firm) would be reluctant to produce a required input if she is unsure about receiving payment from the buyer (downstream firm). A lack of required inputs would in turn disturb the production process in downstream industries. There are at least three mutually non-exclusive reasons why equity market liberalizations can help to reassure the suppliers about receiving the agreed payment, benefiting those industries that

are highly dependent on this particular stakeholder.

First, allowing foreign investors to enter domestic stock markets extends the pool of potential external funding for the firms that had before relied solely on domestic investors. Existing scholarly work has already established that equity market liberalizations decrease the costs of equity capital (Henry, 2000b; Bekaert and Harvey, 2000). A lower cost of external funding naturally improves the overall financial robustness of firms. Financially robust downstream firms are in turn more likely to pay their suppliers in full extent and timely manner.

Second, there is a broad consensus in the existing literature that equity market liberalizations help to improve corporate governance. In particular, opening up to the foreign capital flows increases benefits and decreases costs of investment into corporate governance by the domestic agents who control the firms, being it managers or owners (Stulz, 2005; Doidge et al., 2007). Better corporate governance makes in turn firms more resilient to financial crises (Johnson et al., 2000; Mitton, 2002). This increased crisis resiliency is an important factor in the buyers-suppliers relationships as the risk of outstanding bills for intermediate inputs being not paid increases substantially in times of widespread financial distress.¹

Third, the presence of active foreign investors increases the demand for information services such as auditing or financial analysis in the economy (Morck et al., 2005, p. 709). Financial analysts and auditors improve the transparency of firms and help to alleviate the informational asymmetries between corporate insiders (managers, controlling shareholders)

¹Beyond the link between foreign ownership, corporate governance and crisis resilience, several authors also show a direct impact of foreign ownership on crisis resilience (Alfaro and Chen, 2012; Desai et al., 2008; Kolasa et al., 2010). However, their results are obtained in the context of foreign direct investment and multinational corporations, whereby equity market liberalizations are often associated with portfolio investment.

and outsiders. The literature usually considers the minority investors to be the main benefactors of this development. However, increased external transparency of firms allows also other stakeholders like suppliers to better evaluate the financial situation of the firms.

As the above argumentation makes clear, many ramifications of equity market liberalizations usually thought to benefit primarily industries dependent on external investors turn out to be potentially important also for industries dependent on suppliers. Lower price of external equity, improved crisis resilience, higher financial and accounting transparency – all these features would *ceteris paribus* help downstream firms to convince their suppliers that they will pay for intermediate inputs on time and in full amount. This yields a clear and testable empirical implication: Equity market liberalizations should disproportionately benefit those industries where the production process particularly depends on smooth buyers-suppliers relationships.

I examine this hypothesis in the difference-in-difference econometric framework. The treatment is the event of equity market liberalization and the treated group represents the suppliers-dependent industries. In particular, I interact equity market liberalization dummy varying at the country-time level (Bekaert et al., 2005) with a proxy measuring the importance of smooth relationships with suppliers for a given industry (Nunn, 2007). The proxy measures the share of relationship-specific - as opposed to standardized - inputs used in the production process of an industry. Buyers and suppliers of standardized inputs can easily find alternative business partners and might not even know each other's identity if the inputs are traded on organized exchange. In contrast, buyers and suppliers of relationship-specific inputs have to make substantial *ex-ante* investments and cannot easily switch their business partners. Consequently, industries requiring a high share of relationship-specific inputs are

especially dependent on smooth relationships with their suppliers.²

Both panel data estimations and event studies approach confirm that equity liberalizations disproportionately promote suppliers-dependent industries that require a high share of relationship-specific inputs in their production process. This effect is at least as important as the traditional mechanism of financial liberalization promoting industries dependent on external investors. Following Gupta and Yuan (2009) and Levchenko et al. (2009), I also interact the dummy of equity market liberalization with the dependence of a given industry on external finance. These authors find a positive and significant effect of this interaction on economic growth, affirming the disproportionate impact of equity liberalizations on industries requiring a lot of external finance. My estimations confirm their result. However, when both interactions enter the regressions, it is mostly only the term capturing the beneficial effect of equity liberalization on suppliers-dependent industries that remains significant. This last finding might sound surprising but it seems to be in accordance with some recent evidence in trade literature. Defever and Suedekum (2014) show that equity market liberalizations increase exports particularly in industries requiring a high share of relationship-specific inputs and that this effect dominates the impact of liberalization on export of industries dependent on external finance.

