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Yu Liu
The University of Texas Rio Grande Valley

Jian Xu
The University of Texas Rio Grande Valley

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Residual State Ownership, Foreign Ownership and Firms' Financing Patterns

Yu Liu[1] and Jian Xu[2]

Abstract

Employing the World Bank Enterprise Survey (WBES) dataset, which covers over 130 thousand firms in 139 economies from 2006 to 2017, we investigate the effect of residual state ownership, with or without the moderating effect of foreign ownership, on firms' financing patterns. First, we find that residual state ownership is positively related with a firm's external finance, and foreign ownership is negatively related with a firm's external finance. Second, residual state ownership's positive effect on external finance disappears when foreign ownership and the interaction of the two are taken into consideration. The positive effect of the state-foreign interaction on a firm's external finance is both statistically and economically significant. The increased external finance of firms with both state and foreign ownerships mainly comes from private banks and new equity. Finally, we explore the channels through which residual state ownership or foreign ownership affect firms' financing patterns. Firms with residual state ownership only or foreign ownership only do not actively expand in market or innovate. While firms with both state and foreign ownerships are engaging in market expansion and innovation eagerly.

1.College of Business & Entrepreneurship, The University of Texas Rio Grande Valley, E-mail: yu.liu@utrgv.edu
2.College of Business & Entrepreneurship, The University of Texas Rio Grande Valley, E-mail: jian.xu01@utrgv.edu

1. Introduction

We examine the effect of residual state ownership, with or without the moderating effect from foreign ownership, on firms' financing patterns in this study.

Over the past 30 years, privatization of state-owned enterprises (SOEs) has been a widespread phenomenon in developed, developing and emerging economies. More than 100 countries have implemented different levels of privatization for SOEs (Megginson and Netter, 2001). Privatization has decreased the role of state in the economies, as many previously state-controlled firms have reduced their state shares from majority to minority, or sometime to zero (Megginson, 2010).

Understanding whether and how residual state ownership affect firms' financing patterns is important, given the widespread government bailouts happened during the recent financial crisis and the return of government control in several important developing countries, such as China, Russia and Brazil (Wooldridge, 2012). Moreover, many governments are reluctant to give up control on their residual state ownership. These governments either choose to retain a percentage of shares which is higher than a threshold or appoint representatives to the key positions in firms (Boubakri, Cosset and Guedhami, 2009).

A large volume of literature has examined the relationship between SOEs and firm behaviors. State ownership is generally associated with better government support, lower financing obstacles, and less cost of debt (Kornai, 1979; Kornai, 1980; Harrison and McMillan, 2003; Laeven, 2003; Borisova and Megginson, 2011). However, we do not know whether firms with residual state ownership continue to behave that way as SOEs do.

The impacts of foreign ownership on firm performance or firm decisions are well studied. Foreign ownership is related with lower financial constraints (Beck et al., 2006; Dong and Men, 2014; D'Souza et al., 2017; Mertzanis, 2017), better corporate governance (Doidge et al., 2009; Leuz et al., 2008), less agency problems and more informative disclosures (Boycko et al., 1996; Dyck, 2001; Boubakri et al., 2007; Guedhami et al., 2009; Aggarwal et al., 2011).

State ownership and foreign ownership are examined separately in most of the ownership studies. A few studies have examined the impacts of both state and foreign

ownerships on firm decisions.[2] No study has directly explored the interaction effect between state and foreign ownerships. The interaction effect between state and foreign ownerships is important because we are interested to know whether the resources integration synergies between the two ownerships outweigh the coordination costs between them. Organizations controlled by sharing ownership play a significant role in economic, political and social institutions (Andreoni and Bernheim, 2009). The partners may decide to cooperate if they share control equally, when both partners have assets that are essential for collaboration (Grossman and Hart, 1986; Hart and Moore, 1990). Mantecon et al. (2012) find that monitoring in joint ownership organizations reduces the possibility of value-destroying corporate decisions.

To the best of our knowledge, no study in previous literature has analyzed the effect of residual state ownership on firms' financing patterns, and whether foreign ownership moderates this state-financing effect.

We examine three questions in this study:

1. Does residual state ownership affect firms' financing patterns?
2. Does foreign ownership moderate the state-financing relationship?
3. What are the channels that state and/or foreign ownerships affect firms' financing patterns?

We answer the three questions by analyzing the World Bank Enterprise Survey (WBES) database, which covers over 130,000 firms, from 139 countries, from 2006 to 2017. To simplify our ownership descriptions, we define firms with residual state ownership as State firms, firms with foreign ownership as Foreign firms, firms with both residual state ownership and foreign ownership as State_Foreign firms, and firms with neither residual state ownership nor foreign ownership as Non_State_Foreign firms.

First, residual state ownership and foreign ownership are included in our regressions separately. Firms with residual state ownership tend to have higher external finance, while firms with foreign ownership tend to have lower external finance. (Dong and Men, 2014; Knack and Xu, 2017; Liu et al., 2019). We alleviate the potential endogeneity issue between ownership and external finance by using two-stage least squares, propensity

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[2] See Ben-Nasr (2016), Boubakri, Cosset and Saffar (2013), Chen, et al. (2017) and Guedhami, Pittman and Saffar (2009).

score matching, and Heckman selection model. The main results stated above generally hold in the endogeneity tests.

Second, residual state ownership, foreign ownership and the interaction between the two are simultaneously included in the regression. State firms' positive effect on external finance disappears while Foreign Firms' negative effect on external finance remains. Meanwhile, the positive effect of State_Foreign firms on a firm's external finance is both statistically and economically significant. The increased external finance of State_Foreign firms mainly comes from privately-owned bank finance and new equity finance. These results are robust to including firm-level finance, political and court obstacles, replacing country fixed effects with country-level macroeconomic variables, limiting the regression to the top 10 countries with the highest percent of State firms, limiting the regression to firms with 100 or more employees (large firms according to WBES), using alterative dependent variables.

Third, we explore two channels through which residual state ownership and/or foreign ownerships affect firms' financing patterns. Firms with residual state ownership only or foreign ownership only do not show strong evidence that they are actively expanding or innovating. However, State_Foreign firms reveal strong evidence that they are eagerly engaging in market expansion and innovation.

Our contributions to the literature are fourfold. First, we add to the literature on ownership and firm behaviors. The financing patterns of residual state ownership, foreign ownership and the interaction of the two, are analyzed simultaneously, while previous literature mainly focuses on one type of the ownership each time. Our results indicate that the combination and interaction of different ownerships are meaningful, as residual state ownership is positively related with external finance by itself, but insignificantly related with external finance when foreign ownership and the interaction of the two are included in the regression.

Second, this study contributes to the literature of business collaborations. We are the first to examine the interacting effects between state and foreign ownerships. If synergies between the two types of owners outweigh their coordinating costs, firms with residual state ownership would benefit from foreign direct investment. The positive effects of State_Foreign firms on external finance, market expansion and innovation provide some support to the statement above.

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Third, we propose an explanation to the positive effects of State_Foreign firms on external finance both from the demand side and the supply side. From the demand side, State_Foreign firms may have a higher demand on external finance due to their eagerness to expand and innovate. From the supply side, State_Foreign firms may tap into the financial resources from both types of owners, especially from their foreign owners. Our results indicate that the increased external finance of State_Foreign firms mainly comes from private banks and new equity.

Last but not least, our results provide an ownership-financing evidence from a dataset with over 130 countries, which primarily focuses on non-listed firms in developing or emerging economies. Previous literature mainly examines listed firms in developed countries (Rajan and Zingales, 1995; Borisova and Megginson, 2011; Lin et al., 2011), or listed firms in a few developing countries, such as China, Vietnam et al. (Maksimovic and Demirgüç-Kunt, 1999; Booth et al., 2001; Cull and Xu, 2005; Megginson et al., 2014). The results generated from developed countries or a few leading developing countries may not generalize to other developing or emerging economies.

The rest of the paper is organized as follows. Section 2 reviews the literature and generates hypotheses. Section 3 briefly describes the data and variables used in this study. Sections 4 and 5 present empirical results of the ownership-financing relationship. Section 6 explores the channels through which residual state ownership or foreign ownership affect financing patterns. Section 7 concludes.

