Does Easing Access to Foreign Financing Matter for Firm Performance?

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Abstract

The literature shows that rigid capital control policies adversely influence international trade, leading to external financial reforms in terms of greater cross-border access to financing, which can stimulate aggregate productivity. However, the literature overlooks the relationships among access to external financing, firm-level productivity, and exporting performance. We fill this gap by using a rich dataset of 11,612 Indian firms over 1988–2014 and study how a unique financial policy intervention affects firm performance. We establish a significant effect of capital-account liberalization through an export-oriented policy initiative on firms' productivity and, consequently, on their exporting activity. Finally, we find that the benefits of the policy reform are more pronounced for financially vulnerable firms characterized by either high debt or low liquidity.

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1. Introduction

Researchers generally agree that due to restricted cross-border capital flows, the lack of access to external financing posed a major constraint for the firms in emerging markets during the 1990s, which hampered both aggregate growth and exporting activities. Many governments in the developing world have since liberalized their capital-account regulations, especially regarding the restrictions on external borrowing, so as to improve access to financing. However, extant studies rarely evaluate these widespread programs using firm-level data, especially for developing economies. In this paper, we use a rich dataset and a unique financial policy intervention to fill this research gap.

Specifically, we use panel data for 11,612 Indian firms between 1988 and 2014 to analyze their firm-level responses to the Foreign Exchange Management Act (FEMA), which the Indian government enacted in 1999 and became effectively operational starting from 2000. We study how well FEMA helped firm access overseas financing and achieve better performance during the post-2000 reform period and thus provide new evidence on how firm performance, in terms of productivity improvement, responds to international transaction liberalization, with implications for the intensive margin of trade activity. Additionally, we argue that, although FEMA beneficiaries did become more productive, the effect may have been heterogeneous across firms. That is, we investigate how firm productivity reacted to the FEMA reform, as well as whether high-leverage or low-liquidity firms were more likely to benefit from the reform.

To address the issues mentioned above, we carry out a difference-in-differences analysis to estimate how the policy shift affected firm productivity and, ultimately, export intensity. Our dataset spans the pre-policy period (1988–1999) and post-policy period (2000–2014). We divide firms into two groups: treated and control. The former group includes exporting firms with foreign financing under the external commercial borrowing (ECB) framework, which was

introduced after the FEMA reform. The latter group includes exporting firms with domestic financing only. The identifying assumption for the research design is that treated and control firm groups behave similarly in the absence of the policy change.

India provides an ideal laboratory for the empirical analysis for two main reasons. First, it is the fifth largest economy worldwide in terms of nominal GDP according to the International Monetary Fund (IMF). However, its capital controls are high, as shown in Figure A1. Dismantling capital controls can provide greater access to overseas borrowing and help firms import capital goods, set up new foreign projects, and modernize or expand existing units. Second, financial liberalization is likely to spur productivity and innovation, especially in emerging economies such as India (Shu and Steinwender, 2018). Additionally, in the era of financial globalization, India is linked to other developed markets, in that international policy spills over from the U.S. and Europe, which has implications for its financial stability (Rajan, 2014). Examining firm-level evidence in view of the FEMA policy experiment helps validate the role of the access to overseas debt markets under a liberalized regime, thereby contributing to the literature.

Our baseline results, which remain consistent to several robustness tests, can be summarized as follows. Firms that benefitted from FEMA were more productive and have had higher export intensity compared to firms with domestic sources of financing only. Moreover, our results suggest that firms increased their productivity following the policy change, especially if they were financially vulnerable (as measured by the high levels of debt and low levels of liquidity). Our findings thus make a case for easing capital controls to improve firm performance in countries that maintain restrictive capital accounts.

Our paper contributes to the literature in two main ways. First, it adds to the literature on financial liberalization and firm performance (see, e.g., Bekaert et al., 2005; Quinn and Toyoda, 2008) by analyzing the relationship between an underexplored but important financial reform

and firm productivity, as well as that between the reform and exporting intensity. Exploiting India's foreign exchange liberalization, through the FEMA lens, allows us to systematically analyze how (lower) capital constraints affect productivity and the intensive margin of trade activity. Second, while this study relates to the burgeoning literature on firm heterogeneity and real activities (see Greenaway and Kneller, 2007; Melitz and Redding, 2014; Chen and Guariglia, 2013; Ferrando and Ruggieri, 2018), we focus on the interplay between the FEMA reform and varying degrees of firm heterogeneity. It thus shows that firms with high debt and low liquidity can improve their performance in response to a policy shift that alters their abilities to access external financing. To the best of our knowledge, this channel is yet to be documented.

The remainder of this paper is structured as follows. In Section 2, we provide the background of the FEMA reform and develop the research hypotheses. In Section 3, we describe the econometric modeling strategy. We present the data for our empirical analysis along with summary statistics in Section 4 and report the econometric results in Section 5. In Section 6, we subject the models to various robustness tests and, finally, in Section 7, we provide concluding remarks.

2. Background and hypotheses development

2.1 The FEMA reform

Over the past four decades, India has embarked on a journey of continuous change in trade policy, removing anti-export and pro-import-substitution bias. Particularly, the restrictive regime in the 1970s and 1980s gave rise to pro-liberalization policies. This involved replacing the 1973 Foreign Exchange Regulation Act (FERA) with the more market-friendly FEMA in the winter session of parliament in 1999. The main idea was to support foreign exchange transactions in both the capital and current accounts to achieve greater trade and financial

openness. FEMA's key objective was to facilitate foreign trade and payments involving foreign exchange, consistent with full current-account convertibility and the progressive liberalization of capital-account transactions to maintain stability in the foreign exchange market.[1] In short, one of the key objectives of the FEMA reform was to help Indian firms expand onto foreign markets.

Historically, Indian interest rates have always been higher than offshore ones, thereby encouraging domestic firms to borrow overseas at cheaper rates. However, before FEMA, firms needed the Reserve Bank of India's (RBI) permission to borrow from overseas debt markets, thus restricting their exposure to foreign currency borrowing (FCB). FEMA removed the RBI preauthorization requirement, enabling firms to borrow up to a certain amount per year.[2] The maximum amount of ECB an individual firm can raise increased gradually after the introduction of the regulatory framework to a current value of USD 750 million or its equivalent during a fiscal year. This limit can mitigate any systemic risk due to currency mismatch or excessive borrowing.

An inspection of the ECB amount after FEMA shows a six-fold increase compared to the pre-policy period. The average foreign loan before FEMA was USD 6.20 million (with a standard deviation of 146.71), and USD 40.36 million (with a standard deviation of 536.75) after FEMA. Moreover, the difference between means is statistically significant at the 1% level. This suggests that, following FEMA, firms raised significantly their FCB. Hence, FEMA likely helped all outward-oriented firms obtain foreign currency financing to boost their performance.

[1] Specifically, FEMA was intended to increase India's exports, as well as the imports of raw materials and capital goods needed for rapid industrial growth. Patnaik et al. (2015) provide a detailed account of the existing regulations, including recent policy changes on capital controls for FCB in Indian firms.

[2] In a given year, the government also caps the total amount of ECB that all Indian firms may obtain. This aggregate limit is currently at USD 40 billion per year.

2.2 Hypotheses development

2.2.1 Capital-account liberalization and firm performance

A large and growing body of research shows that capital account restrictions can affect several dimensions of real firm activity, such as investment and productivity. For example, Bekaert et al. (2005) and Quinn and Toyoda (2008) are among the first studies to show that capital-account liberalization leads to higher economic growth rates. Further, cross-country studies show that financial openness affects growth, primarily through higher productivity (Bekaert et al., 2011). Bai et al. (2018) support the existence of a relationship between the improvements in financial markets and economic growth; they argue that increases in aggregate productivity play a key role in driving these gains. Regarding India, Arnold et al. (2016) find that the post-1991 trade liberalization policies have had a significant impact on the productivity of manufacturing firms, and these effects are even stronger for foreign firms.

More recent studies focus on micro data. Campello and Larrain (2016), for instance, study the recent reforms across Eastern European countries and document that, after policy shifts, firms have more flexibility and contracting space for credit transactions. In other words, such reforms can trigger real economic effects. Similarly, Larrain and Stumpner (2017) study how capital-account liberalization affects capital allocation among firms and thus aggregate productivity for 10 Eastern European countries. Their findings suggest that a policy shift increases aggregate productivity through a more efficient allocation of capital across firms. More importantly, they find that capital account openness, measured by the Chinn–Ito index, is positively associated with financial development and negatively related to the cost of lending.

This argument aligns with the Indian context because Shu and Steinwender (2018) show that, in emerging countries, trade liberalization appears to spur productivity and innovation. Additionally, Varela (2018) uses firm-level census data to study how the financial

reform in Hungary affected aggregate productivity. He finds that the reform, which revoked capital controls on international borrowing, led to higher aggregate productivity.

