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**Financing Patterns in Transition Economies:
Privatized Former SOEs versus Ab Initio Private Firms**

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Abstract

We employ 19,521 unique firms in 30 transition economies to investigate the relation between the origins of private firms and their financing patterns. In our sample, the private firms are either privatized former state-owned enterprises (SOEs) or ab initio (from the beginning) private firms. Our results show that privatized former SOEs finance a higher proportion of their fixed assets from bank finance and supplier credit, while ab initio private firms rely more on informal finance. We argue that privatized former SOEs continue to benefit from the political and financial connections established during their SOE era. We further document that financial institution development affects the financing patterns of these two groups differently. In our sample countries, financial institution advancement benefits privatized SOEs more than it benefits ab initio private firms.

JEL Classification: G10, G32, L33, O16

Keywords: Privatization; Financing pattern; Transition economy; Institution development; Business Environment and Enterprise Performance Survey (BEEPS)

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1. Introduction

In the 1990s and early 2000s, governments in many formerly planned economies carried out massive programs to privatize their state-owned enterprises (SOEs), a conscious political decision to move away from state socialism and toward entrepreneurial capitalism (Megginson and Netter, 2001). Several countries in Eastern Europe and Central Asia (ECA hereafter) were among the early adopters of privatization. Privatization in these ECA countries not only aimed to improve efficiency but also to reform the economic system and society at large.

In the subsequent years, a large volume of literature has examined outcomes of the aforementioned privatization programs; the general consensus is that privatization leads to improved efficiency (Megginson and Netter, 2001; Megginson, 2005). Johnson, et al. (2002) and Cull and Xu (2005) argue that institutional development plays a crucial role in influencing firm-level financing and investment decisions in transition economies. Since the completion of the privatization programs in the ECA countries, entrepreneurial private enterprises have been flourishing in large part due to institutional and political encouragement (Cottarelli et al., 2005; Estrin et al., 2006).

Do privatized former SOEs finance their capital investments differently than those that were private from the outset (*ab initio*)? Does institutional development has different impact on financing patterns of these two groups of firms?

In this paper, we examine these two related questions in transition economies. Privatized former SOEs may continue to possess some of the privileges and connections to important institutions they had when they were state-owned (Boubakri et al., 2008). Such connections may give privatized firms a competitive edge over their *ab initio* counterparts, including preferential treatment by government agencies (e.g., tax policies) and state-owned banks (easier access to

credit). The success or failure of a country's transition from a planned to a market economy depends in large part on its institutional development. A useful measuring stick is whether there is a level playing field for enterprises of all types. By examining the financing patterns of privatized versus ab initio private firms, we hope to shed more light on this question.

In our analysis, we employ the Business Environment and Enterprise Performance Survey (BEEPS) database that contains 19,521 firms in 30 ECA countries for 2002–2014.¹ Our results show that relative to ab initio firms, privatized firms finance a higher proportion of their fixed assets from formal sources, especially from state-owned banks and supplier credit, and a lower proportion from informal sources such as moneylenders, friends, and relatives. Our results are robust after controlling for firm characteristics, country level economic and institutional development, as well as possible endogeneity issues.

Next, we compare the effect of financial constraint on financing patterns of privatized versus ab initio firms. We find that when the difficulty of obtaining external finance is low, privatized SOEs use more bank finance, while ab initio firms elect to employ more equity finance. However, when the difficulty of obtaining external finance is high, privatized firms fall back on their old connections with state banks and established links with suppliers for their financing needs. In addition, after controlling for the level of financial constraint, we find that privatized and ab initio firms employ similar fraction of informal finance in financing of fixed assets.

Finally, we find that the level of country level institutional development plays an important role in influencing the financing patterns of these two groups of firms. We use two measures to proxy for the level of a country's financial institution development, namely: private

¹ The sample includes the second round to the fifth round of BEEPS. The sixth round of BEEPS is still ongoing as of Dec. 2017.

credit development and European Union (EU) membership. We argue that a country's financial institutions are more developed when the country has a higher private credit to GDP ratio or EU membership.

Our results show that when financial institution is underdeveloped, neither the privatized nor the ab initio firms have any clear advantage in accessing external finance. When a country's financial institution has become more developed, privatized firms continue to have an advantage over ab initio private firms in accessing formal external finance, especially bank finance.

This finding is particularly important and puzzling. Two decades has passed since the completion of the major privatization programs in the ECA countries. However, the financing gaps between the privatized and ab initio firms continue to exist, even as institutions are advancing. One possible explanation is that privatized firms are inherently different from ab initio private firms in terms of business and social networks, including political connections and banking relationships (Boubakri et al., 2008). As such, privatized firms continue to enjoy better access to bank finance and supplier credit. It could also be that financial markets and institutions in these transition economies are improving but not yet to a point where all businesses are treated on a fair and meritorious basis.

Our paper makes important contribution to the privatization literature, as this is the first study that compares the financing patterns of privatized SOEs and ab initio private firms in transition economies. More importantly, our study sheds new light in financing patterns of privatized versus ab initio firms in transition economies. In particular, the findings concerning the role of institutional development could have useful policy implications. Though privatized former SOEs continue to play an important role across the ECA transition economies, the future vitality and growth of these economies ultimately depend on the entrepreneurship and innovation

from the private sector, i.e. ab initio private firms.² Access to formal finance by ab initio firms is vital to their success. To level the playing field, government efforts should be directed at making external formal finance more available to the private sector.

The rest of this paper is organized as follows. Section 2 discusses our research questions and related literature. Section 3 describes the data and summary statistics. Sections 4 and 5 present the methodology and the empirical results. Section 6 concludes.

2. Literature review

Our research question is broadly related to the capital structure literature in a cross-country setting. Rajan and Zingales (1995) find that the variables explaining the leverage of U.S. firms can also explain the leverage of firms in seven other developed countries. Booth et al. (2001) obtain similar findings when they study the financing choices in a sample of 10 developing countries. However, their findings also indicate the presence of large country fixed effects and the importance of country specific factors. Demirgüç-Kunt and Maksimovic (1999) investigate capital structure in 30 developed and developing countries and argue that differences in financing patterns can be largely explained by the differences in financial and legal infrastructure. Fan et al. (2003) confirm previous findings that institutional differences between countries are crucial in determining firm-level capital structure choices in a sample of 39 countries. Using World Business Environment Survey (WBES) data, Beck et al. (2008) investigate how firm financing patterns differ around the world for large versus small firms. Their findings highlight the importance of firm size in financing patterns and suggest that small firms use less external finance, especially bank finance.

² Privatized former SOEs (ab initio private firms) comprise 17% (83%) of our sample firms, respectively.

The Commonwealth of Independent States (CIS), which includes most of the countries from the former Soviet Union, and countries in Central and Eastern Europe (CEE) are commonly referred to as Eastern European and Central Asian (ECA) countries, and their economies are called “transition economies.” These transition economies are less-developed (Hanedar et al., 2014) and generally have weak property rights, underdeveloped capital markets, poor governance, and a shortage of skilled labor (D'Souza et al., 2017). From the mid-1990s to the early 2000s, ECA countries privatized most of their SOEs with the hope that privatization would increase these enterprises' efficiency and competitiveness.

Regarding the privatized former SOEs in ECA countries, D'Souza et al. (2017) study 27 transition economies and find that privatized SOEs experience fewer financial and legal obstacles and less corruption than ab initio private firms. Although privatized SOEs face fewer obstacles in the business environment, they underperform ab initio private firms. Ullah and Wei (2017) investigate the association between financing patterns and firm growth in transition economies and find that the use of bank finance leads to faster firm growth as opposed to the use of informal finance.

However, the existing literature has not yet examined the financing patterns of privatized versus ab initio private firms in the transition economies. Our paper fills this literature gap.

2.1. Privatized former SOEs and access to finance

Research has established that SOEs tend to have easier access to external financing due to soft-budget constraint (Kornai, 1979, 1980; Megginson et al., 2014). Using a sample of fully/partially privatized firms, Borisova and Megginson (2011) find that a decrease in government ownership is linked with an increase in the cost of debt. Huyghebaert et al. (2014)

investigate the post-listing financing patterns of 221 partially privatized Chinese SOEs and find significant differences in debt/equity financing between government-controlled and non-government-controlled firms.

SOEs' preferential access to finance can be inherited by their privatized successors through established political connections, bank connections, and supplier relationships. For example, Boubakri et al. (2008) find that privatized firms with greater government residual ownership are more likely to possess more political connections.

Research has also established that politically connected firms experience a lower cost of capital. Boubakri et al. (2013) show that political connections lower the cost of equity for a firm thereby lowering financial constraints. Houston et al. (2014) find that the cost of loans is significantly lower for politically connected firms. They argue that lenders charge lower rates because political connections enhance borrowers' creditworthiness. Cull et al. (2015) suggest that firms without government connections face greater financial constraints, and investments in firms without government connections are more sensitive to internal cash flows. Khwaja and Mian (2005) show that firms with political connections get favorable treatment from governments and financial institutions.

