

# **Interaction among New Firm Formation, Privatization, and Business Environment in Transition Countries**

**Youngho Kang, Byung-Yeon Kim and Jong-Kyu Lee**

The formation of new private firms can facilitate transition from socialism to a market economy. This study uses data from transition economies to investigate the effects of large-scale privatization and the barriers to the establishment of new firms. It finds that large-scale privatization positively affects the formation of new firm, but such effects disappear as the costs of start-up increase. These results imply that both privatization and favorable business environments are necessary for firm creation.

*Keywords:* New firms, Large-scale privatization, Start-up costs

*JEL Classification:* M13, P2

## **I. Introduction**

The creation of new private firms is key to a successful transition from socialism to a market economy. The formation of new firms accelerates reallocation and restructuring, which are the two core elements of transition identified by Blanchard (1997); these elements

Youngho Kang, Department of Economics, Soongsil University, Seoul, Korea. (E-mail): yhkang@ssu.ac.kr, (Tel): +82-2-820-0564, (Fax): +82-2-824-4384; Byung-Yeon Kim, Department of Economics, Seoul National University, Seoul, Korea. (E-mail): kimby@snu.ac.kr, (Tel): +82-2-880-6370, (Fax): +82-2-886-4231; Jong-Kyu Lee, Corresponding author, Korea Development Institute, Seoul, Korea, (E-mail): jklee@kdi.re.kr, (Tel): +82-44-550-4097, (Fax): +82-44-550-4090, respectively.

B.-Y. Kim acknowledges that this work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2016S1A5B8924523).

lead to increased productivity and competitiveness. In matured market economies, the entry of new firms increases efficiency because they are likely to enter the market with an efficient combination of capital and labor. New firms play a crucial role in the transition process given the structural imbalance in post-communist economies prior to transition. Furthermore, private firms are not subject to soft-budget constraints that prevail among state-owned enterprises in the socialist era (Kornai 1994).

Transition countries implemented a large-scale privatization program to transform ownership from the state to a private entity. Policy makers expected the program to encourage entrepreneurship and the formation of new firms. This expectation appears to have been realized as shown in the significant average increase of shares of the private sector in 26 transition countries from 12% in 1990 to 68% in 2009.

However, privatization per se does not increase the creation of new firms. Rather, the consequences of privatization are diversified according to the fundamental conditions of transition countries. In some cases, privatization may leave an insignificant effect on the entry of new firms despite a notable increase in the shares of the private sector. Moreover, excessive concentration on privatization could distract attention away from the central task of encouraging new start-ups (Murrell 1995).

Mixtures of barriers exist in transition economies even after privatization. These barriers include complicated and time-consuming registration, ambiguous tax laws, and corruption. This finding implies that the aims of privatization, namely, competition and efficiency, are hard to achieve and may even produce negative effects without appropriate support for institutional reforms and favorable business environments. The case of the Russian oligarchy indicates that privatization with poor institutional quality and business environments may concentrate ownership in the wrong hands, which may retard the emergence of a free market. Havrylyshyn, and McGettigan (2000) reflected on these features and claimed that only privatization conditioned by good business environment contributes to an increase in new firm registrations. This finding suggests that the effects of privatization increases when it is combined with good market institutions. However, this conjecture was not empirically tested.

The present study examines how reform in large-scale privatization and the business environment, as measured by start-up barriers,

interactively affect the density of new firms across transition countries. Two datasets are used, namely, World Development Indicators (WDI) and the European Bank for Reconstruction and Development (EBRD) reform index. For new firm density, we use new business density in WDI, which was calculated as the number of new limited liability corporations registered in a calendar year per 1,000 people aged 15–64. WDI provides information on new firm density, start-up barriers, private credit, and real GDP per capita. Start-up barriers are measured by start-up costs, start-up day, and start-up procedures. We extract information on the degree of large-scale privatization reform from EBRD. The final dataset includes an unbalanced panel of 119 observations from 25 countries over a five-year period from 2005–2009.

We find that large-scale privatization significantly contributes to the formation of new firms when the costs of start-up are low. However, the effect of large-scale privatization on new firm formation becomes negligible when firms face high start-up costs. The main difference between the present study and existing literature on institutions is the emphasis of previous studies on the role of various institutional factors<sup>1</sup> in privatization process; by contrast, the present study indicates that business environments are directly correlated with the impact of privatization on the formation of new firms.

The rest of this study is organized as follows. In Section II, we review previous literature to understand the channels through which privatization affects the creation of new firms in transition countries. Section III describes the dataset and the estimation strategy. Section IV discusses the estimation results. Section V provides the summary and conclusion.