In the context of FEMA, which aimed to help firms access financing from abroad, easing access to financing encouraged firms to invest in technology and improve productivity by employing higher-skilled workers, adopting new technologies, and creating better and higher-quality products. The implication is that firms with foreign financing under the ECB framework (or treated firms) are more productive following the FEMA reform and should be able to attract more foreign buyers, thus improving their exporting status. Accordingly, there is a link between capital-account restrictions and firm performance. Hence, we posit:

Hypothesis 1: *Following FEMA, treated firms are more likely to increase their productivity relative to the control firms without any foreign borrowing and, consequently, improve their export intensity.*

2.2.2 Financial vulnerability

The literature establishes the role of financial health in firm performance. Specifically, the empirical evidence shows that financial constraints affect firms' real activities by distorting the optimal allocation of production inputs (see, e.g., Almeida and Campello, 2007; Chava and Roberts, 2008; Campello and Chen, 2010). When financially vulnerable firms, whose access to financial markets is prohibitively expensive, gain access to external borrowing, they are able to make productivity-enhancing investments. For instance, Gatti and Love (2008) estimate the effects of access to credit on total factor productivity (TFP), finding that access to credit is positively and strongly associated with firm productivity. Aghion et al. (2010) also show that firms with financial constraints forego long-term investment opportunities that can contribute to productivity growth.

Other studies document that financial frictions affect productivity. Chen and Guariglia (2013), for example, show that Chinese firms' productivity is significantly and positively affected by the availability of internal financing. Further, Ferrando and Ruggieri (2018) find a negative and significant estimate of TFP elasticity to financial constraints. Access to financing is also a well-established, critical factor in exporting activities (see, e.g., Greenaway et al., 2007; Bellone et al., 2010; Amiti and Weinstein, 2011; Minetti and Zhu, 2011).[3] Motivated by this consideration, we examine how firm-level vulnerability affects productivity and exports following the analyzed policy intervention. Overall, after the financial reform, firms that were highly indebted improved their productivity. However, bankruptcy may explain the positive association between debt and productivity, in that high leverage increases moral hazard and, thus the probability that firms will go bankrupt. Therefore, managers have incentives to improve productivity (Chen and Guariglia, 2013). Moreover, Chen and Guariglia (2013) show that productivity is severely constrained among illiquid firms. Therefore, we expect firms with low liquidity to improve their performance after the passage of the law, compared to their more liquid counterparts. In turn, we assume:

Hypothesis 2*: Following FEMA, financially vulnerable firms benefit more from the access to foreign financing, thus being more productive and showing higher export intensity compared to their counterparts.*

3 Empirical methodology

3.1 Baseline model

We begin our empirical analysis by estimating how firm productivity changed around the FEMA reform. As previously mentioned, we estimate our productivity model using a

[3] The empirical literature analyzes how credit disruptions affect trade, both at the extensive and intensive margins (see Bricongne et al., 2012; Chor and Manova, 2012; Paravisini et al., 2015; Görg and Spaliara, 2018).

difference-in-differences estimator. We then examine whether the firms that improved their productivity after FEMA also enjoyed higher export intensity. For the exporting model, we follow Elsas and Florysiak (2015) and adopt a doubly censored Tobit estimator with censoring at 0 and 1. This estimator is unbiased and consistent when using both an unbalanced dynamic panel with a fractional dependent variable and unobserved time-invariant firm heterogeneity.[4] This method is particularly appropriate for our context, given that export intensity is the ratio of exports to total sales and bounded between 0 and 1.[5] We estimate the model in a dynamic setting to ensure that the results are not attributable to a lack of controlling for state dependence in exporting.[6] The estimated models are:

$$TFP_{inst} = a_0 + a_1 Treat_i * FEMA_t + a_2 x_{inst-1} + \gamma_i + \tau_t + \delta_{nt} + \vartheta_{st} + \varepsilon_{inst}, \quad (1)$$

$$E(EXP_{inst}|x_{inst-1}, EXP_{inst-1}, C_i) = \varphi(a_0 + a_1 \widehat{TFP_{inst-1}} * FEMA_t + a_2 \widehat{TFP_{inst-1}} + a_3 EXP_{inst-1} + a_4 x_{inst-1} + \tau_t + \delta_{nt} + \vartheta_{st} + C_i), \quad (2)$$

where i = 1, 2, …., N refers to firms in sector n in state (region) s for time period t. *TFP* is calculated using Levinsohn and Petrin's (2003) methodology. *Treat* is a dummy that equals 1 if a firm raised FCB during 1988–2014, and 0 otherwise.[7] *FEMA* is a dummy that equals 1 for observations in the post-reform period of 2000–2014, and 0 otherwise. The coefficient of interest in equation (1) is a_1, which measures the difference in productivity between the treated and control firms in the post-FEMA period. Put differently, the point estimates measure how the policy affected productivity for firms with access to FCB versus firms with access to domestic borrowing only. In equation (2), we incorporate the estimated *TFP* ($\widehat{TFP}$) from

[4] In unreported regressions, we find that estimating the models under a static probit fractional model does not alter the results.
[5] In our sample, 48.9% of firms report 0 exports. This figure is in line with Wagner (2001), who observed 0 exports for 40.4% of the total sample. The author argues that firms opt for the profit-maximizing volume of exports, which might be 0 or a positive quantity.
[6] The lagged export share can be considered a proxy for sunk costs (see, e.g., Meinen, 2015).
[7] We also use an alternative treated group of firms that did not have access to FCB in the pre-reform period but had access in the post-reform period. The results are qualitatively and quantitatively similar to those in our main models.

equation (1) to assess how export intensity (*EXP)* responded to changes in productivity after the start of the FEMA. To avoid the generated regression problem (we do not observe, but estimate TFP; see Pagan, 1984), we obtain standard errors using a bootstrap procedure. The coefficient of interest is a_1, which shows whether the firms that enjoyed higher productivity after FEMA were able to improve their export intensity relative to less productive firms. A positive coefficient for *Treat*FEMA* supports H1.

The models include additional controls as follows: firm fixed effects (γ_i) to account for unobserved firm heterogeneity, year fixed effects (τ_t) to account for possible business cycle effects, as well as *year*industry* (δ_{nt}) and *year*state* fixed effects (ϑ_{st}) to control for other industry and time-varying shocks that could affect firms in the treated and control groups differently.[8] Following Papke and Wooldridge (2008), C_i is the unobserved effect modelled using the time average of $\overline{x_i}$. Finally, we cluster the standard errors at the firm level.

We also add various firm-specific characteristics, which are captured by vector *x* in equations (1) and (2), as control variables that help determine productivity and exporting performance. We lag all time-varying, firm-specific variables by one period to reduce possible simultaneity problems (Bernard and Jensen, 1999, 2004; Greenaway et al., 2007). We first include *Size*, measured as real total assets. Large firms cope well with financial constraints and have greater access to external financing, which is necessary to cover the sunk and fixed costs of exports (Bernard and Jensen, 1999; Greenaway et al., 2007). Additionally, there exists a significant firm size-productivity relationship, as larger firms are more likely to engage in technological innovation that improves productivity (Crespi and Zuniga, 2012). Therefore, we expect *Size* to be positively associated with productivity and export intensity.

[8] Our models include various fixed effects to control for the possibility that firms may raise FCB for speculative purposes and may be affected by other reforms, such as industrial liberalization, FDI liberalization, and financial liberalization in the early and mid-1990s.

Wage is the total wage bill adjusted by the GDP deflator. This variable controls for the systematic differences among firms in terms of human capital (Bellone et al., 2010). A stylized fact in the trade literature is that foreign firms pay higher wages, but we also observe the opposite effect in determining the probability of entry into export markets (see Greenaway et al., 2007). We argue that this is an empirical issue, determined by the data.

Finally, we consider two important aspects of firm financial health: leverage and liquidity (see Greenaway et al., 2007). *Debt* is the ratio of short-term debt to current assets and accounts for a firm's dependence on bank debt. *Liquidity* is the ratio of current assets, less current liabilities, over total assets. Firms with less leverage and more liquidity are generally in better financial shape and should be more successful at exporting. Hence, we anticipate a positive (negative) relationship between *Liquidity* (*Debt*) and export intensity.

3.2 Accounting for financial vulnerability

In this subsection, we examine whether firms within the treated group with different levels of financial vulnerability exhibit different productivity and export share sensitivities after FEMA compared to the firms in the control group. We focus on two dimensions of financial vulnerability: debt and liquidity. We augment equation (1) with the interactions between the policy effects and the indicators of firm-level vulnerability. This exercise is based on the consideration that, when FEMA was implemented, firms that were highly indebted or less liquid responded more strongly in terms of productivity improvement compared to their counterparts. Formally, we estimate the following models:

$$TFP_{inst} = a_0 + a_1 Treat_i * FEMA_t * Finvar_{it} + a_2 Treat_i * FEMA_t + a_3 FEMA_t * Finvar_{it} + a_4 Treat_i * Finvar_{it} + a_5 Finvar_{it} + a_6 x_{inst-1} + \gamma_i + \tau_t + \delta_{nt} + \vartheta_{st} + \varepsilon_{inst}, \quad (3)$$

$$E(EXP_{inst}|x_{inst-1}, EXP_{inst-1}, C_i) = \varphi(a_0 + a_1 \widehat{TFP_{inst-1}} * FEMA_t * Finvar_{it} + a_2 \widehat{TFP_{inst-1}} * FEMA_t + a_3 FEMA_t * Finvar_{it} + a_4 \widehat{TFP_{inst-1}} * Finvar_{it} + a_5 Finvar_{it} + a_6 \widehat{TFP_{inst-1}} + a_7 EXP_{inst-1} + a_8 x_{inst-1} + + \tau_t + \delta_{nt} + \vartheta_{st} + C_i), \quad (4)$$

where *Finvar* is a dummy that equals 1 in a given year for firm *i* if its debt (or liquidity) is in the top (bottom) 25% of the distribution of debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. The main term is the triple-interaction coefficient on *Treat*FEMA*Finvar*, which measures whether highly leveraged or low-liquidity firms improved productivity following FEMA compared to firms with access to domestic borrowing only in the pre-FEMA period. Positive coefficients on both *Treat*FEMA* and *Treat*FEMA*Finvar* support H2. The remaining control variables and fixed effects remain unchanged.