Based on previous literature, we conjecture that privatized former SOEs have a competitive advantage over their *ab initio* counterparts in terms of preferential treatment by government agencies, suppliers, financial institutions, and other stakeholders.

2.2. Ab initio private firms and access to finance

In recent times, transition economies gradually have moved away from centrally planned economies to market-based diversified systems. However, these economies still face problems of

more serious information asymmetry and lower degree of bank intermediation (Hanedar et al., 2014). Their banking systems still lack efficiency and capability to meet the needs of smaller private firms (Brandt and Li, 2003). Limited availability of bank finance is a significant impediment to small, young, and private firms in these countries.

In developed countries, promising young and private firms usually have access to early-stage venture capital or small business loans from formal sources (Fenn et al., 1997). However, this is not the case in transition economies. Young and private firms are less likely to have political and institutional connections as compared to SOEs and privatized former SOEs. Despite the rapid growth and increasing importance of the private sector in transition economies, private firms find it difficult to obtain external finance from formal sources (Pistor et al., 2000).

Based on the above discussions, we conjecture that ab initio private firms are more constrained than the privatized former SOEs in accessing external finance from formal sources (i.e. banks and supplier credits) and thus, rely more on financing from informal sources (i.e. money lenders, friends and relatives, and non-banking financial institutions).

2.3. Privatization, financial institution development, and access to finance

A country's legal and financial institutions play an important role in increasing access to external financing (e.g., La Porta et al., 1997, 1998). Studies have established a significant link between institutional development, external financing, and firm performance (Demirgüç-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998). Beck et al., (2008) highlight the importance of improving a country's institutional environment to increase small firms' access to external finance.

We choose private credit and European Union (EU) membership to proxy for the development of a country's financial institutions. Private credit is an indicator commonly used to measure financial market development, defined as credit extended to private businesses over GDP (Beck et al., 2008). Baltagi et al. (2009) argue that private credit is an important factor for the development of new firms and a major indicator of financial development. Beck et al. (2000a) find that a higher level of private credit is associated with faster GDP growth rate. Figure 1a compares the external financing patterns between high private-credit countries (countries with the private credit to GDP ratio higher than the sample median) and low private-credit countries (countries with the private credit to GDP ratio lower than the sample median). As shown in Figure 1a, firms in high private-credit countries use more bank finance, equity finance, supplier credit, and informal finance than those in low private-credit countries.

[Insert Figure 1a about here]

EU membership is another indicator we use to proxy for financial and institutional development. EU members differ from non-member countries in terms of access to markets, regulatory and business environments, and quality of institutions, among others. Relatively speaking, EU member countries have more developed financial markets and more efficient institutions. These institutional differences should have an impact on firm-level financing patterns. Moreover, the EU helps its new members restructure their banking sector and provides new sources of finance to the entrants (Popov and Ongena, 2011; Caporale et al., 2015). Figure 1b compares the external financing patterns between EU countries and non-EU countries. In all measures, firms in EU countries use more external finance.

[Insert Figure 1b about here]

Based on the above discussions, we argue that country level financial and institutional development should have an impact on the relation between the origins of private firms (i.e. privatized versus ab initio) and their financing patterns. More specifically, we conjecture that the advancement of financial markets and institutions should be able to mitigate the discrepancies between privatized and ab initio firms in accessing to external finance from formal sources.

3. Data

We start with all observations in the BEEPS database and delete firms that do not have answers to the question: “How was the firm established?” We keep firms only if the answer to the above question is either 1 (“Privatization of a state-owned firm”) or 2 (“Originally private, from time of start-up”).³ We also exclude firms with missing values for their financing source. Our sample includes the second round to the fifth round of BEEPS, which consists of 19,521 unique firms in 33 industries from 30 ECA countries. The sixth round of BEEPS is ongoing as of December 2017. Among these firms, 3,320 are privatized former SOEs and 16,201 are firms that were private from the outset (ab initio). Table A1 in the Appendix presents the number of privatized and ab initio private firms surveyed by country.

BEEPS relies on standardized survey instruments in collecting firm-level data.⁴ The survey respondents are mainly business owners and/or firm top managers. The survey focuses on

³ The BEEPS database for ECA countries also contains some not-yet privatized state-owned enterprises (SOEs). Due to the relatively small number of SOE observations and the focus of this paper, we do not include SOEs in our analysis.

⁴ For a literature survey of firm-level studies using BEEPS and WBES data, see Xu (2010). These data have been used to investigate a series of questions in finance and development economics, including obstacles in the business environment and firm growth (e.g., Beck et al., 2005; Ayyagari et al., 2008a; Ullah and Wei, 2017), firm innovation (e.g., Ayyagari et al., 2011, 2014), the relation between property rights and contracting institutions (e.g., Acemoglu and Johnson, 2005; Ayyagari et al.,

assessing the critical obstacles in the business environment that hinder firm growth. The survey also contains information on the origins of the enterprises (private or privatized), firm financing sources, firm ownership, sales, employees, top manager experience, whether a firm is an exporter, and firm age.⁵

Table 1 reports firm-level financing sources by country. In BEEPS, business owners and/or firm top managers were asked this question, “*Over the last fiscal year, please estimate the proportion of this establishment’s total purchase of fixed assets that was financed from each of the following sources?*” The financing sources include internal funds or retained earnings (internal finance), borrowed funds from banks (bank finance), which can be further separated into state-owned banks (state bank) and private banks (private bank), owners’ contribution or issued new equity shares (equity finance), purchases on credit from suppliers (supplier credit), and other informal sources such as moneylenders, friends, relatives, and non-banking financial institutions (informal finance). These proportions add up to 100%. The focus of our research is on external financing sources, i.e. bank finance (including state and private bank finance), equity finance, supplier credit, and informal finance.

As shown in Table 1, an average firm in the sample finances its capital investment with about 32% external sources, indicating that about 68% of the financing comes from internal funds or retained earnings. The statistics suggests that firms rely heavily on internally generated funds for growth in transition economies, which is an indication of financial market underdevelopment in these countries. Among the external sources, firms obtain the highest proportion from private banks, followed by informal sources, equity, supplier credit, and state

2008b), firm-financing patterns (e.g., Beck et al., 2008; Cull and Xu, 2005; and Ayyagari et al., 2010), and dispute resolution via courts (e.g., Djankov et al., 2003).

⁵ Detailed survey information is available at <http://ebrd-beeps.com/about/>.

banks. There are wide variations of firm financing patterns among the ECA countries. For instance, firms in Bosnia-Herzegovina, Croatia, Montenegro, Slovenia, and Turkey obtain more than 24% of their total financing from bank finance, whereas Azerbaijan, Kyrgyzstan, Tajikistan, and Uzbekistan, obtain less than 10% from bank finance. On the other hand, firms in the Czech Republic, Estonia, Lithuania, and Slovakia obtain more than 10% of their financing from informal sources. Similar wide variations in supplier credit and equity financing can also be observed among the ECA countries.

[Insert Table 1 about here]

[Insert Figure 2 about here]

In our regression analyses, the dependent variables are *Bank Finance*, *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance*, as described in Table A2.

Among the explanatory variables, the key variable, *Privatized*, is an indicator variable that equals one if the firm is a privatized former SOE and zero if the firm is an ab initio private firm. We control for several firm-level characteristics. Firm size is an important control variable as prior literature suggests that smaller firms exhibit superior performance improvement in the post-privatization era (Harper, 2002) as compared to larger firms, which are resistant to changes (Aussenegg and Jelic, 2007; Villalonga, 2000). However, larger firms face lower levels of financial constraints (Beck et al. 2005). In a different study, Beck et al. (2008) find that smaller firms use less external finance, especially bank finance, and rely heavily on informal finance. Thus, we can safely say that firm size plays an important role in determining the financing patterns of firms. We use the number of permanent, full-time employees of the firm for the *Firm*

Size variable.⁶ As reported in Table 2 (Panel A), the mean of *Firm Size* is 103.89 while the median of *Firm Size* is 22.

We also control for firm growth. A firm's growth opportunity is commonly represented by its Tobin's Q. Due to the lack of such data in BEEPS, we use the firms' employment growth rate over the previous three years as an indicator of *Firm Growth*. D'Souza et al. (2017) show that ab initio private firms in transition economies have a significantly higher employment growth rate than privatized firms. In our sample, the average firm growth rate is 7% as indicated in Table 2 (Panel A).