2. Literature Review

2.1 Residual State Ownership and Finance Patterns

The relationship between state ownership and external finance is likely to be positive considering that SOEs naturally enjoy the benefits of all kinds of government support. The soft budget constraint theory (Kornai, 1979; Kornai, 1980) states that governments can relax SOEs' financial constraint by offering them a favorable tax rate, an easier access to credit, and other support. Consistent with the soft budget constraint, Harrison and McMillan (2003) and Laeven (2003) find that SOEs have lower financing obstacles since they receive direct subsidies from governments and funds with favorable terms from state-owned banks. Borisova and Megginson (2011) identify a

negative link between government ownership and the cost of debt using a sample of newly privatized firms.

Moreover, SOEs tend to possess more political connections (Boubakri et al., 2008). Faccio et al. (2006) report that firms with political connections are more likely to get an implicit government bailout guarantee during financial distress. Boubakri et al. (2012) find that a government official on board is associated with a higher leverage. Chaney et al. (2011) identify that firms with political connections have a lower cost of borrowing even if their financial reports are of poor quality. Boubakri et al. (2012) find that political connections reduce equity costs. Cull et al. (2015) argue that firms with government connections face fewer financial constraints, and investments in these firms are less sensitive to internal cash flows.

However, the relationship between state ownership and external finance can also be negative considering that SOEs are notorious for their low efficiency and higher agency cost (Shleifer and Vishny, 1997; Boycko et al., 1996; Fogel et al., 2008; Guedhami et al., 2009). They do not have an easier access to loans from privately-owned banks as they do from state-owned banks (Liu et al., 2019). Dong et al. (2016) report that SOEs no longer have an easier access to bank finance in China, which is different from the traditional prediction. Lin and Bo (2012) also indicate that state ownership does not equal lower financial constraints or more borrowing from banks in China. The soft budget constraint once enjoyed by SOEs or former SOEs may have gradually dissipated with a country's privatization process and its advancement of market economy.

Firms with residual state ownership are likely to behave similar to SOEs (Chen et al., 2011; Ben-Nasr et al., 2012; Boubakri et al., 2013; and Chen et al., 2017). These firms may also benefit from the soft budget constraint and suffer from the exacerbated agency issue. Following the discussion above, we make the following two hypotheses:

H1a: Residual state ownership is positively related with external finance.

H1b: Residual state ownership is negatively related with external finance.

2.2. Foreign Ownership and Financing Patterns

The relationship between foreign ownership and external finance is also ambiguous according to previous literature. Foreign ownership is commonly associated with lower

financial constraints (Beck et al., 2006; Dong and Men, 2014; D'Souza et al., 2017; and Mertzanis, 2017), better corporate governance, less agency problems and more informative disclosures (Boycko et al., 1996; Dyck, 2001; Boubakri et al., 2007; Doidge et al., 2009; Guedhami et al., 2009; Leuz et al., 2008; Aggarwal et al., 2011). Equipped with low financial constraints and better governance, firms with foreign ownership are valuable loan applicants from banks' perspective and they may have an easier access to external funding.

Moreover, Ayyagari et al. (2011) find that foreign ownership is related with a higher probability of innovation. Boubakri et al. (2013) present that foreign ownership is positively related with a firm's risk-taking behavior. With a higher incentive to innovate and take risks, firms with foreign ownership tend to have a higher demand for external finance.

Think from a different perspective, less financial obstacles indicate that firms with foreign ownership do not need that much external finance. Beck et al. (2008) show that foreign-owned firms fund a large share of investment with equity finance. Kwok and Tadesse (2006), Barth et al. (2009), and Houston et al. (2011) argue that firms with foreign ownership have less bank lending since they obtain funds from parent companies and foreign capital markets.

Firms with foreign ownership may also suffer from less connections with domestic banks, be it state-owned or privately-owned. Hence there is no guarantee that the fund supply from domestic banks/suppliers to foreign firms are positive. Colombo (2001) find that foreign ownership has no significant effect on access to short-term debt finance for a sample of Hungary firms. Knack and Xu (2017) document a negative relationship between foreign ownership and external finance. Liu et al. (2019) find firms with foreign ownership receive less bank finance, either from state-owned banks or privately-owned banks.

Based on the discussion above, we hypothesize that:

H2a: Foreign ownership is positively related with external finance.

H2b: Foreign ownership is negatively related with external finance.

2.3 Coexistence of State-Foreign Ownerships and Financing Patterns

The coexistence of state and foreign ownerships in one firm may positively affect its external finance. Firms with (previous) state ownership tend to have built-up links with state-owned banks and suppliers (Liu et al. 2019). Firms with foreign ownership tend to have an easier access to equity funding from their foreign parent companies or foreign capital markets (Kwok and Tadesse, 2006; Barth et al., 2009; and Houston et al., 2011). Firms with both state and foreign ownerships may hence inherit the financing advantages from both side of the owners. Related literature has reported that in privatized firms, foreign ownership is associated with better firm performance and investment efficiency (Megginson and Netter, 2001; Denis and McConnell, 2003; Estrin et al., 2009; D'Souza et al., 2001; and Chen et al., 2017).

On the other hand, the coexistence of state and foreign ownerships in one firm may negatively affect its external finance. It is well documented that state owners and foreign owners have vastly different incentives when they are making business decisions (Ben-Nasr, 2016; Boubakri, Cosset and Saffar, 2013; Chen, et al., 2017; and Guedhami, Pittman and Saffar, 2009). The cost of coordinating activities is higher in joint ventures than wholly owned affiliates (Desai et al. 2004). State_Foreign firms may be plagued by conflicting interests and coordinating costs, hence unable to take advantage of any type of financing resources from state/foreign owners.

H3a: The coexistence of state-foreign ownership is positively related with external finance.

H3b: The coexistence of state-foreign ownership is negatively related with external finance.

3. Data

3.1. The Sample

In this study, we employ the World Bank Enterprise Survey (WBES) database for our empirical analysis (http://www.enterprisesurveys.org/). This dataset was collected through surveys between 2006 and 2017 across Sub-Saharan Africa, East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa and South Asia. WBES dataset uses standardized survey instruments to measure

the business climate of each economy. It is widely used in corporate finance studies (see, e.g. Beck et al., 2005; Beck et al., 2008; Ayyagari et al., 2008, 2011, 2014; Barth et al., 2009; Houston et al., 2011; Akins et al., 2017).

WBES has its unique advantages that make it suitable to study the relationship between firm ownership and financing patterns. First, WBES contains in-depth firm-level financing pattern information. Second, it covers over 130 developing and emerging countries around the world.

WBES also has its shortcomings. One shortcoming is that financial data are generally missing in this dataset. Many important financial measures, such total asset, total equity, net profit, are not available. Another shortcoming is that the dataset is a pooled one and we cannot perform panel regressions at the firm level.

To reduce the impact of outliers, all continuous variables are winsorized at the top and the bottom one percentile. Dependent variables (financing patterns, financing channel proxies for market expansion and innovation), key independent variables (residual state ownership and foreign ownership), and control variables are briefly described in Sections 3.2, 3.3, and 3.4.

3.2. Dependent Variables

3.2.1 Financing Patterns

A firm's financing pattern is measured by its answers to the question: *"Over fiscal year [insert last complete fiscal year], please estimate the proportion of this establishment's purchase of fixed assets that was financed from each of the following sources?"* The firms' purchase of fixed assets can be financed by internal funds/retained earnings (*Fixed_Internal*), funds borrowed from banks (*Fixed_Bank*), which equals the sum of funds from state-owned banks (*Fixed_StateBank*) and privately-owned banks (*Fixed_PrivateBank*), funds borrowed from non-bank financial institutions (*Fixed_NonBank*), purchases on credit from suppliers and advances from customers (*Fixed_Suppliers*), other informal sources, e.g. moneylenders, friends, relatives (*Fixed_Other*), and owners' contribution or issued new equity shares (*Fixed_NewEquity*). These funding channels add up to 100%. We further define *Fixed_External* as 100 minus *Fixed_Internal*.