4 Data and summary statistics

4.1 Dataset

We construct our dataset based on the profit and loss and balance sheet data assembled by the Centre for Monitoring Indian Economy (CMIE) and its Prowess database. CMIE is a private research organization in India that collects data and makes it available through Prowess.[9] The Prowess database covers large and medium-size Indian firms and offers detailed information on over 25,346 firms. Most companies in the database are listed on the stock exchange.

We start with an initial sample of 89,660 firm-year observations. We then apply the following criteria, which are common in the literature. First, we exclude firm-years with missing values for export sales and other control variables in the main models. This reduces the sample to 84,212 observations. Second, we control for the potential influence of outliers by excluding observations in the 1% tails of the distribution for each variable included in the regressions. As a result, our sample is reduced to 80,996 firm-year observations. Finally, we allow for the entry and exit of firms, as the use of an unbalanced panel partially mitigates

[9] See www.cmie.com for more information on the Prowess database, which is widely used in the literature for firm-level analysis on the capital structure of Indian firms (see, e.g., Vig, 2013).

potential selection and survivorship bias. To deal with potential endogeneity concerns, we apply a one-year lag to the control variables and 61,851 firm-year observations are used for the productivity regressions. Our sampled firms operate in different sectors, such as manufacturing, utilities, resources, services, and nonbanking financial services.[10]

4.2 Summary statistics

Figures 1 and 2 provide a simple visual account of how firms' productivity and exporting changed over the sample period. Figure 1 graphs the evolution of TFP among Indian firms over 1988–2014, separating the treated from the control firms. The vertical line indicates the change in policy. The figure shows a relative increase in productivity for the first group of firms after the policy change in 2000 compared to the second group. Figure 2 also shows a nearly continuous increase in exports as a proportion of sales for the treated group after FEMA took effect in 2000. Both graphs support the model's parallel-trends assumption, suggesting that, in the absence of the reform, both groups would have exhibited similar growth in productivity and export shares.

Table 1 reports descriptive statistics on the main variables of interest. We report mean and standard deviation for the whole sample (column 1) and the treated and control groups before the FEMA reform (columns 2 and 3, respectively) and after FEMA (columns 5 and 6, respectively).[11] We also report *p*-values for testing the equality of means between the treated and control groups before and after the FEMA reform (columns 4 and 7, respectively).

For TFP and export share, before FEMA, the difference in the means between the treated and control groups is insignificant. However, post FEMA, the treated firms experience a

[10] Non-banking financial companies (NBFC) provide financial services and banking facilities without meeting the legal definition of a bank. They are regulated by the RBI and provide banking services such as loans, credit facilities, retirement planning, investing, and money markets. However, they are restricted from taking deposits from the general public.

[11] We report the correlation matrix among all variables in Table A1 in the Appendix.

significant increase in both TFP and export share, which is not the case for the control group.[12] With respect to firm-level variables, before the policy, treated firms are larger, pay higher average wages, and display differences in their balance sheets. Columns 5 and 6 show a significant difference in the mean values of all variables for the treated and control groups, respectively.

Altogether, the preliminary statistics suggest that firm performance is related to the introduction of FEMA, and access to external borrowing is associated with differences in balance sheet indicators. The following sections provide a formal regression analysis of the relationships among the policy initiative, firm productivity, and export share, focusing on the role of firm-level financial vulnerability.

5 Empirical results

5.1 Baseline models

We begin the analysis by examining how the policy reform affected productivity. We then examine the impact of the estimated productivity on export share after FEMA. Panel A of Table 2 shows the results of estimating equation (1). The estimation results in the subsequent columns include different fixed effects that strengthen our identification. We report coefficient estimates and *t*-statistics, with standard errors clustered by firm. The general finding is that FEMA positively and significantly affects firm productivity, both statistically and economically.

Our key variable of interest is the interaction between the firm-level dummy *Treat* and the policy dummy *FEMA* (*Treat*FEMA*). This shows the impact of the policy change on TFP in 2000.[13] Controlling for firm characteristics and macroeconomic shocks, FEMA's impact is

[12] We decompose the export share to gauge the evolution of the numerator and denominator separately. We find that a decline in sales does not drive the increase in the export share. Table A2 in the Appendix shows that both exports and sales increased significantly after FEMA.

[13] Our findings are robust to using labor productivity instead of TFP. Additionally, the results hold when we estimate the TFP models in a dynamic setting (see Tables A3 and A4 in the Appendix).

substantial for the treated firms, as demonstrated by the positive coefficient on the interaction term in column 1 of Table 2. Following FEMA, firms with access to FCB improved their productivity compared to firms with access to domestic borrowing only. Hence, easing access to financing helped firms increase productivity. The results show qualitatively and quantitatively significant effects. Based on the estimates in column 1, the treated firms increased their productivity by 15.5 percentage points after the financial reform. In the following columns of Table 2, we rerun the same regressions and find that the main results persist even after controlling for other industry and time-varying shocks that could affect firms in the treated and control groups differently.

In panel B of Table 2, we present the estimates of equation (2), taking into account the estimated TFP by equation (1). We report marginal effects and *z*-statistics with standard errors clustered at the firm level. In all models, we add time averages of firm-level variables to allow for time-constant unobserved effects correlated with our explanatory variables (Papke and Wooldridge, 2008). The point estimates on the double interaction $\widehat{TFP}$*$FEMA$ are positive and highly significant in all three specifications. Focusing on the estimates in column 1 of panel B, the marginal effect of $\widehat{TFP}$*$FEMA$ is 0.010, while that of $\widehat{TFP}$ is 0.001. The $\widehat{TFP}$ value in the bottom decile is 0.21, while that in top decile equals 0.61. Hence, the overall $\widehat{TFP}$ effect for a firm in the bottom decile of the $\widehat{TFP}$ distribution is 0.001+0.010*0.21=0.003, while that in top decile is 0.001+0.010*0.61=0.007. This represents an increase of approximately 2.33 times.

This implies that the firms that became more productive after the introduction of FEMA increased their export intensities relative to the less productive firms. Our results are valuable in light of previous studies, as we suggest that firms with access to foreign financing under the ECB framework were more likely to face lower financial constraints, being subject to fewer distortions and hence able to build higher-quality products. In this sense, firms can attract foreign consumers and expand global sales further. Therefore, our findings provide strong

support for H1 and the idea that firms tapping foreign currency financing increased their productivity and, consequently, their export share relative to firms without any foreign borrowing.

For the control variables, the coefficient on *Size* is positive and significant at the 1% level. This is in line with the previous studies (e.g. Crespi and Zuniga, 2012) suggesting that export intensity and productivity increase with firm size, as larger firms have better access to external financing and tend to be more innovative. The results further illustrate that lagged export status is positive and highly significant in the export-intensity equation, indicating the importance of sunk costs for exporting. Additionally, we find that the export-to-sales ratio decreases with the lagged wage per employee (also a puzzling finding of Greenaway et al., 2007) when controlling for firm size. In terms of financial indicators, highly indebted firms face higher credit risk and display lower export intensity. This situation reverses when we consider the coefficients on liquidity, which are positive and highly significant across all specifications. Hence, as Greenaway et al. (2007) suggest, financial health is an important export determinant.

5.2 Role of financial vulnerability

Here, we focus on how access to foreign financing affects productivity for different firm types, namely those that rely more on debt or are less liquid. The results with debt as an indicator for financial vulnerability are shown in Table 3. Panel A reports the results for productivity, followed by export intensity in panel B.

We focus on the sign and significance of the triple-interaction term (*Treat*FEMA*Finvar*), which reveals whether financially vulnerable firms are more likely to improve their productivity compared to their counterparts during the post-FEMA period. We find that, following the FEMA reform, *TFP* is more sensitive for financially vulnerable firms that incurred more debt. Particularly, we find a positive and highly significant coefficient on the double-interaction term *Treat*FEMA*, which implies that treated firms increased their

productivity after FEMA by 21.8 percentage points. More importantly, the increase in productivity was higher among financially vulnerable firms within the treated group by 4.5 percentage points relative to similar firms in the control group, as shown by the triple-interaction term *Treat*FEMA*Finvar*.

In panel B of Table 3, we present how the post-FEMA predicted-TFP affects exports. We find a positive and highly significant coefficient on the double-interaction term $\widehat{TFP}$**FEMA*, which implies that high-productivity firms increased their export intensity after FEMA. More importantly, the increase in export intensity due to high productivity was even more prevalent among firms with higher debt levels, as captured by the triple-interaction term $\widehat{TFP}$**FEMA*Finvar*. A firm in the bottom decile of the $\widehat{TFP}$ distribution has seen an increase in export intensity by 0.69 percentage points, while a firm in the top decile of the distribution has seen a significantly higher export intensity of 1.25 percentage points, which is approximately 1.81 times larger than the former value.

These findings point to a strong relationship between productivity, debt exposure, and export intensity. They also highlight the link between productivity and the financial reform. *A priori*, we expected improvements in access to foreign financing to help diversify the sources of financing and the associated risks. This additional income source provides greater assurance to lenders regarding firms' financial health and relaxes liquidity constraints. When a financial reform such as FEMA takes place, we find that financially vulnerable firms improve their productivity and export performance. To the best of our knowledge, this is the first paper to make this point and we document the channel through which more indebted firms enjoy higher productivity and better export performance compared to their counterparts.