We also control for exporting firms. Exporting firms may have different financial relationships with financial institutions (such as export/import banks) and suppliers than non-exporting firms. Moreover, such firms experience better growth and performance as compared to non-exporters (Beck et al., 2005). Exporters also face fewer firm-level business obstacles (financial, legal, and corruption) and rely more heavily on external finance than non-exporters (Beck et al., 2006; Beck et al., 2008). We use a dummy variable, *Exporter*, to indicate if a firm exports part or all of its products. In our sample, about 28% of the firms export as reported in Table 2 (Panel A).

We further control for foreign ownership in a firm. Foreign ownership exposes firms to foreign markets, technology, managerial and technical expertise, and monitoring which may lead to improved operating performance (Boubakri et al., 2005) and financial performance (Fishman and Svensson, 2007). Beck et al. (2005) find that foreign ownership has a large positive effect on firm performance. Firms with a foreign ownership stake face less firm-level business obstacles

⁶ BEEPS also has firms' sales data in local currencies, which can be used to proxy for firm size. However, compared to sales, employment is typically more reliable in developing countries. Therefore, the number of permanent, full-time employees is used as a measure of firm size by the World Bank Group and many other international survey teams.

and finance a larger share of investment with equity finance, but a lower share with lease and trade finance (Beck et al., 2006; Beck et al., 2008). We use a dummy variable, *Foreign*, to indicate if any foreign company/individual has an ownership stake in the firm. As shown in Table 2 (Panel A), about 11% of our sample firms have foreign ownership.

As part of our robustness checks, we control for a firm's perceived financing constraints in some of the regressions. The BEEPS survey contains various indicators of obstacles to firm growth. We focus on firm financial obstacles (*Financing Obstacle*), which are survey responses to the question: "Is access to financing, which includes availability and cost [interest rates, fees and collateral requirements], No Obstacle, a Minor Obstacle, a Major Obstacle, or a Very Severe Obstacle to the current operations of this establishment?" The responses take values between 0 and 4, where 0 indicates no financial obstacle and 4 indicates a very severe financial obstacle. *Financing Obstacle* is included in the regression to proxy a firm's cash constraint (Beck et al., 2008).

Industry characteristics have an important impact on firm characteristics and dynamics. Our sample includes firms from 33 industries. We use industry dummies to control for industry effects. We control for country fixed effects with country dummies. In addition, in all our regressions, we control for year fixed effects by including year dummies.

Panel B of Table 2 presents a correlation matrix of all the dependent and independent variables described above. We do not observe any correlation coefficient great than 0.5 for any pair of independent variables, indicating that multicollinearity is unlikely to be an issue.

We also present univariate test results for the firm-level variables between privatized and ab initio private firms. As shown in Table 2 (Panel C), relative to ab initio private firms, privatized firms finance a higher proportion of their investment from bank finance (both state

and private banks) and supplier credit, and a lower proportion of their investment from informal sources. The results also show that privatized firms are larger but grow at a slower speed than ab initio private firms. Privatized firms are also more likely to be exporters and to have foreign ownership stakes.

[Insert Table 2 about here]

In the latter part of this paper, we include country-level macroeconomic variables, *GDP*, *GDP per capita*, *GDP Growth*, and *Inflation*, and financial development proxies (private credit to GDP ratio or EU membership) into our regressions. Detailed variable definitions and sources are given in Table A2 in the Appendix.

Table 3 shows that there are wide variations among the ECA countries in terms of economy size, economic development, and financial market development. Our sample includes some large economies (such as Russia, Turkey, and Poland) as well as some relatively smaller ones (such as Kyrgyzstan, Tajikistan, and Montenegro), as measured by their GDP. Economic development in terms of GDP per capita ranges from a low of \$351 in Tajikistan to a high of \$18,030 in Slovenia. Developing countries, such as Azerbaijan, Kazakhstan, and Tajikistan, grow faster than more-developed countries. The countries also vary significantly in the rate of inflation, from a low of 2% in Kosovo, up to a high of 54% in Belarus. *Private Credit* also varies widely across the ECA countries. Among all the ECA countries, 37% of them are members of the EU as of 2014. In general, firms in countries with higher levels of financial institution development have better access to external finance (see Figures 1a, 1b and 1c).

Overall, these economies present a unique, yet underexplored, set of countries with wide variations in economic and institutional development.

[Insert Table 3 about here]

4. Methodology and results

4.1. Methodology

Our empirical approaches are as follows. As the dependent variables in our study, i.e. firm-level financing pattern observations, are censored between 0 and 100, we use Tobit regressions to estimate our empirical models.⁷ First, in our baseline regression, we employ a Tobit model that includes fixed effects for year, country, and industry. To check for potential endogeneity, we use the PSM technique. As an alternative to country dummies, we include country-level variables to control for variations in macroeconomic and financial institution development among the ECA countries. We further partition the full sample into various subsamples based on several firm and country characteristics. Standard errors are clustered at the country level.

4.2. Baseline regression

We first estimate a baseline regression model that includes firm-level explanatory variables and controls for year, country, and industry fixed effects with respective dummies. Our baseline model is specified as follows:

$$\begin{aligned} \text{Financing Source}_{i,j} = & \alpha + \beta_1 \text{Privatized}_{i,j} + \beta_2 \text{Firm Size}_{i,j} + \beta_3 \text{Firm Growth}_{i,j} \\ & + \beta_4 \text{Exporter}_{i,j} + \beta_5 \text{Foreign}_{i,j} + \varepsilon_{i,j} \end{aligned} \quad (1)$$

The subscripts i and j represent firm and country, respectively. The dependent variable, *Financing Source*, represents the six sources of financing, i.e. *Bank Finance*, *State Bank*, *Private*

⁷ In untabulated results, we also estimate all the regressions using the ordinary least squares (OLS) method and obtain very similar results.

Bank, Equity Finance, Supplier Credit, and Informal Finance. *Bank Finance* equals the sum of *State Bank* and *Private Bank*. The explanatory variable of our focus is *Privatized*, an indicator for privatized former SOEs. The regression results are presented in Table 4 (Panel A).

As shown, the coefficients of *Privatized*, β_1 , are positive and significant for *Bank Finance* (column (1)), *State Bank* (column (2)), and *Supplier Credit* (column (5)), and negative and significant for *Informal Finance* (column (6)). These results show that privatized firms use significantly more bank finance and supplier credit, while ab initio private firms use significantly more informal finance. Ab initio private firms rely more on informal sources most likely because they face more difficulties in accessing bank finance and credit from suppliers. The results further show that privatized firms have significantly better access to state-owned banks than ab initio private firms (column (2)). However, these two groups of firms have similar access to private banks and new equity finance (columns (3) and (4)).

These findings are important for the following two reasons. First, they are consistent with our conjecture that in transition economies, state institutions, such as state-owned banks, continue to favor old connections and ties that privatized firms are more likely to possess. Second, non-state institutions, such as private banks, and equity markets, provide a level playing field for private enterprises of all origins. These findings represent a bright spot and hope in the transition economies. In fact, in our sample, private banks provide four times as much financing to businesses as do the state banks (13.51% vs. 3.29%) (Table 1).

Table 4 (Panel A) also documents that firm financing patterns are linked to several other firm characteristics. Larger firms have easier access to bank finance, while smaller firms rely more on new equity finance. This is not surprising in that bigger firms may also have higher fraction of fixed assets that can collateralized to secure loans from banks, while smaller firms

must rely on raising equity capital from new or existing owners to meet their investment needs. High-growth firms mainly rely on private banks, supplier credit, as well as informal finance for their growth. Interestingly, exporters are linked to private banks and supplier credit, but not state banks. This finding could indicate that state banks in transition economies play an insignificant role in capital investments in the export sector. Last, we document that firms with foreign ownership stakes use significantly less bank finance for their capital investment than their pure domestic counterparts. One reason could be that pure domestically owned firms have better relations with domestic banks than foreign firms. Another reason can be that foreign investors bring other sources of financing not mentioned in the surveys, such as funds from parent companies and/or foreign banks.

In Panel B of Table 4, we check for potential endogeneity between a firm's sources of financing and its origin (privatized versus ab initio). At the onset of the privatization programs in the ECA countries, some SOEs were chosen to be privatized; these choices were not random events. As economic reforms deepened, an overwhelming majority of the SOEs were privatized in these countries. Moreover, almost two decades have passed since major privatization programs in the ECA countries have concluded, and there is little evidence of re-nationalization of privatized firms, regardless of the financing choices made by firms. Therefore, endogeneity problems arising from reverse causality is less of a concern in this study. We employ the propensity score matching (PSM) technique to address the potential endogeneity problems related to selection bias or omitted variables arising from unobserved firm heterogeneity.