This paper contributes to two strands of literature. First, it complements the existing findings on the transmission channels from financial liberalization to the real economy. The research exploring investment and growth effects of equity market liberalization events has so far focused on the direct impact of foreign external investors on the domestic economy

²In particular, a supplier of a specialized input has to customize her product for specific needs of a specific purchaser and would therefore face significant difficulties if forced to sell it to a different buyer. Suppliers of relationship-specific inputs will be therefore particularly interested in the financial situation of a potential corporate customer.

(Bekaert and Harvey, 2000; Henry 2000a, 2000b; Bekaert et al., 2005; Henry, 2006; Gupta and Yuan, 2009; Levchenko et al., 2009). This is in line with the whole finance-growth literature that emphasizes the interactions between agents and institutions of the financial sector (individual investors, financial intermediaries, capital markets) on the one side and subjects from the real economy (industries, firms, households) on the other side (see, e.g., Levine, 2005). This paper looks beyond the traditional shareholder focus, establishing a new channel from financial liberalization to economic growth. In particular, it shows that equity market liberalizations boost economic growth also by promoting industries dependent on a stakeholder from the real economy - the suppliers.

Second, the paper contributes to the literature exploring the character of relationship-specific investment. This is investment whose value is higher within a particular relationship than outside it. The proxy for suppliers-dependence of a given industry used in this paper relies on the notion of such investment. Existing literature mostly emphasizes the role of contract enforcement and rule of law in reassuring suppliers of relationship-specific inputs, building upon the insights from the Nobel-prize winning work by Oliver Williamson (1975, 1979). For example, Levchenko (2007) and Nunn (2007) show the importance of institutional quality for export performance of suppliers-dependent industries. There is much less work exploring the potential importance of financial factors in supporting relationship-specific investment. Strieborny and Kukušková (2011) demonstrate the relevance of domestic banking development for the growth of suppliers-dependent industries. Defever and Suedekum (2014) explore the issue of financial liberalization and relationship-specific investment in the context of international trade.

The rest of the paper is structured as follows. The next section describes the data.

Section 3 explains the empirical strategy using both panel data estimations and the event study approach. Section 4 reports the empirical results. Section 5 concludes and provides directions for further research.

2 Data

This paper utilizes the notion of relationship-specific investment to capture the importance of suppliers for given industry (S_i). The most prominent measure of relationship-specific investment was arguably introduced by Nunn (2007), following the classification of Rauch (1999). In particular, Nunn (2007) computes for every industry the proportion of intermediate inputs that cannot be sold on an organized exchange, nor are they reference-priced in trade publications. The non-existence of an organized exchange or reference price suggests some non-standard features and necessity of buyer-specific adjustments to the product by the supplier. These adjustments combined with the absence of organized exchange or reference price in turn implies that the supplier would struggle to secure the original price if the initial buyer were unable to pay. Consequently, the financial stability of downstream firms is crucial for the willingness of upstream firms to engage in production of the required intermediate products (see also Strieborny and Kukenova, 2011). The original measure in Nunn (2007) is reported in the US input-output classification. The direct source of data for sectoral suppliers-dependence (S_i) in this paper is Nunn's website that recomputes the measure for the 3-digit ISIC Revision 2 classification corresponding to production data used in this paper.

Finding a variable appropriately capturing the importance of external investors for a

given industry (I_i) is a more straightforward task. The standard measure in this context is the external finance dependence introduced by Rajan and Zingales (1998). It is defined as capital expenditure minus cash flow divided by capital expenditure. The original variable from Rajan and Zingales (1998) is calculated for a mix of three-digit and four-digit ISIC industries. The source of data for sectoral investors-dependence (I_i) in this paper is Laeven et al. (2002) who follow the 3-digit ISIC Revision 2 classification.

The years when equity market liberalizations took place in different countries come from Bekaert et al. (2005). Conceptually, the liberalization event refers to the year when a given country opens up to cross-border equity flows. Bekaert et al. (2005) use two indicator variables. "Official" equity market liberalization corresponds to the date of a formal legal change allowing foreign investors to acquire domestic equities. "First sign" equity market liberalization is the earliest of the following three dates: official liberalization, first American Depository Receipt (ADR; a security allowing the shares of the non-US companies to be traded in the US financial markets), or a launch of the first country fund (a fund with portfolio containing only stocks of given country). Both official and first sign indicator variables take value one in the year of liberalization and thereafter, and zero otherwise. For all specifications, I check the robustness of the results by alternatively using both indicator variables as measure of equity liberalizations (EL_{ct}).