Next, we examine liquidity as an alternative indicator of firms' financial vulnerability. The estimation results in panel A of Table 4 show that, when firms with low liquidity received

foreign financing, they increased their productivity compared to firms within the control group. This finding is robust across various specifications. Notably, this effect is 8.3 percentage points higher if a firm was financially vulnerable. In panel B, the triple-interaction term $\widehat{TFP}$*FEMA*Finvar* shows higher increase in export intensity due to high-productivity among firms with lower levels of liquidity. The marginal estimates imply this effect is approximately 1.79 times larger for firms in the top decile of the $\widehat{TFP}$ distribution relative to the ones in the bottom decile of the distribution. Finally, the pattern in the point estimates for our control variables is similar to before.

In summary, our results provide strong empirical support for H2 because we show that financially vulnerable firms responded more strongly to the policy reform. They also demonstrated higher informational asymmetry and were hence more likely to face financial constraints. Therefore, when they gained access to FCB, they became more productive, were able to meet higher trade or productivity costs, and improved their performance.

6 Robustness tests

6.1 Different time windows

It is likely that the economic and financial events occurring during the 28-year sample period affected the treated and control firms.[14] The difference-in-differences setting partly resolves this potential concern based on various fixed effects for removing channels that may have influenced firms during the sample period. However, to ensure that the pre- or post-reform confounding shocks do not affect our results, we perform an additional analysis by considering

[14] For example, India initiated its economic liberalization policy during 1991–1993 and reduced tariff and interest rates, ended public monopolies, and allowed the automatic approval of FDI. The export–import (Exim) policy was introduced in 1992–1997, eliminating the system of licenses and quantitative restrictions to sharply reduce the scope of public-sector monopoly for most export items and several import items. The second phase of the economic liberalization took place during 1998–1999 and the global financial crisis occurred during 2007–2009.

shorter time windows. Particularly, we limit our analysis to five years before and five years after the reform to obtain a symmetric time window.[15]

We report the results in Table 5, which confirm that firms improved their productivity after FEMA, with implications for their export share. We further corroborate that the policy initiative is more potent for firms with higher levels of debt and those with lower levels of liquidity. Therefore, limiting the sample period to five years around FEMA does not affect the results.

6.2 Placebo test

We also test whether the pre-policy trends that may have a bearing on our identification strategy influence the results.[16] In the 1997–1998 budget, the government proposed replacing FERA-1973 with FEMA, which the parliament approved in 1999. FEMA came into force on June 1, 2000. To verify if this underlying trend affects the results, we conduct a difference-in-differences estimation, assuming that the policy change took place in 1997.[17] If any pre-policy trends affect our results, we should see positive impacts on productivity and on export share. Failing to recognize any significant effects for these placebo time periods supports the reliability of the chosen treatment period.

Table 6 presents results for the placebo time periods, showing FEMA's insignificant effect on productivity and export share consistently across all model estimates. We do not find any differential effect for firms that are more indebted or have less liquidity. Overall, this test confirms the validity of our identification strategy.

[15] The choice of this time window is robust to modifications.
[16] We employ a different quantitative test for pre-trends by using lags/leads. The results remain unchanged.
[17] In other words, these time periods are chosen at random, owing to the government's proposal, and the true effect for these years is 0. We perform difference-in-differences testing for 1996 and 1997. The results show almost similar results both quantitatively and qualitatively to the 1997–1999 reform period. For details on this approach, see Imberman and Kugler (2012) and Bose et al. (2019).

6.3 Alternative definition of the treated group

In our main models, the treated firms raised FCB anytime during 1988–2014. Here, we define the treated group of firms according to their eligibility in terms of industrial affiliations.[18] Therefore, the treated group includes firms that raised FCB, but the control group includes firms that were eligible but did not raise FCB during the sample period.

Table 7 shows the results. We find that the policy change has had a significant effect on the productivity of firms with foreign financing. Further, the firms that improves their productivity after FEMA could also boost their export share. Finally, firms with more debt and less liquidity benefitted from the policy compared to their counterparts with domestic financing. Therefore, our results are robust to an alternative definition of the treated group.

6.4 Addressing endogeneity concerns

We carry out an additional sensitivity test aimed at dealing with potential endogenous variables in our regression models, since size, wage, debt, liquidity, and exports are all likely endogenous. We estimate our models using a system-generalized method of moments (GMM) estimator that combines the relevant equation in first differences and levels (Arellano and Bover, 1995; Blundell and Bond, 1998).[19] Instruments include all firm-specific variables lagged three times or more in the productivity model and two times or more in the exporting model. To evaluate whether our instruments are legitimate and our model is correctly specified,

[18] The list of entities eligible to raising ECB included companies in the manufacturing and software development sectors, shipping and airlines companies, companies in the infrastructure sector, NBFC, holding companies and core investment companies, real estate and infrastructure investment trusts, microfinance institutions, companies engaged in miscellaneous services as opposed to research and development (R&D), training companies (other than educational institutes), companies supporting infrastructure, and companies providing logistics services. Finally, we include companies engaged in maintenance, repair, overhaul, and freight forwarding.

[19] A way to check whether finite sample bias affects the first-differenced GMM estimator is to compare the estimate of the coefficient on the lagged dependent variable obtained from the latter estimator with those obtained from the OLS and within groups (WG) estimators (see Bond et al., 2001). Table A5 reports the coefficients on the lagged exporting intensity obtained from the above mentioned estimators. We find that the GMM estimates of the coefficient on lagged exporting intensity fall close to or below the corresponding estimates obtained using the WG estimator. We can thus conclude that the first-differenced GMM estimator is subject to serious finite sample bias; thus, we opt for estimating the models using the system-GMM.

we use the Hansen test for over-identifying restrictions and test for *n*-th order serial correlation in the differenced residuals using the *m(n)* test.[20]

In panel A of Table 8, we find evidence that productivity increased after FEMA. This concurs with our main findings that firms with access to FCB were likely to increase productivity in ways that resulted in higher export intensity. In panel B, we further confirm the importance of the policy for firms with higher debt and lower liquidity. At the bottom of each panel, we report the *p*-values for two diagnostic tests: the Hansen test of over-identifying restrictions and the serial correlation tests. Overall, the statistics show that the instruments are valid and there is no model misspecification.

6.5 Additional productivity channels

Here, we identify two channels through which firms can improve their productivity after FEMA. Particularly, we focus on staff training and technological sophistication. For the former indicator, we consider staff training expenses and, for the latter variable, we distinguish whether firms belong to a high-technology sector.[21] The intuition behind these additional tests is as follows. Firms that spend resources on staff training can enhance their productivity as employees gain knowledge and/or capabilities that improve their abilities (Barrett and O'Connell, 2001; Van de Viele, 2010). Additionally, firms in high-tech industries have the highest degree of sophistication, technological content, and R&D intensity, being more likely to achieve competitive gains in the exporting market (Minetti et al., 2015).

[20] If there exists evidence of serial correlation of order two in the differenced residuals, the instrument set needs to be restricted to three lags. The latter instruments are valid in the absence of serial correlation of order three in the differenced residuals (Brown et al., 2009; Roodman, 2009). We use three (and deeper) lags of our regressors as instruments in the productivity model and report the relevant tests in the tables. Note that neither the Hansen test nor the test for *n*-th order serial correlation in the differenced residuals allow for discrimination between poor instruments and model specification.

[21] Staff training expenses are expenditures on staff welfare and training as a proportion of the total compensation to employees. High-technology sectors include high-technology manufacturing industries, medium-high-technology manufacturing industries, and knowledge-intensive service sectors. See Eurostat (2011) and Mallick and Yang (2013) for more details on these sectors.

Table 9 shows the results. We continue to observe that following the FEMA reform, firms that invest in human capital and those in high-tech industries are more likely to improve their productivity in ways that increase their export intensity compared to their counterparts.

6.6 Additional tests for financial vulnerability

For the main empirical results, we partitioned firms according to financial vulnerability if debt (or liquidity) was in the top (bottom) 25% of the distribution of debt (or liquidity) for all firms in the same industry as firm *i* in that year. To ensure that our results are not due to the sample division, we carry out three additional tests. First, we use the 50th percentile as an alternative cut-off point for both criteria. Second, given that the majority of our sample firms are listed on the stock exchange, we define financially vulnerable firms using the volatility of their returns on equity, calculated as the standard deviation of returns on equity. This is measured over a rolling window of five years. Finally, we focus on two more dimensions of financial vulnerability: size and the degree to which firms can pledge collateral.[22]

We then re-estimate the models in Tables 3 and 4 and report the results in Tables 10 and 11. Following the FEMA reform, financially vulnerable firms, irrespective of the definition used, were more likely to improve their productivity in ways that increased their export intensity compared to their counterparts. In summary, our main empirical results are robust to alternative cut-off values and definitions of financial vulnerability.

7 Conclusions

Despite the increased globalization of Indian firms over the past two decades, their access to international debt markets remains largely restricted. There is limited focus on how this affects firm performance. One argument is that firms with access to foreign financing have better

[22] Hadlock and Pierce (2010) provide evidence that firm size is a particularly useful predictor of financial constraints. Additionally, Manova (2008) shows that entrepreneurs can obtain external financing more easily if they pledge collateral; a lack of collateral makes it costlier for exporters to obtain external financing.

production and innovation networks, with overseas market participants, which could boost their performance and exporting intensity. Using a rich panel dataset for India, this paper shows that firms with foreign financing were more productive than those with domestic sources of financing only. We also find this effect has implications for firms' exporting intensity. Finally, we document that this relationship was more sensitive for financially vulnerable firms after the FEMA reform.