The PSM technique estimates the propensity scores (likelihood of receiving treatment, i.e. privatization) of all observations and matches each treated observation with one or more untreated observations (the control) according to their propensity scores. The PSM technique

involves the following steps. First, we perform a probit estimation of the probability of receiving treatment, i.e. privatization and use firm related variables like firm size, growth, exporter dummy and foreign ownership dummy in this estimation model. Next, we form matched pairs of observations with similar estimated probabilities but different realizations of the treatment (i.e., privatized firms are matched with ab initio private firms). We use one-to-many matching. Finally, we calculate the average treatment effects on the treated (ATT) for the differences in financing types between the two groups. The unmatched/unadjusted effects and average treatment effects on the treated (ATT) are presented in Panel B of Table 4. As reported in column (4), the average treatment effects on the treated observations are significantly higher than the controls when the outcomes are *Bank Finance*, *State Bank*, and *Supplier Credit*. These results are largely consistent with the baseline regression results reported in Panel A of Table 4.

[Insert Table 4 about here]

4.3. The effect of firms' perceived financial constraints

A firm's financing pattern is most likely influenced by its financial constraints. As a robustness check, we include a *Financing Obstacle* variable in our baseline regression model. This variable captures survey responses concerning a firm's difficulties in accessing external finance. The results are presented in Table 5. As shown in Panel A, the results for the full sample are largely consistent with our baseline results in that privatized firms have better access to supplier credit and bank finance in general and particularly, state bank finance. However, after controlling for firm financial constraints, we find no difference between the privatized versus ab initio private firms in employing informal finance.

We next divide the sample into two subsamples based on firms' perceived degree of difficulty in accessing external finance, i.e. one subsample of firms with no to minor (low)

finance obstacles and another of firms with moderate to severe (high) finance obstacles. The results for firms with low finance obstacles are reported in Panel B and those for high finance obstacles firms are reported in Panel C.

As shown in Panel B, among the firms that reported low financial constraints, privatized firms elect to use more finance from private banks, while the ab initio firms use more equity financing for their investment need. These findings are quite interesting. In an environment where capital is relatively accessible, privatized firms choose private banks over state banks for their investment needs. When capital is readily available from private banks, these privatized firms do not need to or elect not want to use their connections with state banks or suppliers. The ab initio firms' preference for new equity finance could be attributable to capital injections by venture capital firms or by existing owners due to improved business prospects (no such data available in the survey).

As shown in Panel C, among the firms that report relatively high finance obstacles, the privatized firms exhibit a significant advantage over the ab initio firms in accessing state bank financing and supplier credit. The findings are also interesting in that when times are tough (i.e. (having trouble obtaining external finance), privatized firms can always count on their old political connections with state banks and established relations with suppliers for financing needs. On the other hand, the ab initio firms are constrained in all fronts. They could not count on even family, friends or moneylenders as financial cushions.

[Insert Table 5 about here]

4.4. The effects of firm lifecycle

Literature has shown that firm age is an important variable while analyzing firm-level policies and outcomes (Rahman, 2011, D'Souza et al. 2017). Firms at different stages of their

lifecycles may rely on different sources of financing (Vos et al., 2007). As shown in Table 2 Panel C), the average privatized firm is 29.1 years old, while the average ab initio firm is 11.6 years old, an 17.5 years in age gap. It is possible that this age gap contributes to the variations of financing patterns between the privatized versus the ab initio firms, as the longer a firm is in business, the more business and banking relations it establishes, *Ceteris paribus*. As a robustness check, we examine the effect of firm age on financing patterns of privatized versus the ab initio firms.

The results are reported in Table 6. As shown in Panel A, after adding firm age as a control to our baseline model, the results are largely consistent with the baseline results shown Table 4 (Panel A). That is, privatized firms continue to have better access to bank finance and supplier credit. However, the variation of the use of informal finance between the privatized and the ab initio firms disappears.

We further divide the sample into established firms (older than 5 years) and young firms (5 years or younger) and examine the effect of firm age on financing patterns.⁸ 85% of our sample firms are established firms (Panel B) and 15% are relatively young firms (Panel C). The results documented in the established subsample (Panel B) are consistent with and more pronounced than the full sample results (Table 4, Panel A). For the relatively young subsample of firms (Panel C), privatized firms do not have any advantage over the ab initio firms in accessing bank finance or supplier credits. Interestingly, young privatized firms rely significantly more on informal finance than their ab initio counterparts.

Based on findings in this section, we conclude that our baseline results are robust after controlling for the effect of firm age. The fact that the documented variations in financing

⁸ Global Entrepreneurship Monitor (GEM) defines established firms as those in business for 3.5 years or longer: <https://www.gemconsortium.org/>. We obtain similar results using 4 years or older to define a firm as an established one.

patterns are solely driven by the established firms lends further support for our hypothesis. That is, political and business connections established long ago by the privatized former SOEs continue to be useful.

[Insert Table 6 about here]

5. The effects of macroeconomic and financial institution development

A country's economic and financial development play an important role in firm-level financing and investment decisions (Cull and Xu, 2005; Johnson et al., 2002). In this section, we control for a country's macroeconomic situation and financial institution development.

5.1. The effects of economic development

We control for a country's macroeconomic development using the following Tobit regression model:

$$\begin{aligned} \text{Financing Source}_{i,j} = & \alpha + \beta_1 \text{Privatized}_{i,j} + \beta_2 \text{Firm Size}_{i,j} + \beta_3 \text{Firm Growth}_{i,j} \\ & + \beta_4 \text{Exporter}_{i,j} + \beta_5 \text{Foreign}_{i,j} + \beta_6 \text{GDP}_j + \beta_7 \text{GDP per capita}_j \\ & + \beta_8 \text{GDP Growth}_j + \beta_9 \text{Inflation}_j + \varepsilon_{i,j} \end{aligned} \quad (2)$$

The subscripts i and j represent firm and country, respectively. We retain year and industry dummies but exclude country dummies in these regressions. The results are reported in Table 7 (Panel A). After controlling for a country's economic development, privatized firms continue to exhibit significant advantage in accessing state bank finance and supplier credit, whereas ab initio private firms rely more on informal finance. These results are consistent with our baseline results reported in Table 4 (Panel A).

5.2. The effects of credit market development

Credit market development is should have a direct impact on firm-level financing patterns. In this section, we use *Private Credit* to proxy for credit market development, defined as credit extended to private businesses over GDP. We include *Private Credit* in our baseline Tobit regression model and reestimate firm financing patterns:

$$\begin{aligned} \text{Financing Source}_{i,j} = & \alpha + \beta_1 \text{Privatized}_{i,j} + \beta_2 \text{Firm Size}_{i,j} + \beta_3 \text{Firm Growth}_{i,j} \\ & + \beta_4 \text{Exporter}_{i,j} + \beta_5 \text{Foreign}_{i,j} + \beta_6 \text{GDP}_j + \beta_7 \text{GDP per Capita}_j \\ & + \beta_8 \text{GDP Growth}_j + \beta_9 \text{Inflation}_j + \beta_{10} \text{Private Credit} + \varepsilon_{i,j} \end{aligned} \quad (3)$$

The results are presented in Panel B of Table 7. As shown, after controlling for *Private Credit*, the results are highly consistent with our baseline findings in significant levels and magnitudes.

We further divide the full sample into two subsamples based on the median of *Private Credit* ratios and re-estimate Equation (2). In countries with relatively underdeveloped credit markets (below median *Private Credit* ratios), neither privatized nor ab initio firms have clear advantage over one another in obtaining all sources of external finance (Table 7, Panel B1). In countries with relatively more developed credit markets (above median *Private Credit* ratios), the results are consistent with our baseline findings (Table 7, Panel B2).

The above subsample analyses indicate the existence of a threshold in the credit market development. When the credit market is underdeveloped and the availability of all types of funds is limited, neither privatized nor ab initio firms has a clear advantage in accessing external finance. Only when the credit market has developed to a certain level can privatized firms exploit their political connections and established supplier relationships to their benefit.

5.3. The effects of EU membership

Eleven of the thirty countries in our sample are members of the EU.⁹ We replace *Private Credit* with *EU membership* in Equation (3) and report the Tobit regression results in Panel C of Table 7. As shown, the results are consistent with our baseline results (Table 4, Panel A).

We then divide the full sample into EU and non-EU subsamples and re-estimate Equation (2) separately for the subsamples. We find that in non-EU countries where credit markets and institutions are relatively less developed, neither the privatized nor the ab initio firms have any advantage over one another in accessing bank finance or equity capital. However, privatized firms continue to rely more on supplier credit, while ab initio firms rely more on informal finance (Table 7, Panel C1). In EU countries where credit markets and institutions are relatively more developed, privatized firms have better access to bank finance (both state and private), whereas the ab initio firms use more equity finance (Table 7, Panel C2). We also observe interesting findings that in the EU subsample of firms, the variations in the usage of informal finance and supplier credit disappear between the privatized and the ab initio firms. This suggests that in more developed economies, firms tend to turn to formal financial markets (bond and equity markets) for financing needs, instead of through business relations or informal sources.