Several supplementary measures of a firm's financing pattern are used in our robustness tests. Another question related to a firm's financing pattern is *"Over fiscal year [insert last complete fiscal year], please estimate the proportion of this establishment's working capital that was financed from each of the following sources?"* The firms' working capital can be financed by internal funds/retained earnings (*WC_Internal*), funds borrowed from banks (*WC_Bank*) and non-bank financial institutions (*WC_NonBank*), purchases on credit from suppliers and advances from customers (*WC_Suppliers*), and other informal sources, e.g. moneylenders, friends, relatives (*WC_Other*). The above specified funding channels add up to 100%. Similarly, we define *WC_External* as 100 minus *WC_Internal*. Moreover, *Line_of_Credit* is a dummy variable that equals one if the firm has a line of credit or a loan from any financial institution, zero otherwise. *New_Loan* is a dummy variable that equals one if the firm has applied for a new loan or a line of credit in year t-1, zero otherwise.

Table 1, Panel A demonstrates that for firms with fixed assets purchase, 33.20% of the purchase was financed from external funds, among which 18.24% from bank borrowing, 1.82% from non-bank financial institutions, 5.17% from suppliers, 2.47% from other sources, and 4.20 % from new equity. A firm's working capitals is 28.90% externally financed on average. Specifically, 12.99% of working capital is financed from bank borrowing, 1.31% from non-bank financial institutions, 11.72% from suppliers, and 2.78% from other sources. In our sample, 35.92% of the firms have an existing loan or a line of credit, 27.87% of the firms have applied for a new loan or a line of credit in year t-1.

3.2.2 Financing Channels Proxies

We also investigate the channels through which a firm may spend its externally acquired funds. One potential channel related to cash outflow is market expansion. We use three variables to proxy a firm's market expansion process and they are: *Sales_Growth,* which is defined as $(\ln(\text{Sales}_{t-1}) - \ln(\text{Sales}_{t-3})) / 2$, Employee_Growth, which is defined as $(\ln(\text{Employee}_{t-1}) - \ln(\text{Employee}_{t-3})) / 2$, and *Fixed_Dummy*, which

is dummy variable that equals one if the firm has purchased any fixed assets in year t-1, zero otherwise.[3]

Another potential channel related to cash outflow is innovation. We use the following three variables to proxy a firm's innovation effort. *New_Product* is a dummy variable that equals one if the firm introduced new products/services over the last 3 years, zero otherwise. *Improved_Process* is the dummy variable that equals one if the firm introduced a new/significantly improved process during the last 3 years, zero otherwise. *R&D* is a dummy variable that equals one if the establishment spent on R&D in year t-1, zero otherwise.

The mean (median) of *Sales_Growth* is 0.14 (0.09), and the mean (median) of *Employee_Growth* is 0.05 (0). The mean-median gap indicates that both variables are right skewed. 44.54% of the firms have purchased fixed assets in year t-1. As to innovation, 40.55%, 43.37%, and 22.54% of firms have launched new products/services, introduced new/significantly improved process, or invested on R&D, in year t-1, respectively. See Table 1, Panel B for details.

3.3. State and Foreign Ownerships

We define *State* as a dummy variable that equals one if any governmental agency has at least partial ownership in the firm, zero otherwise, *Foreign* as a dummy variable that equals one if any private foreign individual/company has at least partial ownership in the firm, zero otherwise (Beck et al., 2005, Beck et al., 2008, Akins et al., 2017, and Ullah and Wei, 2017). We further define *State_Foreign* as an interaction dummy between *State* and *Foreign*, which equals one if both state and foreign ownerships co-exist in the firm, zero otherwise.

Table 1, Panel C shows that 2% (11%) of the sample firms have state (foreign) ownership. Among the 2% State firms, 66.17% of which are 50% or less state-owned, 36.25% of which are 20% or less state-owned. Hence in the world level, we are dealing with residual state ownership.

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[3] We define *Sales_Growth* and *Employee_Growth* following D'Souza et al. (2017) and Ullah and Wei (2017).

The distribution of state and foreign ownership varies significantly by firm size. WBES allocates firms into three categories according to their size: small firms have less than 20 employees, medium firms have 21-99 employees, and large firms have 100 or more employees. 4% (23%) of large firms have state (foreign) ownership, while only 1% (8%) of small/medium firms have state (foreign) ownership.

Figure 1 exhibits the state and foreign ownership distribution by regions. Firms in Europe & Central Asia are much more likely to have state ownership (2.64 %), while firms in Latin America & Caribbean are least likely to have state ownership (0.39 %). 16.83% of firms in Sub-Saharan Africa have foreign ownership, which is the highest among regions, while 1.96% of firms in South Asia have foreign ownership, which is the lowest among regions.

[Insert Table1 here]

[Inert Figure 1 here]

3.4. Control Variables

Following the literature, we include a set of control variables in our regressions (Beck et al., 2005; Beck et al., 2008; Ullah and Wei, 2017; Allison et al. 2019). A top manager's working experience is proxied by the years he/she spent in the business-related sector (*Experience*). Firm size is measured by the natural logarithm of the number of permanent full-time employees (*Ln_Employee*). Firm age is calculated as the natural logarithm of the survey year minus the founding year plus one (*Ln_FirmAge*). Ownership concentration is measured by the percentage of the firm owned by its largest shareholder (*Top_Owner_Pct*). The public listing status is proxied by a dummy variable called *Public*. The exporting status of a firm is proxied by a dummy variable called *Exporter*. A set of location variables are also included in our analysis. *City_Xlarge*, *City_Large*, *City_Medium* and *City_Small* are dummy variables which equal one if the city that the firm located has population over 1 million, over 250,000 to 1 million, over 50,000 to 250,000, or less than 50,000, respectively. *City_Large*, City*_Medium* and *City_Small* are directly included in the regression while *City_Xlarge* is held as the default category.

Firm level finance, political and court obstacles are controlled in some robustness test. *Finance_Obstacle* is based on the firm's response to the question "*how much of an obstacle: access to finance?*" (0-no obstacle, 1-minor obstacle, 2-moderate obstacle, 3-a

major obstacle, 4-very severe obstacle). *Political_Obstacle* is used to measure "*how much of an obstacle: political instability?*" (0-no obstacle, 1-minor obstacle, 2-moderate obstacle, 3-a major obstacle, 4-very severe obstacle). *Court_Obstacle* is used to measure "*how much of an obstacle: courts?*" (0-no obstacle, 1-minor obstacle, 2-moderate obstacle, 3-a major obstacle, 4-very severe obstacle).

County level macro-economic variables are used in some other robustness test. We include the natural logarithm of a country's GDP (*Ln_GDP*), the growth rate of GDP (*GDP_Growth*), GDP per capita (*GDP_per_Capita*), and inflation rate (*Inflation*), following Beck et al. (2005) and Zheng et al. (2013).

In our sample, a firm's top manager has 17.35 years of working experience on average. The means of *Ln_Employee* and *Ln_FirmAge* are 3.25 and 2.69, respectively, which indicates that an average firm has 25.79 employees and is 14.73 years old. The percent of the firm owned by the largest shareholder is 79.28%. 4.97% of firms are listed, and 21.27 % of firms are exporters. As to the location of the firms, 38.34%, 27.96%, 19.7% and 14% of the firms located in extra-large, large, medium and small cities, accordingly. The means of *Finance_Obstacle*, *Political_Obstacle*, and *Court_Obstacle* are 1.49, 1.63, and 0.98, respectively. The means of a country's natural logarithm of GDP (*Ln_GDP*) and GDP per capita (*GDP_per_Capita*), are 25.27 and 8.00, respectively. An average country's growth rate of GDP is 4.65%, and the average inflation rate is7.32%.

Appendix 1 provides a summary of definitions and sources of all variables used in this study.

3.5 Correlation Matrix

The correlation matrix among our main dependent and independent variables are presented in Table 2. *Fixed_External* is positively correlated with *State*, negatively correlated with *Foreign*. Among the independent variables, not any two variables have a correlation higher than 0.35. Multicollinearity is not likely to be a major issue in our regressions.