Given the policy relevance of our study, we conclude that the countries that maintain restrictive capital accounts can improve performance by gradually easing capital controls. In view of the favorable impact of relaxing capital controls, capital flight is unlikely to be a concern; instead, greater foreign exchange inflows due to the higher export intensity could support the currency value. Only the most productive firms with better access to foreign financing can improve their exporting intensity, as their access to foreign currency financing can enable improvements in technology and skills, which help exporting firms to improve their productivity and thereby exporting performance.

National governments should thus prioritize diversified sources of external financing. This will help create balanced economies and conditions that could enhance companies' competitive advantages by increasing their productivity and, ultimately, their export intensity. We suggest that the policies aimed at making FCB readily available to financially vulnerable firms would improve firm performance.

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Figure 1: Total factor productivity for treated and control groups

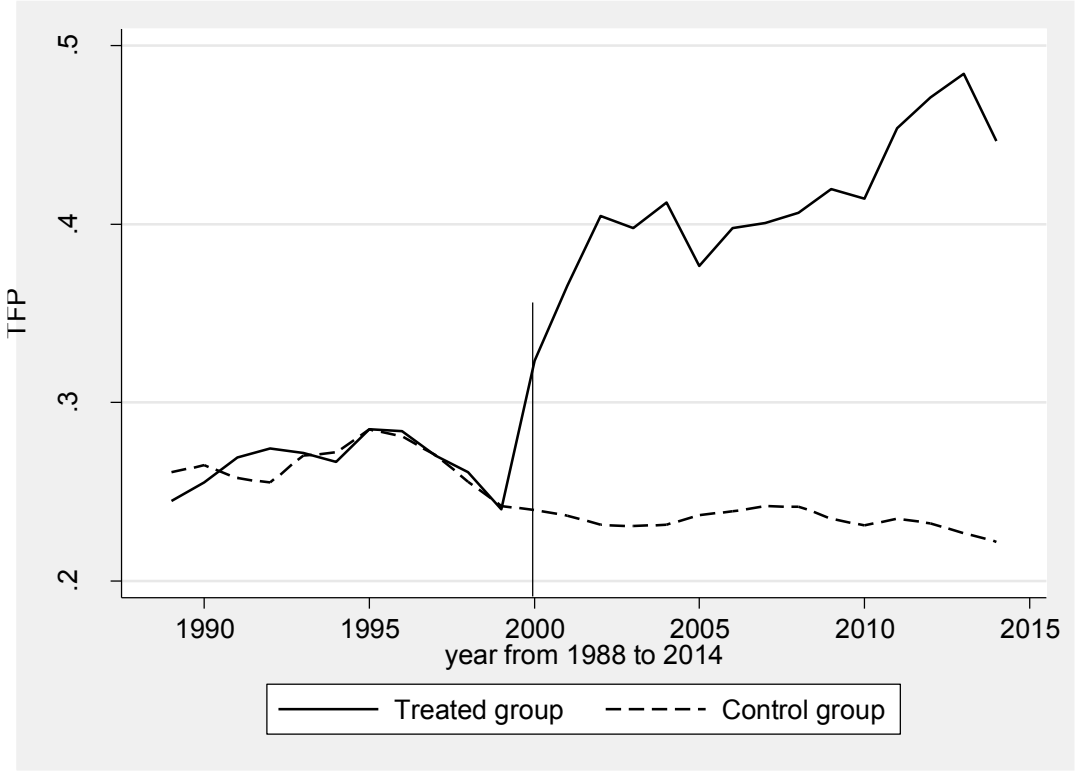

Figure 2: Export share for treated and control groups

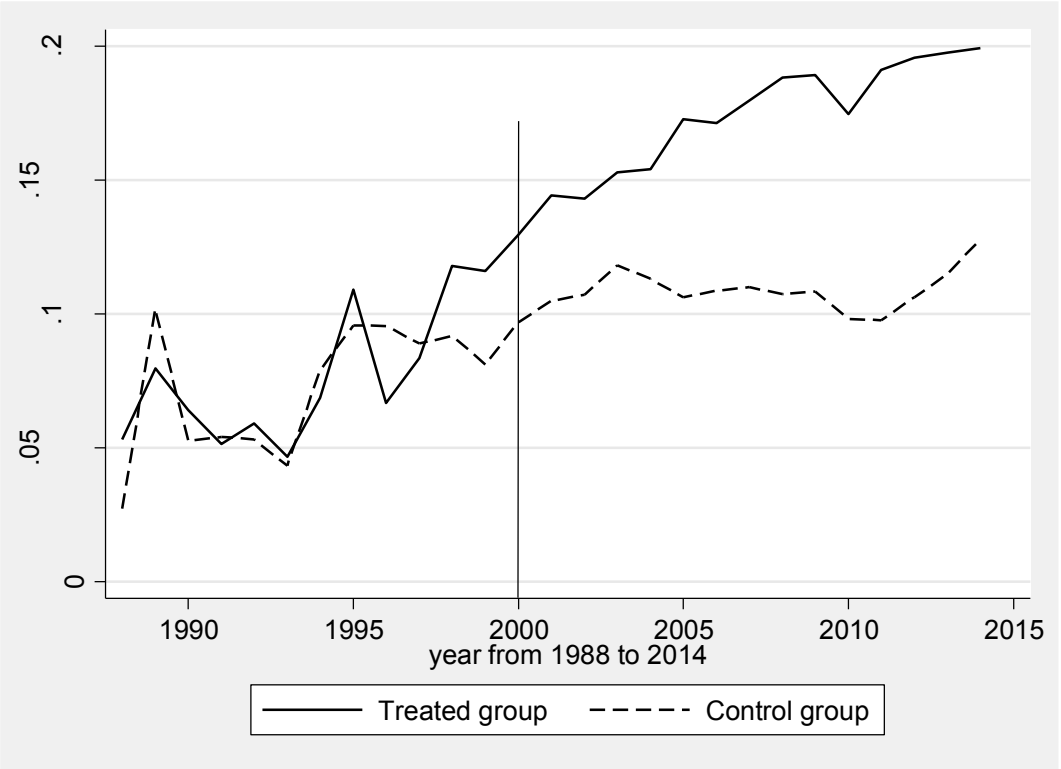

Table 1: Summary statistics

		FEMA=0			FEMA=1		
	Whole sample	**Treat**	**Control**	***p*-value**	**Treat**	**Control**	***p*-value**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
TFP	0.24	0.26	0.26	0.201	0.43	0.23	0.000
	(0.04)	(0.03)	(0.02)		(0.16)	(0.01)	
EXP	0.12	0.08	0.08	0.949	0.17	0.11	0.000
	(0.22)	(0.17)	(0.19)		(0.24)	(0.22)	
Size	29.02	71.30	16.04	0.000	84.48	20.66	0.000
	(71.96)	(148.26)	(59.40)		(134.62)	(50.80)	
Wage	1.18	2.28	0.62	0.000	2.91	0.92	0.000
	(2.34)	(3.29)	(1.62)		(3.56)	(1.96)	
Debt	0.42	0.36	0.45	0.011	0.45	0.43	0.000
	(0.51)	(0.36)	(0.51)		(0.48)	(0.51)	
Liquidity	0.15	0.13	0.15	0.087	0.12	0.15	0.000
	(0.19)	(0.15)	(0.18)		(0.17)	(0.19)	
N	61,851	272	1,891		8,013	51,675	

Notes: The table presents sample means with standard deviations in parentheses. In columns 4 and 7 we report the *p*-values of tests of equalities of means between treated and control firms. *Treat* equals 1 if the firm raises FCB over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *TFP* is total factor productivity calculated using the Levinsohn and Petrin (2003) method adjusted by GDP deflator. *EXP* is the ratio of total exports to total sales. *Size* equals real total assets. *Wage* equals real total wage bill. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. Variables are measured in millions of Indian Rupees.