[Insert Table 7 about here]

Together, the results in Table 7 show that financial and institutional development has a significant impact on the financing patterns of privatized versus ab initio private firms. In

⁹ As of December 2014, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia are member of the EU.

countries with underdeveloped financial markets and institutions, neither privatized nor ab initio firms have any advantage over one another in accessing bank finance. However, in countries with relatively more developed financial market and institutions, privatized firms have an advantage over ab initio private firms in accessing formal external finance, especially bank finance.

6. Conclusions

In this paper, we investigate how firm financing patterns differ between privatized former SOEs and ab initio private firms. Using a unique firm-level survey database, we find that the origin of the private enterprises (privatized or ab initio private) is an important determinant in explaining the observed variations in firm financing patterns in the ECA countries. We document that privatized firms finance their investment with higher proportions of bank finance and supplier credit, while ab initio private firms rely more on informal sources such as moneylenders, friends and relatives, or non-banking financial institutions. Our results are robust after controlling for firm- and country-level characteristics. We further document that financial institution development has an important impact on the financing patterns of privatized versus ab initio private firms. In sum, we argue that privatized firms in these transition economies continue to benefit from their political, business, and financial connections formed during the SOE era.

As these ECA countries continue to rise from the ashes of their socialist past, an important aim of their market and institutional advancement should be to provide a level playing field for businesses of all origins, be it privatized or ab initio private. We find that the playing field in these transition economies are not yet level for the ab initio private firms. Political and institutional efforts should be directed to improve that.

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Figure 1: Financing patterns and financial institution development

Figure 1a: Financing patterns and private credit

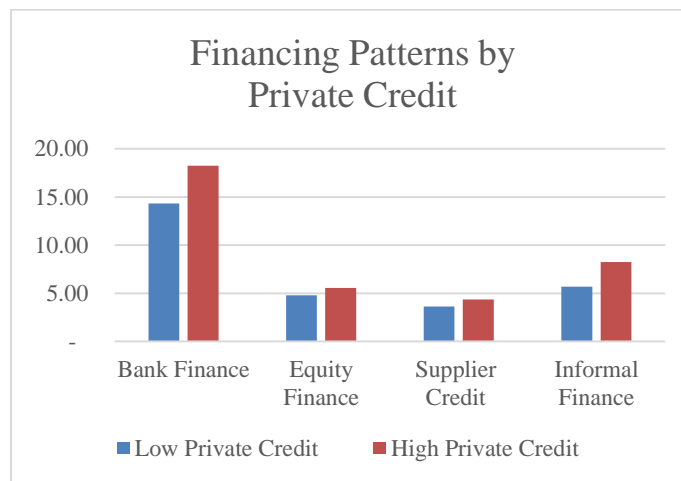


Figure 1b: Financing patterns and EU membership

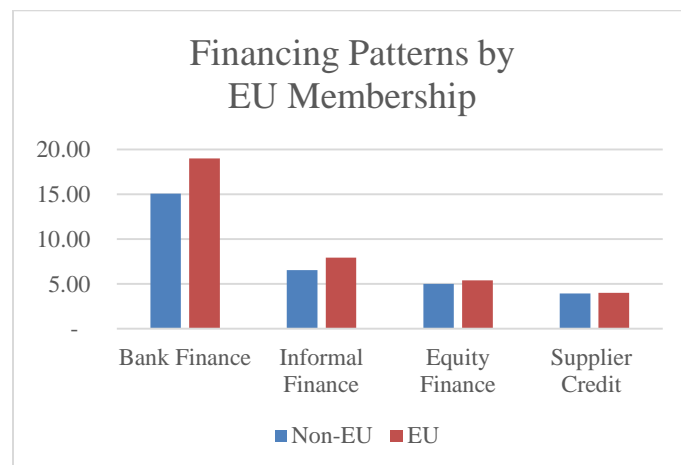


Figure 2: Financing patterns in transitional economies by country

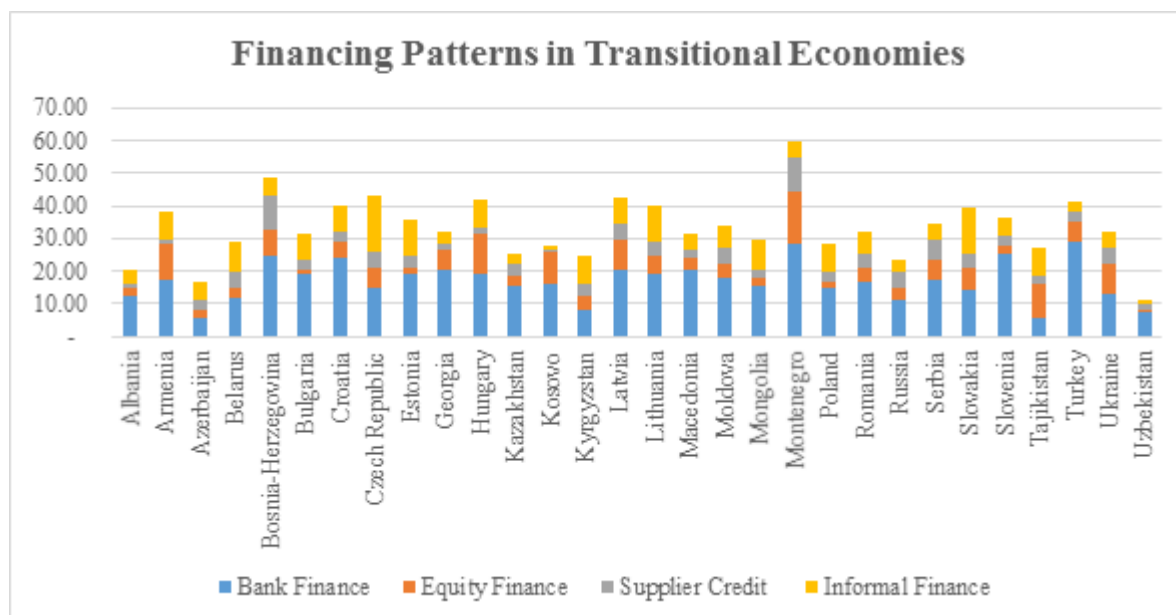


Table 1: Financing patterns in transition economies by country

The table presents firm financing patterns averaged for each of the sample countries. *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance* are firm's proportion of investment financed by state-owned banks, private banks, equity, supplier credit, and informal sources, respectively. *Bank Finance* = *State Bank* + *Private Bank*. *External Finance* = *Bank Finance* + *Equity Finance* + *Supplier Credit* + *Informal Finance*. Variable definitions and sources are given in Table A2 in the Appendix.

Country	<i>External Finance</i>	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Albania	20.71	12.63	0.00	13.67	2.37	1.30	4.41
Armenia	38.13	17.56	2.21	15.62	10.73	1.33	8.51
Azerbaijan	16.98	5.93	0.38	4.50	2.10	3.14	5.81
Belarus	28.89	11.74	5.89	5.79	2.89	5.39	8.87
Bosnia-Herzegovina	48.54	24.90	2.47	21.22	7.90	10.47	5.27
Bulgaria	31.62	19.10	2.86	17.46	1.54	2.74	8.23
Croatia	39.84	24.36	6.21	23.00	4.34	3.55	7.59
Czech Republic	42.89	14.71	3.91	9.78	6.14	4.93	17.11
Estonia	35.79	19.06	0.59	17.84	2.08	3.77	10.88
Georgia	32.14	20.11	1.38	22.39	6.40	1.98	3.65
Hungary	41.99	19.14	5.91	13.72	12.52	1.65	8.67
Kazakhstan	25.25	15.79	2.34	16.21	2.99	3.21	3.26
Kosovo	27.83	16.39	.	.	9.81	0.16	1.46
Kyrgyzstan	24.72	8.08	1.46	6.77	4.43	3.69	8.52
Latvia	42.48	20.45	3.35	21.71	9.01	5.10	7.92
Lithuania	40.13	19.46	2.35	18.11	5.00	4.44	11.23
Macedonia	31.24	20.70	2.04	20.30	3.63	2.23	4.68
Moldova	33.99	18.01	0.67	18.22	4.51	4.61	6.86
Mongolia	29.38	15.45	.	.	2.71	2.23	8.98
Montenegro	59.69	28.60	5.47	29.16	15.95	10.38	4.77
Poland	28.55	14.90	4.50	10.54	1.63	3.49	8.53
Romania	32.33	16.95	2.49	15.28	4.11	4.02	7.26
Russia	23.75	11.25	3.83	8.76	3.68	5.09	3.74
Serbia	34.72	17.25	2.29	14.41	6.04	6.25	5.17
Slovakia	39.16	14.42	1.75	11.40	6.88	3.92	13.94
Slovenia	36.24	25.35	15.92	11.58	2.66	2.60	5.63
Tajikistan	26.88	5.54	2.73	2.67	10.48	2.71	8.14
Turkey	40.97	29.08	.	.	6.22	2.58	3.08
Ukraine	32.07	12.89	1.14	12.95	9.14	4.96	5.09
Uzbekistan	11.37	7.35	2.64	3.81	1.07	1.56	1.39
Mean	32.21	16.20	3.29	13.51	5.12	3.97	6.93