The industrial output data for economic growth (G_{ict}) and initial industry share ($Share_{ict}$) come from the Trade, Production, and Protection Database by Nicita and Olarreaga (2007), based on the 3-digit ISIC Revision 2 classification. The ultimate source of production data in this database is the United Nations Industrial Development Organization (UNIDO). I transform data from current U.S. dollars into constant international dollars using GDP deflator

from Penn World Table (Heston, Summers, and Aten, 2002).

The paper combines data from all above sources. I drop the observations from the United States, closely following the methodological approach in the seminal work of Rajan and Zingales (1998). The industry characteristics (S_i) and (I_i) are namely computed from the US data, ensuring the exogeneity of those characteristics within the applied industry-country setting. Rajan and Zingales (1998) provide detailed exposition of this difference-in-difference identification strategy that has become one of the cornerstones in the empirical finance literature.

The resulting sample includes data for 28 manufacturing industries in 68 countries for the period between 1980 and 1997. Appendices A1 and A2 report the lists of developed and developing countries, respectively.³ If equity market liberalization occurred between 1980 and 1997, the name of country is in bold. The other countries remained either closed or open to foreign equity capital during the whole sample period.

3 Methodology

3.1 Panel Data Specifications

In order to identify the differential impact of equity market liberalizations across industries, I interact a liberalization dummy (EL_{ct}) with variables capturing the technological dependence of a given industry on suppliers (S_i) and external investors (I_i). I examine these two channels first separately, but ultimately allow both interaction terms to enter simultaneously the

³Developed countries are the OECD members, excluding transition and emerging economies.

following specification:

$$G_{ict} = \alpha + \beta_0 EL_{ct} + \beta_1 EL_{ct} * S_i + \beta_2 EL_{ct} * I_i + \gamma Share_{ict} + \delta_{ic} + \mu_t + \varepsilon_{ict}, \quad (1)$$

where the dependent variable is output growth in industry i , country c , and year t . Coefficient β_0 captures the direct effect of equity market liberalizations on economic growth. The specification also includes initial share of industry i in overall output of country c at the beginning of year t . This variable ($Share_{ict}$) controls for the fact that more mature industries usually exhibit lower growth rates. Full sets of industry-country (δ_{ic}) and time (μ_t) fixed effects control for a wide range of omitted variables. Industry-country dummies (δ_{ic}) also absorb the direct effects of industry characteristics S_i and I_i .

The main variable of interest is $EL_{ct} * S_i$. A positive coefficient β_1 would confirm that equity market liberalizations disproportionately promote growth of those industries that require a high share of relationship-specific inputs and are therefore strongly dependent on smooth relationships with their suppliers. Similarly, a positive coefficient β_2 would mean that financial liberalizations disproportionately boost growth of industries dependent on external investors. Gupta and Yuan (2009) already provided empirical support for this well-established transmission channel (captured by the variable $EL_{ct} * I_i$) in a similar specification.

In Equation (1), country characteristics that change over time could bias the coefficients of included variables. One way to address this issue would be to include the “usual suspects” into the regression. In this regard, Gupta and Yuan (2009) control for openness to trade, GDP per capita, human capital, and domestic financial development. However, some less obvious country-specific factors might still shape the complex relationship between fi-

nancial liberalization and economic growth. For this reason, I estimate also the following specification:

$$G_{ict} = \alpha + \beta_1 EL_{ct} * S_i + \beta_2 EL_{ct} * I_i + \gamma Share_{ict} + \delta_{ic} + \eta_{ct} + \varepsilon_{ict}, \quad (2)$$

where a full set of country-time fixed effects (η_{ct}) replaces time fixed effects from equation (1). This more stringent specification controls for all possible time-varying country characteristics that could in more or less obvious ways affect economic growth. The direct effect of equity liberalizations (EL_{ct}) is also captured by η_{ct} .