[Insert Table 2 here]

4. Ownership and Financing Patterns

4.1. Main Regression and Results

In this section, we examine the effects of state and foreign ownership on financing patterns by using the following regression model:

$$Financing\ Pattern = \alpha + \beta_1 State + \beta_2 Foreign + \beta_3 State\_Foreign +$$
$$\beta_4 Firm\ Level\ Controls + \beta_5 Country\_Industry\ Dummies +$$
$$\beta_6 Year\ Dummies + \varepsilon \tag{1}$$

where *Financing Pattern* is proxied by *Fixed_External,* the percent of the firm's fixed assets funded by external financing. *State*, *Foreign*, *State_Foreign* are our key independent variables. *Firm Level Controls* denote a set of firm-level control variables (*Experience, Ln_Employee, Ln_FirmAge, Top_Owner_Pct, Public, Exporter, City_Large, City_Medium* and *City_Small*). *Country_Industry Dummies* and *Year Dummies* represent country times industry and year fixed effects, respectively. We further cluster standard errors at the country-industry level to mitigate heteroscedasticity problems. All continuous variables are winsorized at the 1st and 99th percentiles to reduce the effect of outliers. In Equation (1), we focus on the coefficients β_1, β_2, and β_3.

Table 3 reports regression results of Equation (1). *State* is positively related with *Fixed_External*, see Columns (1) and (3). Yet its positive effect becomes insignificant when *State_Foreign* is included, see Column (4). *Foreign* is negatively related with *Fixed_External*, see Columns (2), (3) and (4). The coefficients of *Foreign* remain relatively stable in different regressions (Dong and Men, 2014; Knack and Xu, 2017; Liu et al., 2019).

State_Foreign is positively related with *Fixed_External*, see Column (4). The *State_Foreign* coefficient is economically significant as well. Firms with both state and foreign ownerships use 8.9% more external funds than firms without either ownership.

Table 3 also presents which firm characteristics have consistent impacts on *Fixed_External*. Larger firms and/or exporting firms tend to use more external funds (Beck et al., 2008; Dong and Men, 2014; Knack and Xu, 2017). Older firms and/or ownership concentrated firms tend to use fewer external funds (Knack and Xu, 2017).

Manager experience, public status and locations have no significant impacts on external finance.

[Insert Table 3 here]

4.2. Endogeneity Tests

The most important concern with the analysis above is endogeneity. Some unobserved/uncontrolled determinants of financing patterns may explain the existence of state/foreign ownership at the same time. Governments could either privatize better performed SOEs first in order to make an impression that the privatization process is successful, or privatize worse performed SOEs first in order to get rid of their historical burdens (Megginson and Netter, 2001; Boubakri et al., 2005; Boubakri et al., 2007). Foreign investors may prefer to invest in firms with more informative financial reporting (e.g., Barth et al., 1999; Guedhami et al., 2009), or firms located at better institutional environments (Boubakri et al., 2005; 2007; Guedhami et al., 2009). To address the above specified issues, we employ three econometric methods: instrumental variable (IV) regression, propensity score matching (PSM), and Heckman selection model.

4.2.1. Instrumental Variable Regression

Two instrument variables (IVs) are employed in the section. First, we use the variable *Collectivism*, which equals 100 minus Hofstede's (2001) individualism index, as an IV for *State*. Boubakri et al. (2016) and Chen et al. (2018) point out that the residual state ownership is higher in newly privatized firms that are located in less individualistic countries. Second, we calculate the average percent of *Foreign* for firms in the same country, industry and year of the target firm as *Foreign_Expected*. Assuming that a firm's choice to bring in foreign investors is affected by the choices of firms similar to itself, we use *Foreign_Expected* as an IV for *Foreign* (Liu et al., 2014).

We report IV regression results regarding state ownership in Columns (1) and (2) of Table 4, Panel A. In the first stage regression, we regress *State* on *Collectivism* along with the full set of control variables and country_industry, year fixed effects. Consistent with Boubakri et al. (2016) and Chen et al. (2018), *Collectivism* enters positively and

significantly at the 1% level, indicating that the state ownership is more prevalent in collectivistic countries. The result of the second stage regression shows that state ownership is positively and significantly correlated with *Fixed_External*. We report IV regression results regarding foreign ownership in Columns (1) and (2) of Table 4, Panel B. In the first stage regression, *Foreign_Expected* is positively and significantly related with *Foreign*, suggesting the existence of a keeping-up with the Joneses effect. The result of the second stage regression indicates that foreign ownership is negatively and significantly correlated with *Fixed_External*.

4.2.2. Propensity Score Matching (PSM)

The PSM method matches the treated firms with controlled firms according to the observable firm characteristics, in order to randomize the sample selection process (Rosenbaum and Rubin, 1983). Although it is impossible to control all of the unobservable variables, PSM is an effective endogeneity control method in both experimental and non-experimental studies (Dehejia and Wahba, 2002; Smith and Todd, 2001).

In this study, the treatment is residual state ownership and foreign ownership, respectively. We first use the same set of firm level control variables and fixed effects in Equation (1) to estimate the propensity score of each firm having any state or foreign ownership. State (Foreign) firms are matched with Non_State_Foreign firms, according to their propensity scores. We then re-estimate Equation (1) using the matched sample. Results reported in Table 4, Panel A, Column (3) indicates that *State* is positively though insignificantly correlated with *FA_External*, and results reported in Table 4, Panel B, Column (3) indicates that *Foreign* is negatively and significantly correlated with *Fixed_External*.

4.2.3. Heckman Two-Stage Analysis

Following the literature (Hope et al., 2011; Chen et al., 2017; Chen et al., 2018; Boubakri and Saffar, 2019), we perform a Heckman two-stage analysis to address the sample selection concern.

In the first stage, we use a probit model to predict whether state/foreign owners

choose to keep any stake in the firms. Specially, we regress *State/Foreign* on its corresponding instrument and the same set of firm level control variables and fixed effects in Equation (1), to estimate the inverse Mills ratio (Lambda). In the second stage, we include Lambda as an additional independent variable in Equation (1). The results in Columns (4) and (5) of Table 4, Panel A (B), indicate that state (foreign) ownership is positively (negatively) and significantly associated with the external finance, which are consistent with the baseline regression. Lambda loads negatively significant at the 1% level on *Fixed_External* in state ownership regression, suggesting the existence of selection issue and the Heckman analysis is needed.

[Insert Table 4 here]

5. Ownership and Detailed Finance Patterns

5.1. Main Regression and Results

In this study, we find that the firms with State (Foreign) firms are more (less) likely to seek and acquire external finance. State firms' positive effect on external finance disappears when Foreign firms and the interaction of the two are taken into consideration. The positive effect of the state-foreign interaction on a firm's external finance is both statistically and economically significant. We examine the detailed relationship between ownership and financing patterns in this section.

$$Detailed\ Financing\ Patterns = \alpha + \beta_1 State + \beta_2 Foreign +$$
$$\beta_3 State\_Foreign + \beta_4 Firm\ Level\ Controls +$$
$$\beta_5 Country\_Industry\ Dummies + \beta_6 Year\ Dummies + \varepsilon \qquad (2)$$

Where *Detailed Financing Patterns* are proxied by *Fixed_External, Fixed_Bank, Fixed_StateBank, Fixed_PrivateBank, Fixed_NonBank, Fixed_Suppliers, Fixed_Other, Fixed_NewEquity.* Similar firm level controls, country-industry dummies, year dummies as shown in Equation (1) are also included in Equation (2). We only report the coefficients of *State*, *Foreign* and *State_Foreign* in Table 5, for the sake of brevity.

We find that State firms have similar financing patterns in terms of *Fixed_Bank*, and *Fixed_NonBank*, compared with Non_State_Foreign firms. Although no significant difference in *Fixed_Bank* is observed between State firms and Non_State_Foreign firms, State firms are more likely to borrow from state-owned banks, and less likely

from privately-owned banks.[4] State firms are also more likely to obtain supplier finance or other finance.

Foreign firms are less likely to finance their fixed assets from banks, especially privately-owned banks, compared with their Non_State_Foreign counterparts. The coefficient of *Foreign* on *Fixed_NewEquity* is positively significant, consistent with the findings from Beck et al. (2008).

The coefficient of *State_Foreign* on *Fixed_Bank* is positively significant. State_Foreign firms' increased finance from banks seems to come from privately-owned banks, instead of state-owned banks. State_Foreign firms also increase their finance from non-bank financial institutions and new equity to purchase fixed assets. The relationship stated above is also economically significant. Compared with Non_State_Foreign firms, State_Foreign firms increased their external financing of fixed assets by approximately 8.9%. 70% of the increased external finance comes from banks, and 30% of the increased external finance comes from new equity, approximately.