Table 2: Summary statistics and univariate tests

Panel A and Panel B of this table report the summary statistics and correlation matrix for the variables, respectively. Panel C reports the univariate test results for the differences between privatized and ab initio private firms. *N* is the number of firm-level observations, except for country-level variables. *Privatized* is a dummy that equals one if a firm is a privatized former SOE, and zero if a firm is an ab initio private firm. *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance* are the firm's proportion of investment financed by state-owned banks, private banks, equity, supplier credit, and informal sources, respectively. *Bank Finance*=*State Bank* + *Private Bank*. *Firm Size* is the firm's number of permanent, full-time employees. *Firm Growth* is the firm's growth rate in the number of permanent, full-time employees. *Exporter* equals one if the firm is an exporter, and zero otherwise. *Foreign* equals one if any foreign company or individual has a financial stake in the ownership of the firm, zero otherwise. *Financing Obstacle* is survey responses for firm-level financial obstacles as specified in the survey questionnaires. *GDP* is the log of real GDP in U.S. dollars. *GDP per Capita* is the log of real GDP per capita in U.S. dollars. *GDP Growth* is the real GDP growth rate. *Inflation* is the log difference of consumer price indices. *Private Credit* is the ratio of domestic banking credit to the private sector divided by GDP. *EU* equals one if a country belongs to the EU, and zero otherwise. Variable definitions and sources are given in Table A2 in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Summary statistics

	<i>N</i>	Mean	Median	SD	Min	Max
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Privatized</i>	19,521	0.17	0	0.38	0	1
<i>Bank Finance</i>	19,521	16.20	0	30.60	0	100
<i>State Bank</i>	13,867	3.29	0	14.88	0	100
<i>Private Bank</i>	13,867	13.51	0	28.38	0	100
<i>Equity Finance</i>	19,521	5.12	0	19.18	0	100
<i>Supplier Credit</i>	19,521	3.97	0	15.39	0	100
<i>Informal Finance</i>	19,521	6.93	0	21.37	0	100
<i>Firm Size</i>	19,458	103.89	22	375.65	1	12,000
<i>Firm Growth</i>	18,193	0.07	0.03	0.21	-0.56	0.70
<i>Exporter</i>	19,449	0.28	0	0.45	0	1
<i>Foreign</i>	19,439	0.11	0	0.31	0	1
<i>Financing Obstacle</i>	17,546	1.37	1	1.25	0	4
<i>Firm Age</i>	19,421	14.57	11	14.70	1	184
<i>GDP</i>	30	24.62	24.51	1.73	21.62	27.39
<i>GDP per Capita</i>	30	8.34	8.49	0.90	5.86	9.80
<i>GDP Growth</i>	30	4.44	3.89	2.03	1.65	11.96
<i>Inflation</i>	30	10.16	5.84	9.45	2.13	53.64
<i>Private Credit</i>	30	30.56	28.13	13.54	5.91	64.94
<i>EU</i>	30	0.41	0	0.49	0	1

Panel B: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
<i>Privatized</i>	(1)												
<i>Bank Finance</i>	(2)	0.03 ***											
<i>State Bank</i>	(3)	0.04 ***	0.41 ***										
<i>Private Bank</i>	(4)	0.02 **	0.88 ***	-0.08 ***									
<i>Equity Finance</i>	(5)	-0.01	-0.09 ***	-0.04 ***	-0.08 ***								
<i>Supplier Credit</i>	(6)	0.02 ***	-0.06 ***	-0.02 *	-0.05 ***	-0.03 ***							
<i>Informal Finance</i>	(7)	-0.03 ***	-0.11 ***	-0.05 ***	-0.12 ***	-0.06 ***	-0.04 ***						
<i>Firm Size</i>	(8)	0.21 ***	0.07 ***	0.02 ***	0.07 ***	-0.01	0.01 *	-0.02 ***					
<i>Firm Growth</i>	(9)	-0.17 ***	0.05 ***	0.00	0.06 ***	0.01	0.02 **	0.02 ***	0.00				
<i>Exporter</i>	(10)	0.10 ***	0.11 ***	0.04 ***	0.10 ***	-0.01	0.01	0.01 *	0.14 ***	0.00			
<i>Foreign</i>	(11)	0.05 ***	-0.01	-0.03 ***	0.01	0.01	-0.01	0.01 *	0.15 ***	0.01 *	0.22 ***		
<i>Financing Obstacle</i>	(12)	-0.01	0.06 ***	0.03 ***	0.05 ***	0.02 ***	0.05 ***	0.04 ***	-0.02 **	0.01	-0.03 ***	-0.09 ***	
<i>Firm Age</i>	(13)	0.44 ***	0.06 ***	0.06 ***	0.05 ***	-0.01	0.02 **	-0.05 ***	0.21 ***	-0.17 ***	0.17 ***	0.03 ***	-0.01

Panel C: Univariate tests for privatized versus ab initio private firms

	<i>Privatized SOEs</i>		<i>Ab initio Private Firms</i>		<i>T-Tests</i>	
	(1)		(2)		(3)	
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>Mean</i>	<i>Difference (1)-(2)</i>	<i>T-value</i>
<i>Bank Finance</i>	3,320	18.35	16,201	15.76	2.59	4.45***
<i>State Bank</i>	2,718	4.52	11,149	2.99	1.53	4.81***
<i>Private Bank</i>	2,718	14.73	11,149	13.22	1.51	2.49**
<i>Equity Finance</i>	3,320	4.83	16,201	5.18	-0.35	-0.96
<i>Supplier Credit</i>	3,320	4.62	16,201	3.83	0.78	2.67***
<i>Informal Finance</i>	3,320	5.75	16,201	7.17	-1.42	-3.49***
<i>Firm Size</i>	3,309	274.93	16,149	68.84	206.10	29.38***
<i>Firm Growth</i>	3,156	-0.00	15,037	0.09	-0.09	-23.22***
<i>Exporter</i>	3,306	0.38	16,143	0.26	0.12	14.41***
<i>Foreign</i>	3,320	0.15	16,119	0.10	0.04	6.81***
<i>Financing Obstacle</i>	3,095	1.35	14,451	1.37	-0.03	-1.10
<i>Firm Age</i>	3,271	29.10	16,150	11.62	17.48	69.23***

Table 3: Macroeconomic and financial institution development indicators by country

GDP is the log of real GDP in U.S. dollars. *GDP per Capita* is the log of real GDP per capita in U.S. dollars. *GDP Growth* is the real GDP growth rate. *Inflation* is the log difference of consumer price indices. *Private Credit* is the ratio of domestic banking credit to the private sector divided by GDP. *EU* equals one if a country belongs to the EU, and zero otherwise. Variable definitions and sources are described in Table A2 in the Appendix.

Country	<i>GDP</i> (1)	<i>GDP per Capita</i> (2)	<i>GDP Growth</i> (3)	<i>Inflation</i> (4)	<i>Private Credit</i> (5)	<i>EU</i> (6)
Albania	8,870	2,982	5.03	2.56	17.33	No
Armenia	4,990	1,666	7.17	4.02	12.32	No
Azerbaijan	18,100	2,052	11.96	5.35	9.41	No
Belarus	33,200	3,456	6.13	53.64	16.72	No
Bosnia-Herzegovina	11,100	2,890	3.89	2.81	55.86	No
Bulgaria	29,700	3,905	2.99	5.39	29.12	Yes
Croatia	43,900	9,973	1.65	2.98	50.61	Yes
Czech Republic	138,000	13,305	2.56	2.55	39.97	Yes
Estonia	13,400	9,944	4.03	4.07	64.94	Yes
Georgia	6,880	1,559	5.65	6.43	16.40	No
Hungary	107,000	10,620	2.00	5.84	41.85	Yes
Kazakhstan	61,400	3,896	7.62	8.45	28.62	No
Kosovo	4,000	2,291	5.58	2.13	23.38	No
Kyrgyzstan	2,670	506	4.50	10.48	5.91	No
Latvia	16,300	7,466	4.32	4.43	45.29	Yes
Lithuania	29,300	9,358	2.64	2.70	28.13	Yes
Macedonia	6,640	3,179	2.90	2.64	27.12	No
Moldova	3,020	843	4.40	12.21	22.63	No
Mongolia	2,930	1,120	7.39	9.41	24.26	No
Montenegro	2,440	3,968	2.32	3.74	61.92	No
Poland	329,000	8,624	3.70	3.63	29.14	Yes
Romania	101,000	4,844	3.43	15.24	22.27	Yes
Russia	788,000	5,482	4.98	16.84	26.02	No
Serbia	26,100	3,547	2.89	22.40	30.61	No
Slovakia	66,700	12,380	3.73	5.03	41.46	Yes
Slovenia	36,400	18,031	2.25	4.21	57.85	Yes
Tajikistan	2,520	351	7.75	12.40	13.20	No
Turkey	494,000	7,154	3.90	22.11	23.01	No
Ukraine	83,500	1,782	3.77	11.47	34.54	No
Uzbekistan	16,900	617	6.83	14.66	.	No