3.2 Event-Study Approach

Event-study approach offers another way to account for various factors that might obfuscate transmission channels from equity market liberalizations to economic growth. This methodology has gained broad popularity in the empirical trade literature, going back to the seminal paper by Treffer (2004). For instance, Manova (2008) and Defever and Suedekum (2014) use event-study approach to examine impact of equity liberalizations on international trade flows. The main idea consists in first-differencing Equation (1):

$$\Delta G_{ict} = G_{ic1} - G_{ic0} = \beta_0 \Delta EL_{ct} + \beta_1 \Delta EL_{ct} * S_i + \beta_2 \Delta EL_{ct} * I_i + \gamma \Delta Share_{ict} + \mu_T + \Delta \varepsilon_{ict}, \quad (3)$$

where $t = 0$ ($t = 1$) refers to the time before (after) equity liberalization takes place. In particular, G_{ic0} (G_{ic1}) corresponds to average growth in three years before (after) the liberalization event. Consequently, a positive value of ΔG_{ict} would document an acceleration

in economic growth due to such event. First-differencing also removes country-industry fixed effects (δ_{ic}) from the regression, providing a cleaner estimate of a causal impact of equity market liberalizations (Manova 2008, p. 41). The event-study specification places high requirements on data to reveal any significant impact of the liberalization events. The number of data points available for identification is namely much lower than in standard panel data estimation, as Equation (3) uses only one observation for every country-industry pair. The specification also controls for the year in which the liberalization event took place (μ_T).

Finally, the dummy character of the liberalization variable (EL_{ct}) implies $\Delta EL_{ct} = EL_{ct1} - EL_{ct0} = 1$. Equation (3) thus simplifies to:

$$\Delta G_{ict} = \beta_0 + \beta_1 S_i + \beta_2 I_i + \gamma \Delta Share_{ict} + \mu_T + \Delta \varepsilon_{ict}, \quad (4)$$

with EL_{ct} not directly entering the specification. Nevertheless, the economic interpretation of main coefficients remains unchanged. Positive estimated coefficients β_1 and β_2 would still imply a disproportionately beneficial impact of equity liberalizations on industries highly dependent on suppliers (S_i) and external investors (I_i), respectively. Coefficient on the constant term, β_0 , captures the direct effect of EL_{ct} .

4 Empirical Results

Table 1 reports the regression results from the full panel of 68 countries. The first column focuses on the main channel examined in this paper. The positive and significant estimated

coefficient for the interaction term $EL_{ct} * S_i$ confirms that equity market liberalizations benefit especially suppliers-dependent industries. The initial industry share ($Share_{ict}$) has the expected negative sign. Industries usually exhibit slower growth rates if their production already accounts for a high share in the country's overall output. The negative direct effect of EL_{ct} is somewhat surprising, but following tables related to more stringent specifications will address this issue. The second column tests for the traditional channel of equity market liberalizations disproportionately helping the industries dependent on external investors. The coefficient for the corresponding interaction term $EL_{ct} * I_i$ is indeed positive and significant.

The third column of Table 1 reports the estimation results for specification (1). Both interaction terms ($EL_{ct} * S_i$, $EL_{ct} * I_i$) enter the regression with expected positive signs, but only the one capturing the suppliers' importance ($EL_{ct} * S_i$) is statistically significant. The disproportionate impact of equity market liberalization on suppliers-dependent industries is also economically important. According to our proxy for suppliers' importance (S_i), the industry most dependent on its suppliers is "transport equipment" that uses a high share of specialized inputs. The least suppliers-dependent industry is "petroleum refineries" whose production process relies mostly on standardized inputs. According to the estimate from the third column of Table 1, equity market liberalization would provide the "transport equipment" industry with an additional boost of 6.7% in terms of output growth relative to the growth rate of the "petroleum refineries" industry.⁴

The first three columns use official liberalization dates to construct the indicator variable

⁴This is calculated as follows. The estimated coefficient for the main interaction term is 0.084. Equity market liberalization is a zero-one dummy variable and the values of industrial suppliers-dependence are 0.859 for transport equipment and 0.058 for petroleum refineries. The additional growth boost equity market liberalization would provide to transport equipment industry relative to petroleum refineries industry is thus: $0.084 * (1 - 0) * (0.859 - 0.058) \approx 6, 7\%$.

EL_{ct} . The last three columns of Table 1 mirror the specifications from columns (1) to (3), but use the dates of first liberalization sign instead. The results are qualitatively the same.