In sum, we find that State_Foreign firms inherit some financing advantages, but not financing disadvantages, from their state owners and foreign owners. For example, State_Foreign firms acquire increased external finance through new equity, possibly from their foreign owners. Privately-owned banks are less likely to lend to State firms or Foreign firms, probably for different reasons, but much more likely to lend to State_Foreign firms.

[Table 5 here]

5.2. Robustness Tests

First, we try to further reduce the potential bias caused by firm level omitted variables. Self-reported finance, political and court obstacles are included in Equation (2). These obstacles are not included in the main regression since they are partially the results of state/foreign ownership. Including them in the main regression can move us further away from finding a causal relationship. However, these obstacles may exist

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[4] The number of observations in Fixed_StateBank and Fixed_PrivateBank is much smaller than the number of observations in other financing patterns. The low observation number may be the reason that the coefficient of State on Fixed_StateBank is positive but insignificant.

beyond the influence of ownership. The results reported in Table 6, Panel A indicate that State remains insignificant, Foreign remains negatively significant, and State-Foreign remains positively significant.

Second, we replaced country dummies with country-level macro variables (*Ln_GDP*, *GDP Growth*, *GDP per Capita*, and *Inflation*). Country level macroeconomic variables vary by time, instead of staying fixed. We can measure this change since many countries in our dataset are surveyed twice or more with a multiple-year gap. The four macroeconomic variables specified above are commonly used in the international corporate finance literature (e.g. Beck et al., 2005; Beck et al., 2008; D'Souza et al., 2017; Allison et. al., 2019). The results are reported in Table 6, Panel B. The main results regarding ownership remain unchanged.

Third, we replicate Equation (2) using the top 10 state ownership countries, as these countries are more likely to benefit from introducing foreign investment to their firms with state ownership. The results are reported in Table 6, Panel C, with main results regarding ownership basically unchanged.

Fourth, firms with residual state ownership or foreign ownership are likely to be larger than purely private firms. We limit our research to the large firm sample, which are firms with 100 or more employees according to WBES, as state ownership is generally concentrated in large firms. The results are similar to the results in Table 5 and they are reported in Table 6, Panel D.

Fifth, we employ alternative dependent variables in Equation (2). The alterative measures of financing patterns are *WC_External*, *WC_Bank*, *WC_NonBank*, *WC_Suppliers*, *WC_Other*[5], *Line_of_Credit* and *New_Loan*. As we have seen in Table 5, State (Foreign) firms are insignificantly (negatively significantly) related with *WC_External*. State_Foreign firms continue to have positively significant effects on external finance.

The results regarding *Line_of_Credit* and *New_Loan* further support the results in Table 5. Neither State firms nor Foreign firms are more likely to possess a line of credit or apply for a new loan. Yet State_Foreign firms are associated with a 11.5% higher probability of having a line of credit and an 8.3% higher probability of filing for a new

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[5] *WC_External=WC_Bank+WC_NonBank+WC_Suppliers+WC_Other.*

loan, compared with Non_State_Foreign firms. See Table 6, Panel E for details.

[Insert Table 6 here]

6. The Channels between Ownership and Financing Patterns

We explore two possible channels through which residual state ownership or foreign ownership could affect financing patterns. We choose three variables to proxy a firm's market expansion process: *Sales_Growth*, *Employee_Growth* and *Fixed_Dummy*. Another three variables are used to proxy a firm's innovation effort: *New_Product*, *Improved_Process* and *R&D*. Definitions of these variables are shown in Section 3.2.2. *State*, *Foreign* and *State_Foreign* are all included in the regression, with *Non_State_Foreign* as the default category. The firm level control variables, country-industry and year fixed effects, and standard errors clustering are the same as in Equations (1) and (2).

We realize that ownership can affect financing patterns through other channels, such as corporate governance. Previous literature generally associates foreign ownership with better corporate governance (Coffee, 1999; Denis and McConnell, 2003; Boubakri et al., 2005), and state ownership with worse corporate governance (Boycko et al., 1996; Dyck, 2001; Boubakri et al.,2007; Doidge et al., 2009; Leuz et al., 2008). Firms with better corporate governance are more trustworthy borrowers in the eyes of both financial institutions and other potential lenders (Klock et al., 2005). Unluckily, we are not able to test this channel empirically due to data limitation.

State and foreign owners may have different visions on a firm's market expansion strategy. Table 7, Panel A reports the ownership-market expansion results. *State* is negatively related with *Employee_Growth* and *Fixed_Dummy*. *Foreign* is negatively related with *Employee_Growth*. The results regarding *State* and *Foreign* are consistent with the findings from Beck et al. (2005), D'Souza et al. (2017), and Ullah and Wei (2017). Nevertheless, *State-Foreign* is positively related with *Sales_Growth*, *Employee_Growth* and *Fixed_Dummy*. Firms with state-foreign ownerships are actively pursue market expansion, compared with their non-state-foreign counterparts.

State and foreign owners may also have vastly different incentives regarding a firm's innovation effort. Table 7, Panel B reports the ownership-innovation results.

State is negatively related with *R&D*. *Foreign* is positively related with *New_Product*, but not the other two measures. The results are consistent with Ayyagari et al. (2011), which document a negative (positive) relationship between state (foreign) ownership and firm innovation. *State-Foreign* is positively related with *New_Product*, *Improved_Process* and *R&D*, which indicates that firms with state-foreign ownerships are willing to take risks associated with innovation and engage in product research and development.

[Table 7 here]

7. Conclusion

In this study, we focus on the ownership-finance relationship. Using a large dataset from over 130 countries, from 2006 and 2017, we find statistically and economically significant evidence that residual state (foreign) ownership is positively (negatively) related to external finance. More importantly, firms with both state and foreign ownerships have a higher usage of external finance, compared with firms without either ownership. The increased supply of external finance mainly comes from privately-owned bank and new equity.

Ownership may affect financing patterns through at least three channels, which are market expansion, innovation and corporate governance. We find some support from the first two channels. Firms with both state and foreign ownerships tend to actively engage in market expansion and innovation, which results in an increased demand of external fund. Unluckily, we do not have relevant variables to test the corporate governance channel.

We conduct a set of endogeneity and robustness tests, the main ownership-finance relationship remains stable. We admit that the endogeneity issue is only relieved but not solved in this study, as the instrument variables we find for state/foreign ownership may not be totally exogenous.

Our results have critical implications for policy makers. Firms with only state ownership tend to perform worse, invest less and expand less. Many governments want to change the behavior pattern of these firms but are not willing to relinquish control of them. The results of this study indicate that introducing foreign investment into State

firms could be a win-win solution. Firms with both state and foreign ownerships are financially supported by both owners, especially foreign owners, and (implicitly) politically supported by state owners. They become vigorous and start to expand in market and engage in innovation. The resources integration synergy between state and foreign ownerships seem to overweight the coordinating cost between them.