Table 4: Financing patterns for privatized versus ab initio private firms

Panel A reports our baseline regression results, while Panel B reports results from the propensity score matching (PSM) analysis. In Panel A, the dependent variables are the six measures of external financing sources. *Privatized* is a dummy that equals one if a firm is a privatized former SOE, and zero if a firm is a ab initio private firm. *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance* are firms' proportion of investment financed by state-owned banks, private banks, equity, supplier credit, and informal sources, respectively. *Bank Finance* = *State Bank* + *Private Bank*. *Firm Size* is the firm's number of permanent, full-time employees. *Firm Growth* is the firm's growth rate of permanent, full-time employees. *Exporter* is a dummy equal to 1 if the firm is an exporter, and 0 otherwise. *Foreign* is a dummy equal to 1 if any foreign company or individual has a financial stake in the ownership of the firm, 0 otherwise. The regressions are estimated using a Tobit model that includes fixed effects for year, country, and industry. Standard errors are clustered at the country level and reported in parentheses. Variable definitions and sources are given in Table A2 in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Baseline regressions

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Privatized</i>	1.85** (0.01)	1.30** (0.01)	0.79 (0.37)	-0.63 (0.20)	0.77** (0.03)	-0.87* (0.08)
<i>Firm Size</i>	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	-0.00** (0.03)	0.00 (0.93)	-0.00 (0.28)
<i>Firm Growth</i>	6.84*** (0.00)	0.79 (0.12)	6.88*** (0.00)	0.33 (0.69)	1.34** (0.04)	2.63*** (0.01)
<i>Exporter</i>	4.41*** (0.00)	0.40 (0.21)	4.62*** (0.00)	-0.52 (0.16)	0.38* (0.10)	0.12 (0.81)
<i>Foreign</i>	-3.59*** (0.00)	-1.53*** (0.00)	-1.96** (0.03)	0.50 (0.30)	-0.24 (0.43)	-0.28 (0.63)
Observations	18,059	13,085	13,085	18,059	18,059	18,059
Year FE				Yes		
Country FE				Yes		
Industry FE				Yes		

Panel B: Propensity score matching analysis

Outcome	Sample	Treated	Controls	Difference	T-Stat
	(1)	(2)	(3)	(4)=(2)-(3)	(5)
<i>Bank Finance</i>	Unmatched	18.23	15.59	2.64	4.42***
	ATT	17.98	16.41	1.57	1.81**
<i>State Bank</i>	Unmatched	4.30	2.92	1.39	4.31***
	ATT	4.20	2.63	1.57	3.31***
<i>Private Bank</i>	Unmatched	14.77	12.88	1.89	3.06***
	ATT	14.92	15.67	-0.75	0.81
<i>Equity Finance</i>	Unmatched	4.65	4.86	-0.21	0.57
	ATT	4.68	4.90	-0.21	0.41
<i>Supplier Credit</i>	Unmatched	4.57	3.74	0.82	2.76***
	ATT	4.61	3.75	0.86	1.94**
<i>Informal Finance</i>	Unmatched	5.75	7.33	-1.58	-3.73***
	ATT	5.82	6.14	-0.32	-0.58

Table 5: The effects of firms' perceived financial constraints

This table reports regression results after controlling for firm-level perceived financial constraints. Panel A reports results for the full sample after including *Financing Obstacle*, which embodies survey responses about firm-level financial constraints as specified in the survey questionnaires. We divide the full sample into two subsamples according to firms' survey responses concerning their perceived financial constraints and run regressions separately for the subsamples. The results are reported in Panel B and Panel C. The dependent variables are the six measures of external financing sources. *Privatized* is a dummy that equals one if a firm is a privatized former SOE, and zero if a firm is an ab initio private firm. *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance* are a firm's proportion of investment financed by state-owned banks, private banks, equity, supplier credit, and informal sources, respectively. *Bank Finance* = *State Bank* + *Private Bank*. *Firm Size* is the firm's number of permanent, full-time employees. *Firm Growth* is the firm's growth rate in the number of permanent, full-time employees. *Exporter* is a dummy equal to 1 if the firm is an exporter, and 0 otherwise. *Foreign* is a dummy equal to 1 if any foreign company or individual has a financial stake in the ownership of the firm, 0 otherwise. The regressions are estimated using a Tobit model that includes fixed effects for year, country, and industry. Standard errors are clustered at the country level and reported in parentheses. Variable definitions and sources are given in Table A2 in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Control for <i>Financing Obstacle</i>						
<i>Privatized</i>	1.90** (0.01)	1.16** (0.02)	1.00 (0.25)	-0.70 (0.21)	0.80** (0.03)	-0.81 (0.14)
<i>Financing Obstacle</i>	1.59*** (0.00)	0.22 (0.23)	1.17*** (0.00)	0.17 (0.23)	0.49*** (0.00)	1.07*** (0.00)
Observations	16,316	12,623	12,623	16,316	16,316	16,316
Panel B: <i>Financing Obstacle</i> = 0 or 1						
<i>Privatized</i>	1.85* (0.08)	0.65 (0.21)	1.94* (0.09)	-1.33*** (0.00)	0.17 (0.77)	-1.04 (0.13)
Observations	8,893	6,546	65,46	8,893	8,893	8,893
Panel C: <i>Financing Obstacle</i> = 2 or 3 or 4						
<i>Privatized</i>	1.77* (0.09)	1.69** (0.02)	-0.13 (0.92)	-0.04 (0.96)	1.50** (0.03)	-0.59 (0.45)
Observations	7,423	6,077	6,077	7,423	7,423	7,423
Firm controls			Yes			
Year/industry/country FE			Yes			

Table 6: The effects of firm lifecycle

This table reports the regression results after controlling for firm age which can be treated as a proxy for a firm's lifecycle. The dependent variables are the six measures of external financing sources, i.e. *Bank Finance*, *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance*. *Privatized* is dummy that equals one if the firm is a privatized former SOE, and zero if a firm is a ab initio private firm. In Panel A we control for *Firm Age* whereas Panel B and C present subsample analysis if the firm age is less than 5 years and greater than 5 years respectively. All regressions include four firm-level control variables (*Firm controls*), i.e., *Firm Size*, *Firm Growth*, *Exporter*, and *Foreign*. The regressions are estimated using a Tobit model including fixed effects for year and industry. Country dummies are excluded from the regressions whenever country-level macroeconomic and institutional development variables are included in the analysis. Standard errors are clustered at the country level and reported in parentheses. Detailed variable definitions and sources are given in Table A2 in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Control for Firm Age						
<i>Privatized</i>	1.32*	0.96*	0.41	-0.48	0.89***	-0.37
	(0.10)	(0.07)	(0.68)	(0.28)	(0.01)	(0.45)
<i>Firm Age</i>	0.03	0.02*	0.02	-0.01	-0.01	-0.03***
	(0.14)	(0.09)	(0.34)	(0.45)	(0.34)	(0.00)
Observations	17,986	13,029	13,029	17,986	17,986	17,986
Panel B: Firm Age>5 (Established Firms)						
<i>Privatized</i>	1.80**	1.17**	0.88	-0.74	0.86**	-1.05**
	(0.03)	(0.02)	(0.37)	(0.13)	(0.03)	(0.03)
Observations	15,243	10,874	10,874	15,243	15,243	15,243
Panel C: Firm Age<=5 (Young Firms)						
<i>Privatized</i>	0.68	2.30	-1.91	-0.71	-0.33	4.37*
	(0.82)	(0.21)	(0.52)	(0.67)	(0.75)	(0.10)
Observations	2,743	2,155	2,155	2,743	2,743	2,743
Firm controls				Yes		
Year/industry/country FE				Yes		