[Table 1 about here]

Table 2 reports the results of the more stringent specification (2). Country-time fixed effects (η_{ct}) now capture all observable and unobservable country characteristics that change over time. Thus, they also absorb the direct effect of equity market liberalizations (EL_{ct}). The first three columns report the results based on the official dates of these liberalization events. Column (1) presents the regression result from the full sample of countries. Columns (2) and (3) rely on subsamples of developing and developed countries, respectively. Broadly speaking, developed countries are non-transition and non-emerging economies among the OECD members. Appendices A1 and A2 provide the details. Columns (4) to (6) repeat the estimations from the first three columns, while using the dates of the first liberalization sign to construct the liberalization dummy (EL_{ct}).

Overall, Table 2 confirms the patterns from the previous table. Financial liberalization disproportionately benefits industries heavily dependent either on their suppliers or external investors, as captured by positive estimated coefficients for $EL_{ct}*S_i$ and $EL_{ct}*I_i$, respectively. In five out of six cases, the effect is significant for the suppliers-dependent sectors, but not for the investor-dependent ones. This pattern reverses only in the last column that reports the results of the first sign of liberalization dates in the subsample of developed countries.

[Table 2 about here]

The results in Tables 1 and 2 might be partially driven by some underlying differences between countries that remain open or closed to cross-border equity flows during the whole sample period. I therefore restrict the sample in Tables 3 and 4 to countries that actually did experience equity market liberalization between 1980 and 1997. The focus on these “liberalizers” does not fully remove the cross-sectional variation, as countries open themselves to cross-border equity flows at different times. Nevertheless, the identification comes in this case mostly from the within-country variation over time. One could thus view results from Tables 3 and 4 as an intermediate step between the full panel and the event-study analysis (Manova 2008, p. 40).

Table 3 re-estimates the specifications from Table 1 using the restricted sample of liberalizing countries. The results remain qualitatively the same. Financial liberalization still seems to benefit particularly industries dependent on smooth relationship with their suppliers ($EL_{ct} * S_i$). The positive impact of equity market liberalizations on industries relying on external investors is stronger in the group of liberalizing countries (Table 3) than in the whole sample (Table 1). The clearly significant positive estimated coefficient for the interaction term $EL_{ct} * I_i$, both in second and fifth column of the Table 3, is now more in accordance with the results reported in Gupta and Yuan (2009). This is not surprising, as their sample consists mostly of the liberalizers. In particular, 27 out of 31 countries examined in Gupta and Yuan (2009) liberalized cross-border equity flows during their sample period. Nevertheless, once both interaction terms are allowed to enter regressions in columns (3) and (6), only the variable capturing the suppliers’ importance ($EL_{ct} * S_i$) maintains significance. Focusing on liberalizing countries also provides more intuitive results for the overall effect of equity market liberalizations. The direct effect of EL_{ct} is less negative than in Table 1.

Importantly, the overall liberalization effect is positive.⁵

[Table 3 about here]

Table 4 verifies the estimations of the stringent specification (2) in the sample of liberalizing countries. The results broadly confirm the patterns found in Table 2. The single qualitative deviation relates to subsample of liberalizing developed countries in columns (3) and (6). Contrary to Table 2, none of the two interaction terms ($EL_{ct} * S_i$, $EL_{ct} * I_i$) is significant. However, the specification might simply ask too much from data in this case. Appendix A1 shows that only six developed countries officially implemented equity market liberalizations between 1980 and 1997. In the case of dates for the first sign of liberalization, the number even drops to five as Japan issued the first ADR before 1980. Most of the developed countries were financially open during the whole sample period. This substantially decreases the amount of available data in columns (3) and (6) of Table 4.

[Table 4 about here]

Finally, Table 5 reports the results from estimating Equation (4). This event-study approach places arguably the highest data requirements on the search for a possible impact of financial liberalization. Columns (1) and (4) use data from all liberalizing countries, while columns (2) and (5) rely on subsample of developing countries. In these four specifications, the main variable of interest (S_i) is positive and significant. The direct effect of equity

⁵The overall effect of equity market liberalizations can be computed from the estimated coefficients for variables containing the liberalization dummy and from mean values of industry characteristics. For example, the overall liberalization effect in column (3) of Table 3 is captured by $\widehat{\beta}_0 + \widehat{\beta}_1 \overline{S_i} + \widehat{\beta}_2 \overline{I_i} = -0.043 + 0.099 * 0.487 + 0.019 * 0.269 = 0.010324$

market liberalizations (ΔEL_{ct}) is either positive or insignificant and the overall liberalization effect is clearly beneficial for the output growth. Positive impact of equity liberalizations on suppliers-dependent industries seems to disappear when applying the event-study approach in the case of developed countries (columns three and six). Similarly to Table 4, this result might reflect the small number of liberalizers among the developed countries rather than a smaller impact of financial liberalization at higher stages of economic development.⁶