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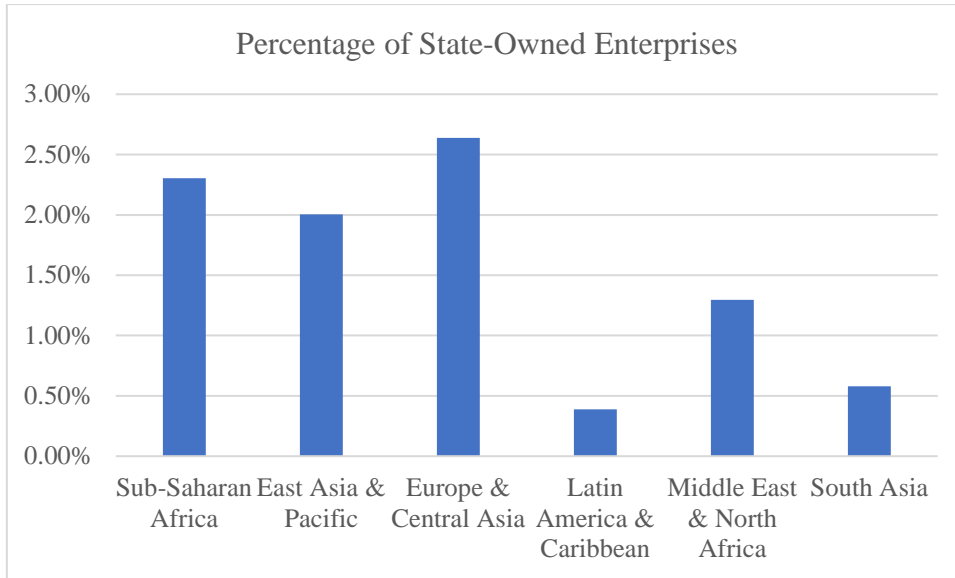
Figure 1A. Percentage of State-Owned Enterprises by Region.
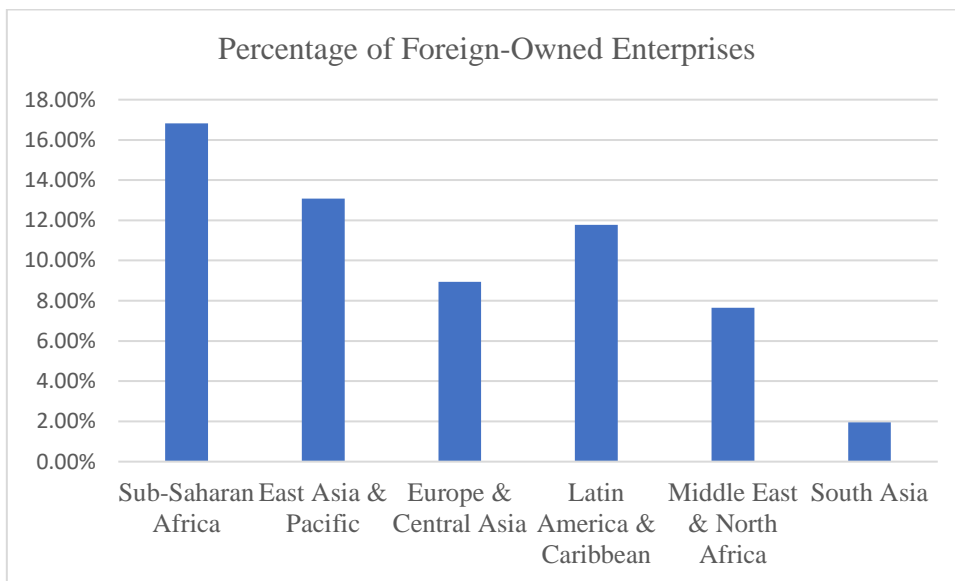
Figure 1B. Percentage of Foreign-Owned Enterprises by Region.

Table 1. Summary of Descriptive Statistics.

	N	Mean	Std	Min	Median	Max
A. Financing Patterns						
Fixed_External	59250	33.20	40.54	0	0	100
Fixed_Bank	58666	18.24	32.97	0	0	100
Fixed_PrivateBank	16708	18.21	33.25	0	0	100
Fixed_StateBank	16692	2.16	12.20	0	0	100
Fixed_NonBank	52477	1.82	11.27	0	0	100
Fixed_Suppliers	58762	5.17	17.92	0	0	100
Fixed_Other	45281	2.47	12.92	0	0	100
Fixed_NewEquity	58923	4.20	16.62	0	0	100
WC_External	121703	28.90	34.17	0	12	100
WC_Bank	120193	12.99	24.25	0	0	100
WC_NonBank	120681	1.31	7.83	0	0	100
WC_Suppliers	120266	11.72	22.23	0	0	100
WC_Other	103325	2.78	12.21	0	0	100
Line_of_Credit	131498	0.36	0.48	0	0	1
New_Loan	130073	0.28	0.45	0	0	1
B. Channels						
Sales_Growth	100358	0.14	0.45	-1.07	0.09	2.57
Employee_Growth	122812	0.05	0.18	-0.48	0	0.75
Investment_Dummy	135102	0.45	0.50	0	0	1
New_Product	84887	0.41	0.49	0	0	1
Improved_Process	83247	0.43	0.50	0	0	1
R&D	83553	0.23	0.42	0	0	1
C. Ownership						
State	134248	0.02	0.13	0	0	1
Foreign	134203	0.11	0.31	0	0	1
State_Foreign	134167	0.01	0.07	0	0	1

	N	Mean	Std	Min	Median	Max
D. Firm-level Control and Macro Variables						
Experience	132685	17.35	11.12	0	15	90
Ln_Employee	135616	3.25	1.36	1.10	3.00	7.17
Ln_FirmAge	134562	2.69	0.75	0	2.71	5.83
Top_Owner_Pct	129240	79.28	26.37	0.20	100	100
Public	135506	0.05	0.22	0	0	1
Exporter	135089	0.21	0.41	0	0	1
City_Large	93395	0.28	0.45	0	0	1
City_Medium	93395	0.20	0.40	0	0	1
City_Small	93395	0.14	0.35	0	0	1
Finance_Obstacle	131934	1.49	1.33	0	1	4
Political_Obstacle	132359	1.63	1.47	0	1	4
Court_Obstacle	124685	0.98	1.23	0	0	4
Ln_GDP	135172	25.27	2.01	19.48	25.26	29.53
GDP_Growth	135910	4.65	4.21	-26.05	5.25	29.32
GDP_per_Capita	135172	8.00	1.06	5.39	7.94	10.87
Inflation	134182	7.32	5.86	-35.84	6.97	59.22

Table 2. Pearson Correlation Matrix.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Fixed_External	(1)											
State	(2)	0.03***										
Foreign	(3)	-0.02***	0.09***									
Experience	(4)	0.05***	-0.01***	-0.02***								
Ln_Employee	(5)	0.08***	0.10***	0.21***	0.13***							
Ln_FirmAge	(6)	0.07***	0.06***	0.00	0.45***	0.28***						
Top_Owner_Pct	(7)	-0.07***	-0.07***	-0.10***	-0.14***	-0.26***	-0.15***					
Public	(8)	0.02***	0.14***	0.11***	0.02***	0.18***	0.10***	-0.12***				
Exporter	(9)	0.09***	0.06***	0.20***	0.10***	0.35***	0.14***	-0.14***	0.07***			
City_Large	(10)	-0.01**	-0.01***	0.00	-0.05***	-0.03***	-0.02***	0.01***	0.01***	-0.04***		
City_Medium	(11)	-0.01	0.00	0.01***	-0.02***	-0.02***	-0.03***	0.00	0.00	-0.01***	-0.31***	
City_Small	(12)	0.04***	0.01***	0.00	0.03***	-0.04***	0.01***	0.01***	0.00	0.06***	-0.25***	-0.20***

Table 3. State/foreign Ownership and Financing Patterns.

	Fixed_External	Fixed_External	Fixed_External	Fixed_External
State	3.465**		4.452***	1.051
	(2.04)		(2.62)	(0.50)
Foreign		-5.339***	-5.495***	-5.977***
		(-6.10)	(-6.34)	(-6.72)
State_Foreign				8.920***
				(3.02)
Experience	-0.032	-0.039	-0.037	-0.038
	(-1.21)	(-1.47)	(-1.43)	(-1.44)
Ln_Employee	1.509***	1.765***	1.749***	1.782***
	(6.51)	(7.37)	(7.35)	(7.53)
Ln_FirmAge	-1.105***	-1.199***	-1.242***	-1.237***
	(-3.04)	(-3.30)	(-3.44)	(-3.43)
Top_Owner_Pct	-0.051***	-0.054***	-0.052***	-0.052***
	(-3.54)	(-3.81)	(-3.69)	(-3.64)
Public	-0.425	0.344	-0.001	0.030
	(-0.40)	(0.32)	(-0.00)	(0.03)
Exporter	2.875***	3.540***	3.501***	3.456***
	(4.23)	(5.32)	(5.28)	(5.21)
City_Large	0.519	0.473	0.471	0.469
	(0.50)	(0.46)	(0.46)	(0.45)
City_Medium	1.267	1.272	1.257	1.245
	(1.19)	(1.19)	(1.17)	(1.16)
City_Small	2.376	2.329	2.356	2.358
	(1.64)	(1.60)	(1.62)	(1.62)
Observations	33912	33919	33910	33910
Adj. R-squared	0.14	0.14	0.14	0.14

Table 4 Panel A. Endogeneity Test of State Ownership.