Table 2: Baseline model

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
Treat*FEMA	0.155***	0.157***	0.151***
	(3.04)	(3.06)	(2.95)
Size	0.001***	0.001***	0.001***
	(5.09)	(5.26)	(5.21)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.010***	0.006***	0.005***
	(2.69)	(4.13)	(6.89)
$\widehat{\textbf{TFP}}$	0.001	0.006***	0.004
	(0.32)	(2.80)	(1.53)
EXP (lag 1)	0.361***	0.363***	0.363***
	(120.62)	(80.76)	(81.93)
Size	0.004***	0.004***	0.005***
	(7.96)	(8.66)	(6.48)
Wage	-0.001***	-0.002***	-0.001***
	(-4.90)	(-5.68)	(-4.76)
Debt	-0.001	-0.001***	-0.001***
	(-1.29)	(-4.19)	(-3.45)
Liquidity	0.009***	0.009***	0.009***
	(3.60)	(5.39)	(3.54)
N	48,081	48,081	48,081
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period of 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Size* equals real total assets. *Wage* equals real total wage bill. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 3: Accounting for financial vulnerability: Debt

Panel A: Dependent variable	**TFP**		
	(1)	(2)	(3)
		Finvar = Debt	
Treat*FEMA*Finvar	0.045***	0.039**	0.039**
	(2.74)	(2.43)	(2.42)
Treat*FEMA	0.218***	0.223***	0.213***
	(3.86)	(3.97)	(3.81)
Treat*Finvar	0.044**	0.039**	0.041**
	(2.29)	(2.02)	(2.17)
FEMA*Finvar	-0.099***	-0.095***	-0.094***
	(-11.24)	(-10.84)	(-10.81)
Finvar	-0.117***	-0.114***	-0.115***
	(-13.20)	(-13.02)	(-13.12)
Size	0.001***	0.001***	0.001***
	(3.65)	(3.96)	(3.90)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	0.014***	0.010**	0.011**
	(2.86)	(1.97)	(2.29)
$\widehat{\textbf{TFP}}$***FEMA**	0.004***	0.006***	0.005***
	(2.64)	(3.26)	(3.66)
$\widehat{\textbf{TFP}}$***Finvar**	-0.004	-0.005	-0.005
	(-0.91)	(-1.06)	(-1.25)
FEMA*Finvar	-0.037***	-0.024*	-0.028**
	(-2.64)	(-1.74)	(-2.07)
Finvar	0.014	0.015	0.016
	(1.01)	(1.03)	(1.23)
$\widehat{\textbf{TFP}}$	0.004	0.007	0.007
	(0.31)	(1.03)	(0.48)
EXP (lag 1)	0.361***	0.363***	0.363***
	(115.27)	(117.12)	(116.95)
Size	0.004***	0.004***	0.004***
	(7.37)	(7.59)	(7.83)
Wage	-0.001***	-0.002***	-0.001***
	(-4.44)	(-6.16)	(-6.09)
Debt	-0.002***	-0.001**	-0.001**
	(-2.86)	(-2.01)	(-2.37)
Liquidity	0.007**	0.008***	0.008***
	(2.45)	(2.87)	(2.70)
N	48,081	48,081	48,081
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period of 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt is in the top 25% of the distribution of debt for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Size* equals real total assets. *Wage* equals real total wage bill. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 4: Accounting for financial vulnerability: Liquidity

Panel A: Dependent variable	**TFP**		
	(1)	(2)	(3)
	Finvar = Liquid		
Treat*FEMA*Finvar	0.083***	0.077***	0.077***
	(3.65)	(3.40)	(3.45)
Treat*FEMA	0.204***	0.207***	0.197***
	(3.61)	(3.72)	(3.58)
Treat*Finvar	0.026	0.020	0.018
	(1.24)	(0.97)	(0.86)
FEMA*Finvar	-0.090***	-0.093***	-0.093***
	(-8.73)	(-8.99)	(-8.95)
Finvar	-0.161***	-0.161***	-0.161***
	(-15.69)	(-15.89)	(-15.88)
Size	0.001***	0.001***	0.001***
	(2.92)	(3.28)	(3.23)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	0.028**	0.032**	0.027**
	(2.10)	(2.05)	(2.16)
$\widehat{\textbf{TFP}}$***FEMA**	0.008***	0.005***	0.006***
	(6.82)	(3.10)	(2.99)
$\widehat{\textbf{TFP}}$***Finvar**	-0.020	-0.024	-0.021
	(-1.26)	(-1.23)	(-1.40)
FEMA*Finvar	-0.065	-0.076*	-0.062
	(-1.38)	(-1.72)	(-1.33)
Finvar	0.043	0.055	0.047
	(1.09)	(1.33)	(1.07)
$\widehat{\textbf{TFP}}$	-0.004	0.010***	0.008**
	(-0.90)	(4.23)	(2.40)
EXP (lag 1)	0.361***	0.363***	0.364***
	(120.16)	(24.57)	(121.21)
Size	0.004***	0.004***	0.004***
	(7.09)	(5.30)	(8.36)
Wage	-0.001***	-0.002***	-0.002***
	(-5.10)	(-5.49)	(-6.07)
Debt	-0.001***	-0.001*	-0.001
	(-3.22)	(-1.81)	(-0.59)
Liquidity	0.006**	0.004**	0.003*
	(1.98)	(2.00)	(1.94)
N	48,081	48,081	48,081
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	No	Yes	Yes
Year*State FE	No	No	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period of 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if liquidity is in the bottom 25% of the distribution of liquidity for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Size* equals real total assets. *Wage* equals real total wage bill. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 5: Robustness: Implementing different time windows

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	0.090**	0.142***	0.142***
	(2.08)	(2.87)	(2.82)
Treat*FEMA*Finvar	-	0.063**	0.077**
		(2.28)	(2.16)
Treat*Finvar	-	0.053***	0.002
		(2.85)	(0.06)
FEMA*Finvar	-	-0.127***	-0.099***
		(-7.96)	(-5.37)
Finvar	-	-0.153***	-0.184***
		(-9.67)	(-10.78)
Size	0.002***	0.001***	0.001***
	(5.05)	(4.03)	(4.12)
N	21,757	21,757	21,757
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.007***	0.002***	0.014**
	(2.92)	(3.12)	(2.53)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.012**	0.027***
		(2.42)	(4.38)
$\widehat{\textbf{TFP}}$***Finvar**	-	0.006	-0.016
		(1.04)	(-0.34)
FEMA*Finvar	-	-0.036**	-0.060
		(-2.57)	(-0.55)
Finvar	-	-0.006	-0.032
		(-0.31)	(-0.54)
$\widehat{\textbf{TFP}}$	0.045***	0.027***	0.023***
	(11.93)	(5.24)	(6.98)
EXP (lag 1)	0.433***	0.432***	0.433***
	(64.10)	(3.24)	(37.10)
Size	0.001	0.001***	0.001
	(1.06)	(3.00)	(0.95)
Wage	-0.002***	-0.002***	-0.002***
	(-5.76)	(-3.77)	(-3.12)
Debt	-0.001	-0.001*	-0.001
	(-0.35)	(-1.84)	(-0.27)
Liquidity	0.012***	0.010**	0.002
	(8.10)	(2.45)	(1.04)
N	14,374	14,374	14,374
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1995-2005, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2005, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 6: Robustness: Placebo tests

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	-0.083	-0.109	0.036
	(-0.56)	(-0.77)	(0.23)
Treat*FEMA*Finvar	-	0.318	-0.410
		(0.89)	(-1.51)
Treat*Finvar	-	-0.006	0.159
		(-0.03)	(0.60)
FEMA*Finvar	-	0.028	0.003
		(0.25)	(0.02)
Finvar	-	0.049	0.081
		(0.68)	(0.98)
Size	0.005**	0.005**	0.005**
	(2.43)	(2.48)	(2.31)
N	4,667	4,667	4,667
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	-0.004	-0.009	-0.007
	(-1.47)	(-1.19)	(-1.05)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.012	0.006
		(1.61)	(0.78)
$\widehat{\textbf{TFP}}$***Finvar**	-	-0.006	-0.007
		(-1.12)	(-1.20)
FEMA*Finvar	-	-0.018	-0.009
		(-1.37)	(-0.64)
Finvar	-	0.014	-0.006
		(1.41)	(-0.53)
$\widehat{\textbf{TFP}}$	0.019***	0.024***	0.022***
	(2.91)	(3.09)	(2.83)
EXP (lag 1)	0.189***	0.342***	0.342***
	(19.16)	(49.04)	(49.30)
Size	-0.001	0.006***	0.007***
	(-1.08)	(3.43)	(3.64)
Wage	0.002	-0.001	-0.001
	(1.57)	(-0.77)	(-0.92)
Debt	-0.004	-0.004	-0.001
	(-0.80)	(-0.88)	(-0.12)
Liquidity	0.010	0.005	-0.009
	(0.94)	(0.39)	(-0.71)
N	2,161	2,161	2,161
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-1999, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 1997-1999, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 7: Robustness: Alternative treatment group

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	0.142***	0.204***	0.187***
	(2.79)	(3.66)	(3.39)
Treat*FEMA*Finvar	-	0.038**	0.083***
		(2.38)	(3.83)
Treat*Finvar	-	0.033*	0.018
		(1.31)	(0.85)
FEMA*Finvar	-	-0.095***	-0.091***
		(-10.82)	(-8.72)
Finvar	-	-0.119***	-0.158***
		(-13.42)	(-15.50)
Size	0.001***	0.001***	0.001***
	(5.18)	(4.06)	(3.41)
N	60,069	60,069	60,069
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.011***	0.007***	0.011***
	(3.99)	(3.16)	(4.28)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.013***	0.033***
		(3.03)	(4.52)
$\widehat{\textbf{TFP}}$***Finvar**	-	-0.007	-0.029
		(-0.99)	(-0.47)
FEMA*Finvar	-	-0.034***	-0.075***
		(-2.65)	(-9.85)
Finvar	-	0.022	0.065
		(1.01)	(1.49)
$\widehat{\textbf{TFP}}$	0.003***	0.005	0.007*
	(8.69)	(0.46)	(1.79)
EXP (lag 1)	0.393***	0.365***	0.365***
	(18.46)	(5.46)	(3.94)
Size	0.005***	0.004***	0.004***
	(3.21)	(8.66)	(6.55)
Wage	-0.001***	-0.002***	-0.002***
	(-5.96)	(-4.20)	(-4.41)
Debt	-0.001	-0.001**	-0.001***
	(-0.60)	(-2.34)	(-2.63)
Liquidity	0.009***	0.008*	0.002***
	(3.48)	(1.92)	(3.30)
N	46,845	46,845	46,845
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 for firms that are eligible but did not raise ECB during the sample. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 8: Robustness: GMM estimations