[Table 5 about here]

5 Conclusions

Equity market liberalizations enable foreign investors to acquire shares in domestic firms. Existing literature has therefore naturally focused on the impact of these events on the relationship between firms and investors. In particular, there is by now a well-established case for equity market liberalizations disproportionately promoting growth of industries that are highly dependent on financing by external investors (Gupta and Yuan, 2009; Levchenko et al., 2009). This paper stresses the effect of financial liberalization on firms' relationships with another crucial stakeholder - the suppliers.

Many empirically well-established effects of equity market liberalizations (increased financial stability due to lower costs of external funding, improved crisis resilience, better transparency towards corporate outsiders) have the potential to reassure suppliers about

⁶Indeed, both in Table 4 and 5 the point estimates for the coefficients capturing the importance of financial liberalization on suppliers-dependent industries are very similar in the subsamples of developing and developed countries. In case of developed countries the coefficients for the main variable of interest just happen to be imprecisely estimated (arguably due to a much lower number of observations) and therefore insignificant.

getting paid for intermediate inputs, making these crucial corporate stakeholders more willing to produce and deliver the required inputs in the first place. Consequently, equity market liberalizations should particularly promote those industries where the firms strongly depend on their suppliers as their production process requires a high share of specialized intermediate inputs. Results from panel data and event-study approach confirm this hypothesis, establishing a novel transmission channel from financial liberalization to real economy. Financial openness seems to play an important role in facilitating direct interactions among agents in real economy, rather than having an impact exclusively via improved firms-investors relationships.

There are two areas for possible further research. Firstly, Strieborny and Kukušková (2011) show in a cross-sectional setting that banks rather than stock markets promote industries requiring a high share of relationship-specific investment. The results from equity market liberalizations therefore suggest that there is something special about the impact of foreign investors as opposed to stock markets in general. Secondly and relatedly, there is the remaining question whether majority versus minority foreign ownership plays a significant role. A buyer that is an integral part of a multinational corporation might be in an even better position to reassure suppliers, compared to a downstream firm with a "merely" minority foreign ownership. As existing research has established decades ago, multinational corporations (MNC) face a lower average probability of insolvency, even when compared with domestic corporations in the developed countries (Shaked, 1986). There is also a more recent literature briefly mentioned in the introduction of this paper about the higher financial resilience of the MNC subsidiaries compared to the local firms (Alfaro and Chen, 2012; Desai et al., 2008; Kolasa et al., 2010). In the sense that equity market liberalizations are

often associated with foreign portfolio investment (acquiring of minority stakes by foreign investors), the results in this paper might constitute only a lower bound for the importance of foreign capital in the buyers-suppliers relationships within domestic economy.

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Appendix A1: Developed Countries

The subsample includes non-transition and non-emerging members of the OECD. Countries in bold implemented equity liberalizations during the sample period 1980-1997. Japan (in italics) experienced official liberalization in 1983, but issued the first ADR prior to the sample period.

Australia, Austria, Canada, Denmark, Finland, France, Germany, **Greece**, **Iceland**, Ireland, Italy, *Japan*, Netherlands, **New Zealand**, Norway, **Portugal**, **Spain**, Sweden, Switzerland, United Kingdom

Appendix A2: Developing and Emerging Countries

Countries in bold implemented equity liberalizations during the sample period 1980-1997.

Algeria, **Argentina**, **Bangladesh**, Benin, **Botswana**, **Brazil**, Cameroon, **Chile**, **Colombia**, Costa Rica, **Cote d'Ivoire**, **Ecuador**, **Egypt**, El Salvador, Gabon, **Ghana**, Guatemala, Honduras, **India**, **Indonesia**, Iran, **Israel**, **Jordan**, **Kenya**, **Korea (Republic of)**, Kuwait, Malawi, **Malaysia**, **Malta**, **Mauritius**, **Mexico**, **Morocco**, Nepal, **Nigeria**, **Oman**, **Pakistan**, **Peru**, **Philippines**, Senegal, Singapore, **South Africa**, **Sri Lanka**, **Thailand**, **Trinidad and Tobago**, **Tunisia**, **Turkey**, Uruguay, **Venezuela**