Variables	IV 1st	IV 2nd	PSM	Heckman 1st	Heckman 2nd
	State	Fixed_External	Fixed_External	State	Fixed_External
State		292.633***	3.832		9.624***
		(6.80)	(1.15)		(4.94)
Collectivism	0.001***			0.027***	
	(4.98)			(8.37)	
Experience	-0.000	0.028	0.016	-0.006**	0.057
	(-1.60)	(0.56)	(0.12)	(-2.37)	(1.46)
Ln_Employee	0.004**	0.072	1.998*	0.118***	-0.513
	(2.29)	(0.16)	(1.73)	(5.65)	(-0.85)
Ln_FirmAge	0.006***	-2.647***	-3.057*	0.212***	-3.825***
	(2.58)	(-3.30)	(-1.66)	(4.86)	(-4.30)
Top_Owner_Pct	-0.000***	0.029	-0.141***	-0.008***	0.033
	(-3.97)	(0.75)	(-2.71)	(-7.49)	(1.03)
Public	0.062***	-19.235***	-3.259	0.663***	-10.449***
	(6.00)	(-4.34)	(-1.05)	(11.04)	(-3.87)
Exporter	0.019*	-1.585	6.122**	0.296***	-0.332
	(1.90)	(-0.53)	(2.22)	(2.59)	(-0.27)
City_Large	-0.005*	3.934**	-2.159	-0.035	2.933**
	(-1.77)	(2.49)	(-0.58)	(-0.67)	(2.22)
City_Medium	-0.004	1.468	-7.104*	0.015	0.019
	(-0.84)	(0.67)	(-1.92)	(0.18)	(0.01)
City_Small	-0.007*	3.748	-6.708	0.058	0.966
	(-1.79)	(1.52)	(-1.11)	(0.69)	(0.42)
LAMBDA					-15.359***
					(-4.16)
Observations	23088	23088	1197	57447	23088
Adj. R-squared		-0.94	0.19		0.09
1st stage F test statistics		24.83			
1st stage F test p value		0.00			

Table 4 Panel B. Endogeneity Test of Foreign Ownership.

Variables	IV 1st	IV 2nd	PSM	Heckman 1st	Heckman 2nd
	Foreign	Fixed_External	Fixed_External	Foreign	Fixed_External
Foreign		-2.914	-3.655***		-5.751***
		(-0.34)	(-3.30)		(-6.37)
Foreign_Expected	0.939***			4.270***	
	(40.06)			(22.95)	
Experience	-0.001***	-0.046	-0.022	-0.006***	-0.042
	(-5.50)	(-1.51)	(-0.54)	(-5.18)	(-1.39)
Ln_Employee	0.040***	0.962	0.992**	0.221***	0.823
	(12.94)	(1.46)	(2.27)	(18.82)	(1.06)
Ln_FirmAge	-0.020***	-0.147	-0.143	-0.124***	-0.072
	(-5.82)	(-0.26)	(-0.21)	(-7.16)	(-0.11)
Top_Owner_Pct	-0.000***	-0.054***	-0.049**	-0.005***	-0.050**
	(-2.93)	(-3.27)	(-2.38)	(-8.75)	(-2.51)
Public	0.096***	0.338	1.095	0.350***	0.233
	(6.59)	(0.28)	(0.70)	(9.14)	(0.20)
Exporter	0.111***	4.649***	2.162**	0.593***	4.273***
	(11.91)	(4.59)	(2.00)	(17.54)	(3.60)
City_Large	-0.007	0.812	0.462	-0.075**	0.889
	(-1.27)	(0.69)	(0.28)	(-2.39)	(0.79)
City_Medium	-0.003	0.746	0.061	-0.096***	0.881
	(-0.42)	(0.57)	(0.03)	(-2.80)	(0.69)
City_Small	-0.014*	0.316	-1.842	-0.143***	0.501
	(-1.85)	(0.18)	(-0.77)	(-3.31)	(0.29)
LAMBDA					-1.365
					(-0.54)
Observations	32935	32935	7534	79852	32935
Adj. R-squared		0.02	0.13		0.06
1st stage F test statistics		1605.09			
1st stage F test p value		0.00			

Table 5. Ownership and Detailed Financing Patterns.

	Fixed_External	Fixed_ Bank	Fixed_ PrivateBank	Fixed_ StateBank	Fixed_ NonBank	Fixed_ Suppliers	Fixed_Other	Fixed_ NewEquity
State	1.051	-1.737	-9.290***	3.472	0.429	1.598**	1.817*	0.644
	(0.50)	(-1.02)	(-4.07)	(1.42)	(0.69)	(1.98)	(1.92)	(0.66)
Foreign	-5.977***	-6.586***	-4.173**	-1.242	-0.320	0.165	-0.371	0.657*
	(-6.72)	(-9.29)	(-2.38)	(-1.45)	(-1.28)	(0.46)	(-1.64)	(1.80)
State_Foreign	8.920***	6.936***	12.848**	-4.260	1.769*	1.056	-0.359	2.868**
	(3.02)	(2.86)	(1.99)	(-1.12)	(1.80)	(0.84)	(-0.23)	(2.17)
Observations	33910	33399	4891	4890	29487	33632	30972	33630
Adj. R-squared	0.14	0.13	0.08	0.09	0.05	0.05	0.04	0.03

Table 6. Robustness Tests.

	Fixed_External	Fixed_Bank	Fixed_PrivateBank	Fixed_StateBank	Fixed_NonBank	Fixed_Suppliers	Fixed_Other	Fixed_NewEquity
Panel A: Add finance, political, and court obstacles.								
State	1.482	-0.934	-7.652***	4.164	0.264	1.620*	2.382**	0.035
	(0.68)	(-0.49)	(-3.25)	(1.36)	(0.46)	(1.88)	(2.26)	(0.03)
Foreign	-5.119***	-6.406***	-4.632**	-1.196	-0.148	0.343	-0.277	0.903**
	(-5.63)	(-8.76)	(-2.47)	(-1.35)	(-0.57)	(0.91)	(-1.27)	(2.36)
State_Foreign	8.167***	6.270**	11.667*	-4.450	2.119**	1.155	-0.733	3.206**
	(2.61)	(2.37)	(1.73)	(-1.00)	(2.16)	(0.83)	(-0.45)	(2.48)
Observations	31078	30619	4355	4354	27133	30807	28275	30804
Adj. R-squared	0.15	0.14	0.09	0.09	0.06	0.05	0.04	0.03
Panel B: Replace country fixed effects with macro variables.								
State	5.490**	-2.676	-11.475***	5.939**	-0.044	1.879**	2.443**	1.101
	(2.37)	(-1.48)	(-4.98)	(2.20)	(-0.07)	(2.11)	(2.19)	(1.03)
Foreign	-6.694***	-7.834***	-4.655**	-1.586*	-0.317	0.399	-0.288	0.094
	(-6.72)	(-10.83)	(-2.60)	(-1.69)	(-1.32)	(1.13)	(-1.33)	(0.26)
State_Foreign	14.914***	2.675	14.597**	-6.192	1.886**	1.360	2.177	3.372**
	(4.38)	(1.01)	(2.27)	(-1.59)	(1.99)	(1.04)	(1.37)	(2.44)
Observations	32926	32416	4691	4690	28592	32649	29991	32647
Adj. R-squared	0.07	0.07	0.04	0.03	0.01	0.02	0.01	0.01
Panel C: Top 10 State ownership countries.								
State	1.879	-2.257	-6.952**	3.157	-0.256	3.229**	1.967	2.429*
	(0.64)	(-0.92)	(-2.18)	(0.74)	(-0.47)	(2.04)	(1.06)	(1.90)
Foreign	-3.626	-4.377**	8.665	-2.227	0.446	-0.666	-1.169	1.208
	(-1.24)	(-2.17)	(1.59)	(-0.52)	(0.68)	(-0.69)	(-1.32)	(0.89)

	Fixed_External	Fixed_Bank	Fixed_PrivateBank	Fixed_StateBank	Fixed_NonBank	Fixed_Suppliers	Fixed_Other	Fixed_NewEquity
State_Foreign	11.041**	8.755**	-15.495*	-11.040	2.085**	0.350	0.464	3.088
	(2.14)	(2.41)	(-1.96)	(-1.43)	(2.15)	(0.17)	(0.13)	(1.12)
Observations	3525	3524	490	490	3029	3521	2760	3519
Adj. R-squared	0.17	0.14	0.10	0.04	0.02	0.05	0.05	0.03

Panel D: Large firm sample.