Table 7: The effects of macroeconomic and institutional development

This table reports the regression results after controlling for various country-level macroeconomic and financial institution measures. Panel A controls for country-level macroeconomic variables, while Panels B, C, and D control for the credit market development and EU membership respectively. The dependent variables are the six measures of external financing sources, i.e. *Bank Finance*, *State Bank*, *Private Bank*, *Equity Finance*, *Supplier Credit*, and *Informal Finance*. *Privatized* is dummy that equals one if the firm is a privatized former SOE, and zero if a firm is an ab initio private firm. *GDP* is the log of real GDP in U.S. dollars. *GDP per Capita* is the log of real GDP per capita in U.S. dollars. *GDP Growth* is the real GDP growth rate. *Inflation* is the log difference of consumer price indices. *Private Credit* is the ratio of domestic banking credit to the private sector divided by GDP. *EU* equals one if a country belongs to the EU, and zero otherwise. All regressions include four firm-level control variables (*Firm controls*), i.e., *Firm Size*, *Firm Growth*, *Exporter*, and *Foreign*. The regressions are estimated using a Tobit model including fixed effects for year and industry. Country dummies are excluded from the regressions whenever country-level macroeconomic and institutional development variables are included in the analysis. Standard errors are clustered at the country level and reported in parentheses. Detailed variable definitions and sources are given in Table A2 in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Control for macroeconomic factors

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Privatized</i>	1.69** (0.02)	1.67*** (0.01)	0.66 (0.49)	-0.68 (0.19)	0.70** (0.05)	-0.94* (0.07)
<i>GDP</i>	-1.60*** (0.00)	-0.10 (0.80)	-1.70*** (0.00)	-0.28 (0.50)	0.31 (0.13)	-0.77*** (0.01)
<i>GDP per Capita</i>	3.25*** (0.00)	1.77* (0.10)	1.50 (0.22)	-0.44 (0.63)	-0.19 (0.57)	1.80** (0.02)
<i>GDP Growth</i>	-1.02*** (0.00)	-0.14 (0.11)	-0.95*** (0.00)	-0.49* (0.05)	-0.15 (0.22)	-0.17 (0.33)
<i>Inflation</i>	-0.03 (0.41)	0.04* (0.06)	-0.13*** (0.00)	-0.02 (0.51)	0.04* (0.08)	0.00 (0.92)
Observations	18,059	13,085	13,085	18,059	18,059	18,059
Firm controls				Yes		
Year/industry FE				Yes		

Panel B: Control for private credit development

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Privatized</i>	1.71** (0.03)	1.59*** (0.01)	0.76 (0.44)	-0.55 (0.28)	0.78** (0.02)	-0.97* (0.07)
<i>Private Credit</i>	0.05 (0.54)	0.01 (0.80)	0.02 (0.72)	0.06 (0.31)	0.09** (0.03)	-0.02 (0.70)
Observations	17,710	12,826	12,826	17,710	17,710	17,710
Panel B1: Private Credit < Median						
<i>Privatized</i>	0.80 (0.46)	1.23 (0.18)	-0.17 (0.90)	-0.76 (0.18)	0.74 (0.13)	-0.95 (0.21)
Observations	8,341	5,362	5,362	8,341	8,341	8,341
Panel B2: Private Credit ≥ Median						
<i>Privatized</i>	2.87** (0.02)	1.86** (0.01)	1.75 (0.24)	-0.42 (0.64)	0.71 (0.20)	-1.40** (0.03)
Observations	9,369	7,464	7,464	9,369	9,369	9,369
Firm controls				Yes		
Macro controls				Yes		
Year/industry FE				Yes		

Panel C: Control for EU Membership

	<i>Bank Finance</i>	<i>State Bank</i>	<i>Private Bank</i>	<i>Equity Finance</i>	<i>Supplier Credit</i>	<i>Informal Finance</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Privatized</i>	1.70** (0.02)	1.68*** (0.01)	0.66 (0.49)	-0.67 (0.20)	0.70** (0.05)	-0.96* (0.06)
<i>EU</i>	-2.35 (0.26)	0.46 (0.63)	-0.88 (0.67)	-1.23 (0.41)	-1.18 (0.30)	3.72*** (0.00)
Observations	18,059	13,085	13,085	18,059	18,059	18,059
Panel C1: EU=0						
<i>Privatized</i>	0.50 (0.58)	1.06 (0.12)	-0.16 (0.89)	-0.50 (0.47)	0.91** (0.04)	-1.14** (0.05)
Observations	10,474	6,997	6,997	10,474	10,474	10,474
Panel C2: EU=1						
<i>Privatized</i>	4.49*** (0.00)	2.32*** (0.00)	2.73* (0.10)	-1.69*** (0.00)	0.41 (0.45)	-1.00 (0.32)
Observations	7,585	6,088	6,088	7,585	7,585	7,585
Firm controls				Yes		
Macro controls				Yes		
Year/industry FE				Yes		

Appendix:

Table A1: Privatized and ab initio private firms by country

Country	Total Observations	Privatized		Ab initio Private	
		N	%	N	%
Albania	376	30	8	346	92
Armenia	698	180	26	518	74
Azerbaijan	552	94	17	458	83
Belarus	517	63	12	454	88
Bosnia-Herzegovina	619	113	18	506	82
Bulgaria	609	109	18	500	82
Croatia	510	94	18	416	82
Czech Republic	754	78	10	676	90
Estonia	545	63	12	482	88
Georgia	410	99	24	311	76
Hungary	803	123	15	680	85
Kazakhstan	782	139	18	643	82
Kosovo	140	13	9	127	91
Kyrgyzstan	378	132	35	246	65
Latvia	497	71	14	426	86
Lithuania	581	100	17	481	83
Macedonia	573	84	15	489	85
Moldova	607	137	23	470	77
Mongolia	188	15	8	173	92
Montenegro	130	14	11	116	89
Poland	1,427	139	10	1,288	90
Romania	1,180	166	14	1,014	86
Russia	2,646	431	16	2,215	84
Serbia	740	114	15	626	85
Slovakia	508	66	13	442	87
Slovenia	637	136	21	501	79
Tajikistan	412	127	31	285	69
Turkey	445	9	2	436	98
Ukraine	892	214	24	678	76
Uzbekistan	365	167	46	198	54
Total	19,521	3,320	17%	16,201	83%

Table A2: Variables and sources

Variable	Definition	Source
<i>Privatized</i>	Dummy variable that takes the value 1 if the firm is a privatized former SOE, and 0 otherwise	BEEPS
<i>Ab initio Private</i>	Dummy variable that takes the value 1 if the firm is ab initio private with zero state ownership, and 0 otherwise	BEEPS
<i>Bank Finance</i>	Share (percentage) of firm's financing over the previous year coming from private and state-owned banks	BEEPS
<i>State Bank</i>	Share (percentage) of firm's financing over the last year coming from state-owned banks	BEEPS
<i>Private Bank</i>	Share (percentage) of firm's financing over the last year coming from private banks	BEEPS
<i>Equity Finance</i>	Share (percentage) of firm's financing over the last year coming from owners' contribution or issue of new equity shares	BEEPS
<i>Supplier Credit</i>	Share (percentage) of firm's financing over the last year coming from supplier credit	BEEPS
<i>Informal Finance</i>	Share (percentage) of firm's financing over the last year coming from informal money lenders, friends, relatives, non-banking financial institutions etc.	BEEPS
<i>Firm Size</i>	Number of permanent, full-time employees at the end of last year	BEEPS
<i>Firm Growth</i>	The average difference of last year's number of permanent, full-time employees and number of permanent, full-time employees three years prior	BEEPS
<i>Exporter</i>	Dummy variable that takes the value 1 if the firm is an exporter, and 0 otherwise	BEEPS
<i>Foreign</i>	Dummy variable that takes the value 1 if any foreign company or individual has a financial stake in the ownership of the firm, 0 otherwise	BEEPS
<i>Financing Obstacle</i>	"How problematic is access to finance for the current operations of a business?" No Obstacle = 0, Minor Obstacle = 1, Moderate Obstacle = 2, Major Obstacle = 3, and Very Severe Obstacle = 4	BEEPS
<i>GDP</i>	Logarithm of GDP in constant 2005 US\$, average over 1999–2013	WDI
<i>GDP per Capita</i>	Logarithm of GDP per capita in constant 2005 US\$, average over 1999–2013	WDI
<i>GDP Growth</i>	Real growth rate of GDP, average over 1999–2013	WDI
<i>Inflation</i>	Log difference of consumer prices, average over 1999–2013	WDI
<i>Private Credit</i>	Credit extended to private businesses over GDP, average over 1999–2013	IFS
<i>EU</i>	Dummy variable that takes the value 1 if the country is an EU member as of 2014, and 0 otherwise	EU

* *Sources of Data:* BEEPS = Business Environment and Enterprise Performance Survey, European Bank for Reconstruction and Development and World Bank; WDI = World Development Indicators, World Bank; IFS = International Financial Statistics; EU = European Union Website.