Table 1: Full Panel - Baseline Specification

The dependent variable is output growth in industry i , country c , and year t . All regressions are estimated by the OLS and include industry-country and time fixed effects. Coefficient for the constant term is not reported. EL_{ct} is indicator variable equal to one if country was in a given year open to cross-border equity flows and zero otherwise. S_i and I_i measure for each industry the importance of suppliers and external investors, respectively. S_i is the proportion of intermediate inputs used by a given industry that cannot be sold on organized exchange and are not reference-priced in a trade publication. I_i is capital expenditure minus cash flow divided by capital expenditure for a median firm in a given industry. $Share_{ict}$ is the share of industry i in overall output of country c at the beginning of year t . The first three columns use the official dates of equity market liberalizations and the last three columns use the dates of the first liberalization sign. Robust standard errors clustered at the country level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|-------------------------|---------------------|----------------------|------------------------------|---------------------|----------------------|
| | Official Liberalization | | | First Sign of Liberalization | | |
| Equity Liberalization (EL_{ct}) | -0.074*** (0.021) | -0.036** (0.017) | -0.073*** (0.021) | -0.064*** (0.020) | -0.026 (0.016) | -0.064*** (0.020) |
| Equity Liberalization x Suppliers ($EL_{ct} * S_i$) | 0.092*** (0.030) | | 0.084*** (0.026) | 0.093*** (0.032) | | 0.086*** (0.030) |
| Equity Liberalization x Investors ($EL_{ct} * I_i$) | | 0.030* (0.017) | 0.014 (0.016) | | 0.029 (0.018) | 0.012 (0.017) |
| Industry Share ($Share_{ict}$) | -1.650** (0.799) | -1.632** (0.795) | -1.655** (0.802) | -1.647** (0.797) | -1.631** (0.794) | -1.650** (0.799) |
| Observations | 23,062 | 23,062 | 23,062 | 23,062 | 23,062 | 23,062 |
| R-squared | 0.081 | 0.080 | 0.081 | 0.080 | 0.080 | 0.080 |

Table 2: Full Panel - Stringent Specification

The dependent variable is output growth in industry i , country c , and year t . All regressions are estimated by the OLS and include industry-country and country-time fixed effects. Coefficient for the constant term is not reported. The independent variables are defined in Table 1. Columns 1 and 4 report results for the full sample. Columns 2 and 5 report results for the subsample of developing countries. Columns 3 and 6 report results for the subsample of developed countries. The first three columns use the official dates of equity market liberalizations and the last three columns use the dates of the first liberalization sign. Robust standard errors clustered at the country level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|-------------------------|----------------------|----------------------|------------------------------|----------------------|----------------------|
| | Official Liberalization | | | First Sign of Liberalization | | |
| Equity Liberalization x Suppliers ($EL_{ct} * S_i$) | 0.103*** (0.026) | 0.100*** (0.029) | 0.104* (0.059) | 0.108*** (0.032) | 0.103*** (0.036) | 0.115 (0.067) |
| Equity Liberalization x Investors ($EL_{ct} * I_i$) | 0.023 (0.016) | 0.024 (0.020) | 0.025 (0.017) | 0.021 (0.017) | 0.020 (0.021) | 0.032* (0.017) |
| Industry Share ($Share_{ict}$) | -2.730*** (0.460) | -2.865*** (0.522) | -1.689*** (0.518) | -2.724*** (0.458) | -2.857*** (0.521) | -1.692*** (0.508) |
| Observations | 23,062 | 15,327 | 7,735 | 23,062 | 15,327 | 7,735 |
| R-squared | 0.323 | 0.325 | 0.267 | 0.323 | 0.325 | 0.267 |