	Fixed_External	Fixed_Bank	Fixed_PrivateBank	Fixed_StateBank	Fixed_NonBank	Fixed_Suppliers	Fixed_Other	Fixed_NewEquity
State	-0.622	-1.281	-9.059**	5.972	-0.525	1.462	1.498	-2.348***
	(-0.19)	(-0.44)	(-2.52)	(1.33)	(-0.67)	(1.16)	(1.59)	(-2.83)
Foreign	-7.501***	-8.492***	-2.794	-2.741**	-0.017	0.555	-0.460	0.273
	(-5.90)	(-8.02)	(-0.86)	(-2.07)	(-0.05)	(0.88)	(-1.58)	(0.45)
State_Foreign	12.176***	8.562**	4.682	-2.648	0.072	0.660	-0.564	5.208**
	(2.59)	(2.20)	(0.56)	(-0.39)	(0.06)	(0.29)	(-0.34)	(2.28)
Observations	8444	8271	1390	1389	7067	8326	7764	8330
Adj. R-squared	0.14	0.13	0.06	0.14	0.07	0.05	0.05	0.03

Panel E: Alterative measures of financing patterns.

	WC_External	WC_Bank	WC_NonBank	WC_Suppliers	WC_Other	Line_of_Credit	New_Loan
State	3.114	-1.083	1.321***	0.396	2.378***	-0.069***	-0.050***
	(1.62)	(-0.81)	(3.00)	(0.54)	(2.93)	(-3.79)	(-2.68)
Foreign	-3.024***	-3.932***	0.094	0.601	0.059	-0.084***	-0.067***
	(-4.20)	(-7.67)	(0.69)	(1.64)	(0.32)	(-9.04)	(-8.42)
State_Foreign	13.806***	7.424***	2.303**	2.365*	1.910*	0.115***	0.083***
	(4.15)	(4.33)	(2.31)	(1.66)	(1.84)	(3.81)	(2.92)
Observations	73401	72079	72519	72587	72512	80549	79974
Adj. R-squared	0.15	0.16	0.02	0.13	0.05	0.19	0.15

Table 7. Ownership and Financing Patterns-Channel Analysis.

	Panel A: Market Expansion		
	Sales_ Growth	Employee_ Growth	Investment_ Dummy
State	0.001	-0.031***	-0.097***
	(0.07)	(-4.63)	(-4.44)
Foreign	-0.006	-0.011***	-0.005
	(-0.92)	(-3.98)	(-0.73)
State_Foreign	0.155**	0.042***	0.150***
	(2.02)	(3.23)	(5.22)
Observations	62597	76252	81700
Adj. R-squared	0.10	0.09	0.15
	Panel B: Innovation		
	New_Product	Improved_ Process	R&D
State	-0.025	-0.051	-0.048**
	(-1.00)	(-1.64)	(-2.04)
Foreign	0.021**	0.007	0.010
	(2.33)	(0.86)	(1.17)
State_Foreign	0.077**	0.129***	0.095***
	(1.98)	(3.32)	(2.97)
Observations	60463	59183	59368
Adj. R-squared	0.15	0.21	0.17

Appendix 1. Variable Definitions and Sources.

Variable	Definition (t is the survey year)	Source
	A. Financing Patterns	
Fixed_External	100-the percent of the firm's fixed assets funded by: retained earnings.	WBES(k5a)
Fixed_Bank	The percent of the firm's fixed assets funded by: bank borrowing.	WBES(k5bc)
Fixed_PrivateBank	The percent of the firm's fixed assets funded by: private bank borrowing.	WBES(k5b)
Fixed_StateBank	The percent of the firm's fixed assets funded by: state-owned bank borrowing.	WBES(k5c)
Fixed_NonBank	The percent of the firm's fixed assets funded by: non-bank financial institutions.	WBES(k5e)
Fixed_Suppliers	The percent of the firm's fixed assets funded by: credit from suppliers.	WBES(k5f)
Fixed_Other	The percent of the firm's fixed assets funded by: other (money lenders\friends\relatives).	WBES(k5hdj)
Fixed_NewEquity	The percent of the firm's fixed assets funded by: issued new equity.	WBES(k5i)
WC_External	100-the percent of the firm's working capital funded by: retained earnings.	WBES(k3a)
WC_Bank	The percent of the firm's working capital funded by: bank borrowing.	WBES(k3bc)
WC_NonBank	The percent of the firm's working capital funded by: non-bank financial institutions.	WBES(k3e)
WC_Suppliers	The percent of the firm's working capital funded by: credit from suppliers.	WBES(k3f)
WC_Other	The percent of the firm's working capital funded by: other (money lenders\friends\relatives).	WBES(k3hd)
Line_of_Credit	Dummy variable that takes on the value 1 if the firm has a line of credit or loan from a financial institution, 0 otherwise.	WBES(k8)
New_Loan	Dummy variable that takes on the value 1 if the firm has applied for new loans or lines of credit in year t-1, 0 otherwise.	WBES(k16)
	B. Channels	

Variable	Definition (t is the survey year)	Source
Sales_Growth	$(Ln(Sales_{t-1}) - Ln(Sales_{t-3}))/2$	WBES(d2 and n3)
Employee_Growth	$(Ln(Employee_{t-1}) - Ln(Employee_{t-3}))/2$	WBES(l1 and l2)
Investment_Dummy	Dummy variable that takes on the value 1 if the firm has purchased any fixed assets in year t-1, 0 otherwise.	WBES(k4)
New_Product	Dummy variable that takes on the value 1 if the firm introduced new products/services over last 3 years, 0 otherwise.	WBES(h1)
Improved_Process	Dummy variable that takes on the value 1 if the firm introduced new/significantly improved process during last 3 years, 0 otherwise.	WBES(h5)
R&D	Dummy variable that takes on the value 1 if the establishment spent on R&D (excl market research), 0 otherwise.	WBES(h8)

C. Ownership

Variable	Definition	Source
State	Dummy variable that takes on the value 1 if the firm is at least partially owned by government or state, 0 otherwise.	WBES(b2c)
Foreign	Dummy variable that takes on the value 1 if the firm is at least partially owned by private foreign individuals, companies or organizations, 0 otherwise.	WBES(b2b)
State_Foreign	The interaction term of State*Foreign.	WBES(b2b and b2c)

D. Firm-level Control and Macro Variables

Variable	Definition	Source
Experience	The top manager's number of years of experience working in this sector.	WBES(b7)
Ln_Employee	$Ln(Employee_{t-3})$	WBES(l2)
Ln_FirmAge	Ln(survey year–firm founding year+1)	WBES(b5)

Variable	Definition (t is the survey year)	Source
Top_Owner_Pct	The percent of the firm owned by the largest shareholder.	WBES(b3)
Public	Dummy variable that takes on the value 1 if the firm is publicly listed, 0 otherwise.	WBES(b1)
Exporter	Dummy variable that takes on the value 1 if the firm exports, 0 otherwise.	WBES(d3a)
City_Large	The city that firm located with population over 250,000 to 1 million.	WBES(a3)
City_Medium	The city that firm located with population over 50,000 to 250,000.	WBES(a3)
City_Small	The city that firm located with population less than 50,000.	WBES(a3)
Finance_Obstacle	Categorical variable, used to measure "how much of an obstacle: access to finance?"	WBES(k30)
Political_Obstacle	Categorical variable, used to measure "how much of an obstacle: political instability?"	WBES(j30e)
Court_Obstacle	Categorical variable, used to measure "how much of an obstacle: courts?"	WBES(h30)
Ln_GDP	The logarithm of GDP (constant 2010 US$).	WDI
GDP_Growth	Growth of GDP (%).	WDI
GDP_per_Capita	The logarithm GDP of per capita (constant 2010 US$).	WDI
Inflation	Inflation rate (%).	WDI