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	0.364**	0.527**	0.521**
	(1.98)	(2.16)	(2.10)
Treat*FEMA*Finvar	-	0.217***	0.243***
		(2.84)	(2.62)
Treat*Finvar	-	-0.075	-0.046
		(-0.25)	(-0.19)
FEMA*Finvar	-	-0.103	-0.173**
		(-1.63)	(-2.39)
Finvar	-	-0.287	-0.518**
		(-1.07)	(-2.43)
Treat	0.836**	0.005	0.072
	(2.30)	(0.03)	(0.27)
Size	0.001***	0.002***	0.002***
	(2.62)	(4.03)	(3.96)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
AR(1) (p-value)	0.000	0.016	0.034
AR(2) (p-value)	0.000	0.000	0.000
AR(3) (p-value)	0.953	0.741	0.265
Hansen (p-value)	0.339	0.060	0.093
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.015**	0.013**	0.021**
	(2.01)	(2.03)	(2.34)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.069**	0.085**
		(2.38)	(2.00)
$\widehat{\textbf{TFP}}$***Finvar**	-	-0.006	-0.011
		(-0.88)	(-0.54)
FEMA*Finvar	-	-0.002	0.001
		(-0.23)	(0.04)
Finvar	-	-0.001	0.002
		(-0.12)	(0.04)
$\widehat{\textbf{TFP}}$	-0.006	0.025	-0.020
	(-0.71)	(1.41)	(-1.60)
EXP (lag 1)	0.789***	0.777***	0.924***
	(29.84)	(28.10)	(71.91)
Size	0.005***	-0.001	0.002**
	(3.53)	(-0.45)	(2.03)
Wage	0.001	0.001	-0.001*
	(0.06)	(0.97)	(-1.86)
Debt	-0.005	-0.007	-0.002
	(-0.71)	(-1.38)	(-0.75)
Liquidity	0.045**	0.056***	0.030
	(2.39)	(3.10)	(1.52)
N	48,081	48,081	48,081
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
AR(1) (p-value)	0.000	0.000	0.000
AR(2) (p-value)	0.560	0.510	0.463
Hansen (p-value)	0.294	0.711	0.999

Notes: We estimate all specifications using a system-GMM estimator. The dependent variables are TFP (panel A) and export intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. In panel A, instruments include the firm-specific regressors lagged three times or more. In panel B, instruments include the firm-specific regressors lagged twice or more. AR(1), AR(2), and AR(3) are test statistics for the null hypothesis that there is no serial correlation of orders 1, 2, and 3 in the first-difference residuals. Hansen is a test of overidentifying restrictions, distributed as chi-square under the null of instrument validity. We lag all firm-level variables by one time-period. The *t*-statistics that are asymptotically robust to heteroskedasticity are in the parentheses. Standard errors are clustered at the firm level. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 9: Robustness: Alternative channels

Panel A: Dependent variable	**TFP**	
	(1)	(2)
	Var = Staff training	**Var = High-tech**
Treat*FEMA*Var	0.298*	0.172*
	(1.71)	(1.93)
Treat*FEMA	0.186***	0.119**
	(3.23)	(2.11)
Treat*Var	-0.487	-
	(-1.56)	
FEMA*Var	0.439	-0.243***
	(1.31)	(-3.03)
Var	0.665*	-
	(1.93)	
Size	0.001***	0.001***
	(5.27)	(2.98)
N	61,848	61,851
Firm FE	Yes	Yes
Year FE	Yes	Yes
Year*Industry FE	Yes	Yes
Year*State FE	Yes	Yes
Panel B: Dependent variable	**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.009***	0.016***
	(4.26)	(8.24)
$\widehat{\textbf{TFP}}$***FEMA*Var**	0.027**	0.013**
	(2.19)	(2.01)
$\widehat{\textbf{TFP}}$***Var**	-0.075	-0.007
	(-1.14)	(-0.32)
FEMA*Var	0.061	0.045
	(0.55)	(1.19)
Var	0.238	0.009
	(1.36)	(0.18)
$\widehat{\textbf{TFP}}$	0.003	0.001
	(0.79)	(0.40)
EXP (lag 1)	0.358***	0.357***
	(47.65)	(23.56)
Size	0.011***	0.011***
	(8.13)	(8.40)
Wage	-0.001**	-0.001***
	(-2.38)	(-5.87)
Debt	-0.002***	-0.002
	(-8.13)	(-1.15)
Liquidity	0.017***	0.016***
	(3.51)	(5.25)
N	48,080	48,081
Time averages of firm variables	Yes	Yes
Year FE	Yes	Yes
Year*Industry FE	Yes	Yes
Year*State FE	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator and by dynamic Tobit models introduced by Elsas and Florysiak (2015) in panel B. The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Var* represents, in turn, staff training and high-tech sectors. *Staff training* is spending on staff welfare and training as a proportion of total compensation to employees. *High-tech* equals 1 for firms that belong to the high-tech manufacturing industries, medium-high-tech manufacturing industries, and knowledge-intensive service sectors; it equals 0 otherwise. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 10: Robustness: Alternative cut-off points for financial vulnerability

Panel A: Dependent variable	**TFP**	
	(1)	(2)
	Finvar = Debt	**Finvar = Liquid**
Treat*FEMA*Finvar	0.038**	0.052***
	(2.11)	(2.90)
Treat*FEMA	0.199***	0.196***
	(3.52)	(3.50)
Treat*Finvar	-0.033	-0.001
	(-1.61)	(-0.01)
FEMA*Finvar	-0.066**	-0.081***
	(-2.39)	(-10.37)
Finvar	-0.007	-0.110***
	(-0.18)	(-14.41)
Size	0.001***	0.001***
	(5.53)	(3.36)
N	61,851	61,851
Firm FE	Yes	Yes
Year FE	Yes	Yes
Year*Industry FE	Yes	Yes
Year*State FE	Yes	Yes
Panel B: Dependent variable	**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.004***	0.005***
	(11.30)	(4.90)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	0.013***	0.016***
	(9.48)	(8.04)
$\widehat{\textbf{TFP}}$***Finvar**	-0.005	-0.011
	(-1.53)	(-1.37)
FEMA*Finvar	-0.033***	-0.038***
	(-9.72)	(-4.55)
Finvar	0.014	0.024
	(0.86)	(1.07)
$\widehat{\textbf{TFP}}$	0.007	0.006***
	(0.94)	(5.46)
EXP (lag 1)	0.364***	0.364***
	(46.06)	(72.92)
Size	0.004***	0.004***
	(5.43)	(4.47)
Wage	-0.001***	-0.002***
	(-6.99)	(-8.46)
Debt	-0.001***	-0.001***
	(-5.42)	(-7.96)
Liquidity	0.007***	0.002***
	(5.48)	(8.46)
N	48,081	48,081
Time averages of firm variables	Yes	Yes
Year FE	Yes	Yes
Year*Industry FE	Yes	Yes
Year*State FE	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 50% of the distribution of the debt (or liquidity) for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table 11: Robustness: Alternative definition of financial vulnerability

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
	Finvar = Vol	**Finvar = Size**	**Finvar = Collateral**
Treat*FEMA*Finvar	0.034**	0.026***	0.042*
	(2.45)	(2.95)	(1.80)
Treat*FEMA	0.116**	0.145**	0.154***
	(2.27)	(2.32)	(3.02)
Treat*Finvar	0.006	0.020	0.026
	(1.52)	(0.76)	(1.02)
FEMA*Finvar	-0.036***	-0.016***	-0.078***
	(-2.66)	(-11.73)	(-8.73)
Finvar	-0.021	-0.117***	-0.084***
	(-0.31)	(-7.01)	(-9.88)
Size	0.001***	0.001**	0.001***
	(5.28)	(2.55)	(2.64)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	0.005***	0.100**	0.024***
	(4.25)	(2.30)	(7.48)
$\widehat{\textbf{TFP}}$***FEMA**	0.002***	0.003**	0.006***
	(5.10)	(1.99)	(7.05)
$\widehat{\textbf{TFP}}$***Finvar**	-0.001	-0.100	-0.016
	(-0.09)	(-0.76)	(-0.53)
FEMA*Finvar	-0.013**	-0.213***	-0.069***
	(-2.04)	(-2.67)	(-3.33)
Finvar	-0.003**	0.209	0.045
	(-2.56)	(0.64)	(0.91)
$\widehat{\textbf{TFP}}$	0.008***	0.010	0.004
	(4.43)	(1.26)	(0.51)
EXP (lag 1)	0.364***	0.363***	0.361***
	(7.63)	(9.35)	(31.89)
Size	0.005***	0.003***	0.004***
	(8.51)	(6.66)	(5.88)
Wage	-0.001***	-0.001***	-0.001***
	(-5.53)	(-4.72)	(-3.81)
Debt	-0.001***	-0.001	-0.001***
	(-3.94)	(-0.81)	(-6.61)
Liquidity	0.009***	0.009**	0.009***
	(4.62)	(2.24)	(4.92)
N	48,081	48,081	48,081
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if the volatility of return on equity (or size and collateral) is in the top (or bottom) 25% of the distribution of volatility of return on equity (or size and collateral) for all firms in the same industry as firm *i* in that year, and zero otherwise. Volatility of return on equity (*Vol*) is the standard deviation of the firm's return on equity, measured over a rolling five-year window. *Size* equals real total assets. *Collateral* is the ratio of tangible assets to total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Online Appendix