Table 3: Liberalizers - Baseline Specification

The dependent variable is output growth in industry i , country c , and year t . Only countries where equity market liberalizations occurred during the sample period are included. All regressions are estimated by the OLS and include industry-country and time fixed effects. Coefficient for the constant term is not reported. The independent variables are defined in Table 1. The first three columns use the official dates of equity market liberalizations and the last three columns use the dates of the first liberalization sign. Robust standard errors clustered at the country level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|-------------------------|-----------|-----------|------------------------------|-----------|-----------|
| | Official Liberalization | | | First Sign of Liberalization | | |
| Equity Liberalization (EL_{ct}) | -0.044** | 0.001 | -0.043** | -0.038* | 0.007 | -0.037* |
| | (0.020) | (0.017) | (0.020) | (0.020) | (0.017) | (0.019) |
| Equity Liberalization x Suppliers ($EL_{ct} * S_i$) | 0.110*** | | 0.099*** | 0.111*** | | 0.101*** |
| | (0.028) | | (0.025) | (0.031) | | (0.030) |
| Equity Liberalization x Investors ($EL_{ct} * I_i$) | | 0.038** | 0.019 | | 0.036** | 0.017 |
| | | (0.017) | (0.016) | | (0.018) | (0.017) |
| Industry Share ($Share_{ict}$) | -2.324*** | -2.290*** | -2.333*** | -2.312*** | -2.282*** | -2.319*** |
| | (0.600) | (0.595) | (0.603) | (0.600) | (0.596) | (0.602) |
| Observations | 13,806 | 13,806 | 13,806 | 13,335 | 13,335 | 13,335 |
| R-squared | 0.102 | 0.101 | 0.102 | 0.101 | 0.101 | 0.101 |

Table 4: Liberalizers - Stringent Specification

The dependent variable is output growth in industry i , country c , and year t . Only countries where equity market liberalizations occurred during the sample period are included. All regressions are estimated by the OLS and include industry-country and country-time fixed effects. Coefficient for the constant term is not reported. The independent variables are defined in Table 1. Columns 1 and 4 report results for the full sample of the liberalizers. Columns 2 and 5 report results for the subsample of developing countries. Columns 3 and 6 report results for the subsample of developed countries. The first three columns use the official dates of equity market liberalizations and the last three columns use the dates of the first liberalization sign. Robust standard errors clustered at the country level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|-------------------------|----------------------|-------------------|------------------------------|----------------------|-------------------|
| | Official Liberalization | | | First Sign of Liberalization | | |
| Equity Liberalization x Suppliers ($EL_{ct} * S_i$) | 0.102*** (0.027) | 0.099*** (0.029) | 0.095 (0.062) | 0.107*** (0.033) | 0.103*** (0.036) | 0.102 (0.073) |
| Equity Liberalization x Investors ($EL_{ct} * I_i$) | 0.023 (0.017) | 0.023 (0.020) | 0.025 (0.019) | 0.021 (0.018) | 0.020 (0.021) | 0.033 (0.018) |
| Industry Share ($Share_{ict}$) | -2.712*** (0.592) | -2.848*** (0.646) | -1.237 (0.763) | -2.705*** (0.592) | -2.837*** (0.643) | -1.171 (0.773) |
| Observations | 13,806 | 11,302 | 2,504 | 13,335 | 11,302 | 2,033 |
| R-squared | 0.244 | 0.241 | 0.291 | 0.244 | 0.241 | 0.287 |

Table 5: Event Studies

The dependent variable is output growth acceleration in industry i and country c , following the event of equity liberalization. Only countries where equity market liberalizations occurred during the sample period are included. All regressions are estimated by the OLS and control for the year when the liberalization event occurred. The independent variables are defined in Table 1. Columns 1 and 4 report results for the full sample of the liberalizers. Columns 2 and 5 report results for the subsample of developing countries. Columns 3 and 6 report results for the subsample of developed countries. The first three columns use the official dates of equity market liberalizations and the last three columns use the dates of the first liberalization sign. Robust standard errors clustered at the country level are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|-------------------------|----------------------|----------------------|------------------------------|----------------------|----------------------|
| | Official Liberalization | | | First Sign of Liberalization | | |
| Constant (ΔEL_{ct}) | 0.026 (0.016) | 0.038** (0.017) | -0.077* (0.029) | -0.025 (0.017) | 0.019 (0.020) | -0.078 (0.035) |
| Suppliers (S_i) | 0.098*** (0.034) | 0.096** (0.040) | 0.111 (0.064) | 0.106** (0.039) | 0.105** (0.046) | 0.107 (0.079) |
| Investors (I_i) | 0.024 (0.021) | 0.026 (0.027) | 0.018 (0.016) | 0.009 (0.021) | 0.003 (0.026) | 0.033 (0.015) |
| Diff. Industry Share ($\Delta Share_{ict}$) | -2.881*** (0.732) | -2.853*** (0.773) | -3.422*** (0.538) | -3.010*** (0.786) | -2.991*** (0.837) | -3.257*** (0.525) |
| Observations | 576 | 455 | 121 | 542 | 437 | 105 |
| R-squared | 0.181 | 0.180 | 0.197 | 0.180 | 0.194 | 0.175 |