Figure A1: Chinn-Ito Financial Openness Index

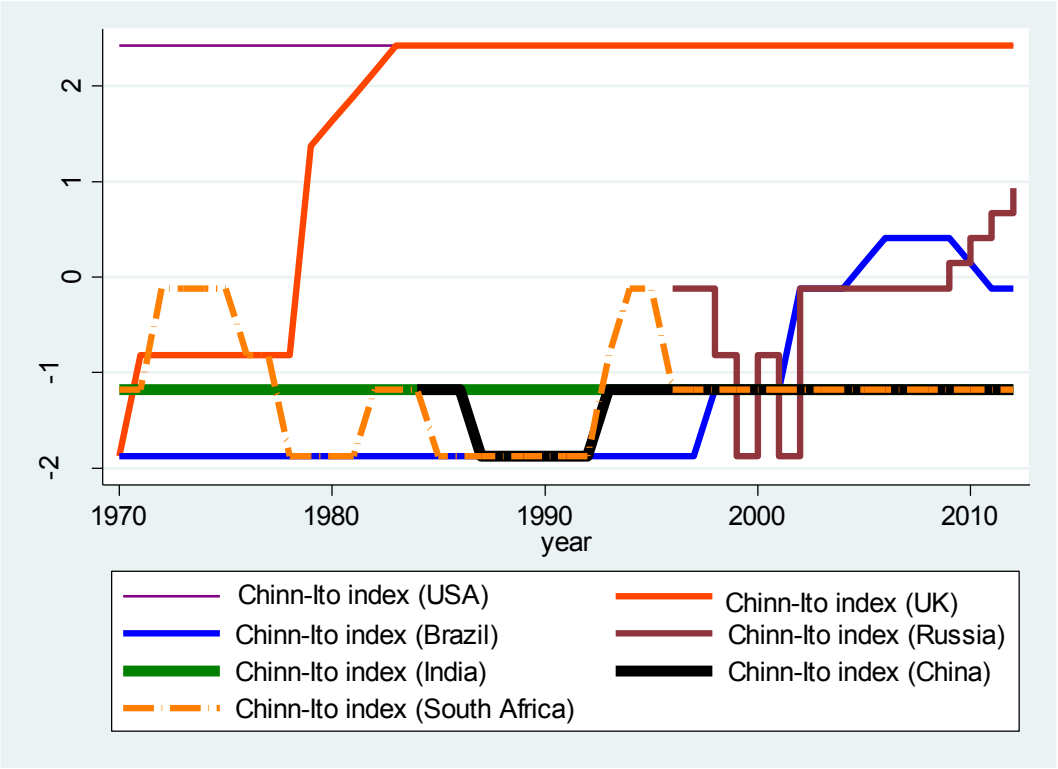

Table A1: Correlation matrix

	Size	Wage	TFP	Debt	Liquidity
Size	1.000				
Wage	0.601	1.000			
TFP	0.125	0.154	1.000		
Debt	0.069	-0.022	-0.082	1.000	
Liquidity	-0.086	-0.106	0.016	-0.156	1.000

Notes: Size equals real total assets. *Wage* equals real total wage bill. *TFP* is total factor productivity calculated using the Levinsohn and Petrin (2003) method adjusted by GDP deflator. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets.

Table A2: Summary statistics for exports and sales

	FEMA=1	FEMA=0	*p*-value
	(1)	(2)	(3)
Exports	336.18	63.39	0.000
	(1731.93)	(294.84)	
Sales	2406.93	781.30	0.000
	(6867.55)	(2288.96)	

Table A3: Robustness: Alternative definition of productivity

Panel A: Dependent variable	**Labor productivity**		
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	0.498***	0.445***	0.396***
	(3.11)	(2.58)	(2.73)
Treat*FEMA*Finvar	-	0.153**	0.467***
		(2.01)	(2.70)
Treat*Finvar	-	0.063	0.076
		(0.99)	(1.16)
FEMA*Finvar	-	-0.074	-0.437**
		(-0.95)	(-2.25)
Finvar	-	0.030	-0.096
		(0.39)	(-1.42)
Size	0.003***	0.003***	0.003***
	(5.11)	(4.93)	(4.92)
N	60,994	60,994	60,994
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.003***	0.003***	0.015***
	(3.10)	(7.73)	(3.17)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.011***	0.016**
		(4.31)	(2.10)
$\widehat{\textbf{TFP}}$***Finvar**	-	-0.002	0.022
		(-0.76)	(1.19)
FEMA*Finvar	-	-0.026*	0.041
		(-1.90)	(1.44)
Finvar	-	0.002	-0.055
		(0.40)	(-0.40)
$\widehat{\textbf{TFP}}$	0.001	0.006***	-0.001
	(0.41)	(9.15)	(-0.84)
EXP (lag 1)	0.364***	0.363***	0.364***
	(28.35)	(33.94)	(18.09)
Size	0.005***	0.005***	0.004***
	(8.61)	(13.96)	(8.65)
Wage	-0.002***	-0.002***	-0.002***
	(-5.71)	(-5.56)	(-5.73)
Debt	-0.001	-0.002	-0.001***
	(-1.53)	(-0.98)	(-1.33)
Liquidity	0.009***	0.008*	0.006**
	(3.35)	(1.80)	(2.00)
N	47,210	47,210	47,210
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are labor productivity (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) of for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table A4: Robustness: Dynamic productivity estimation

Panel A: Dependent variable		**TFP**	
	(1)	(2)	(3)
		Finvar = Debt	**Finvar = Liquid**
Treat*FEMA	0.090***	0.122***	0.110***
	(3.06)	(3.71)	(3.43)
Treat*FEMA*Finvar	-	0.040***	0.042**
		(3.05)	(2.44)
Treat*Finvar	-	-0.008	-0.010
		(-0.85)	(-0.84)
FEMA*Finvar	-	-0.001	-0.009
		(-0.01)	(-0.88)
Finvar	-	-0.109***	-0.208***
		(-3.36)	(-6.28)
Size	0.001**	0.001	0.001
	(2.08)	(0.05)	(0.93)
TFP (lag 1)	0.563***	0.561***	0.556***
	(55.23)	(55.15)	(54.89)
N	61,851	61,851	61,851
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes
Panel B: Dependent variable		**EXP**	
$\widehat{\textbf{TFP}}$***FEMA**	0.004***	0.003**	0.003**
	(3.46)	(2.06)	(2.02)
$\widehat{\textbf{TFP}}$***FEMA*Finvar**	-	0.004**	0.009**
		(1.99)	(2.19)
$\widehat{\textbf{TFP}}$***Finvar**	-	0.005	0.002
		(0.52)	(1.43)
FEMA*Finvar	-	-0.009	-0.016
		(-0.24)	(-1.33)
Finvar	-	-0.010	-0.011
		(-1.45)	(-1.55)
$\widehat{\textbf{TFP}}$	0.002	-0.001	0.001
	(1.56)	(-0.07)	(0.35)
EXP (lag 1)	0.363***	0.363***	0.363***
	(123.05)	(12.33)	(19.27)
Size	0.005***	0.005***	0.005***
	(9.07)	(8.88)	(8.86)
Wage	-0.002***	-0.002***	-0.002***
	(-5.82)	(-5.74)	(-5.85)
Debt	-0.001*	-0.001*	-0.001
	(-1.68)	(-1.67)	(-1.03)
Liquidity	0.008***	0.007**	0.004
	(3.08)	(2.53)	(1.52)
N	48,081	48,081	48,081
Time averages of firm variables	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Year*Industry FE	Yes	Yes	Yes
Year*State FE	Yes	Yes	Yes

Notes: We estimate all specifications in panel A using a difference-in-difference estimator; we estimate all specifications in panel B using a doubly censored Tobit estimator introduced by Elsas and Florysiak (2015). The dependent variables are TFP (panel A) and exporting intensity (panel B). *Treat* equals 1 if the firm raises external currency borrowing (ECB) over the period 1988-2014, and 0 otherwise. *FEMA* equals 1 if the observation occurs in the post-reform period of 2000-2014, and 0 otherwise. *Finvar* equals 1 in a given year for firm *i* if debt (or liquidity) is in the top (bottom) 25% of the distribution of the debt (or liquidity) of for all firms in the same industry as firm *i* in that year, and 0 otherwise. *Debt* is short-term debt to current assets. *Liquidity* is current assets less current liabilities over total assets. We lag all firm-level variables by one time-period. Robust *t*- and *z*-statistics are in the parentheses. Standard errors are clustered at the firm level. In panel B standard errors are bootstrapped. Statistical significance is denoted at 1% (***), 5% (**), and 10% (*).

Table A5: Robustness: Estimation of lagged dependent variables

Dependent variable:	**EXP**		
	(1) **OLS**	(2) **WG**	(3) **Diff-GMM**
Panel A:			
EXP (lag 1)	0.914***	0.498***	0.301**
	(273.57)	(33.07)	(2.26)
N	48,081	48,081	38,629
Panel B:	**Finvar = Debt**		
EXP (lag 1)	0.914***	0.497***	0.205**
	(272.66)	(33.04)	(1.99)
N	48,081	48,081	38,629
Panel C:	**Finvar = Liquid**		
EXP (lag 1)	0.913***	0.498***	0.219***
	(271.41)	(33.04)	(2.90)
N	48,081	48,081	38,629

Notes: The table presents estimates of lagged dependent variables with robust statistics in parentheses from the exporting intensity (EXP) model using ordinary least squares (OLS), within groups (WG), and first-differenced GMM (Diff-GMM).