## **II. Literature Review**

### *A. Effect of Privatization in Transition Economies*

Privatization is prioritized during transition because centrally planned economies suffer from inefficiencies that arise from state ownership and allocation of resources (Gregory, and Stuart 2004). The rate of

<sup>1</sup>These include righteous and enforceable contracts, protection of shareholders and creditors, adequate banking system, functions of bankruptcy courts, and capital market supervision.

large-scale privatization in transition countries is higher than that in developing countries (Estrin *et al.* 2009). In the same vein, Berg *et al.* (1999) emphasized the role of the private sector as the main driving force of recovery; the principle of “the faster, the better” is applicable even for the countries with adverse initial conditions. This assertion is based on the large positive effect of privatization on productivity. Fischer, and Sahay (2000) argued that productivity in the private sector is higher than that in the state sector, and private firms demonstrate remarkable performance cross all sectors. Increased productivity is facilitated by various channels, which include restructuring. Pohl *et al.* (1997) showed that privatization significantly affect restructuring. On average, the productivity of a privatized firm will increase by 3–5 times within four years after privatization compared with that of a state-owned firm. Similar results can be observed in Russia (Barberis *et al.* 1996; Earle, and Estrin 1997) and other CEE countries (Belka *et al.* 1995). Guo *et al.* (2008) conducted a survey using the population of all industrial firms in China; they found that privatized firms perform better than state-owned ones when product and labor markets are functioning.

De novo firms in the private sector have more advantages than former state-owned firms; these advantages come from two channels: (a) infusion of new human capital associated with newly established firms; and (b) absence of a need for fundamental restructuring (Blanchard, and Kremer 1997; Havrylyshyn, and McGettigan 2000). A number of studies showed that de novo firm exhibit faster growth, enjoy higher levels of capacity utilization, expand employment more rapidly, and invest more heavily than former state-owned firms. Moreover, de novo firms do not only exert competitive pressure on state-owned and privatized firms, but they also provide one of the main sources of growth in transition. Findings from empirical studies are consistent with this view. Jackson *et al.* (2005) noted that de novo firms are the main source of gross job creation, whereas former state-owned firms and large private firms suffer from massive job destruction. Similarly, Konings, and Walsh (1999) argued that de novo firms have limited restructuring and reallocation costs; hence, disorganization does not appear to affect their ex-post entry performance. In other words, disorganization plays a limited role in decreasing productivity and employment growth in de novo firms, whereas former state-owned firms and large private firms are affected by central planning economy and face constraints

in employment and productivity growth. Scarpetta *et al.* (2002) found that the net contribution to overall labor productivity growth in OECD countries from the entry and exit of firms accounts for 20–40% of total productivity growth. These studies reach the policy conclusion that governments should concentrate on the development of de novo firms.

#### *B. Role of Start-up Cost in the Creation of New Firms*

Privatization does not always result in the creation of new firms during transition process because the barriers to entry of new firms in some countries appear higher in transition countries than in other developing economies. Shleifer (1997) cited as example the case of Russian entrepreneurs who complained about the difficulties of starting up and operating a business in Russia. The main difficulty that they pointed out is the multiple permits, inspections, and registrations, and the need for interactions with multiple officials many of whom need to be bribed before necessary documents are issued. Similarly, Djankov *et al.* (2002) found that firms in Ukraine undergo 11 procedures, which take 21 business days and cost 20% of per capita GDP. In Georgia, a new firm needs to undergo 12 procedures, which take 70 business days and cost 28% of per capita GDP, whereas a new firm in Russia has to go through 16 procedures, which take 69 business days and cost 37% of per capita GDP. By contrast, a new firm in the United States has to complete four procedures, which take seven business days and cost less than 1% of per capita GDP. In summary, new firms in transition economies face the following barriers. The first type of barrier includes complicated, time-consuming, and poorly defined registration and licensing procedures. Many of these regulations are ambiguous thereby creates opportunities for corruption. The second type of barrier includes complicated and ambiguous tax laws that change frequently that are often accompanied by exorbitant taxes and social security contributions. The third barrier is limited access to commercial real estate. Local governments in transition countries often own real estate, which gives politicians additional power over local businesses and creates further opportunities for corruption. The fourth barrier is export–import and foreign exchange regulations that disrupt foreign trade. Kaufmann (1997) reported the extensive customs regulations in Ukraine and the administrative control on foreign currency purchases and private foreign currency loans. The fifth barrier is corruption,

which is reportedly widespread in many of these countries. Extralegal payments to officials are considered established practice. In some cases, privatization deters the entry of new firms because the process is slow and costly and uses valuable resources that could be devoted to the improvement of market conditions to facilitate private sector growth. Moreover, privatization increases severe competition, which deters new firm formation. In this regard, privatization can either enhance or deter the formation of new firms through its impact on the local business environment (Berkowitz, and Holland 2001).

Klapper, and Love (2011) considered these aspects and argued that isolated reform does not have a significant effect on new firm registration, but synergies exist in multiple reforms of business environment indicators. Other important aspects are the requirements for starting a business, such as costs, days, and procedures. Data from the World Bank Entrepreneurship Surveys (WBGES) showed that a good regulatory environment can boost entrepreneurial activity, facilitate a stable political climate, good governance, modernized business registries, reduced red tape, and simplified business legal forms (Klapper *et al.* 2010). High level of corruption, weak property rights, and inefficient governance significantly constrain aspirations for entrepreneurial employment growth. Local social networks mitigate the effects of these institutional deficiencies (Estrin *et al.* 2009). Johnson *et al.* (1997) suggested that the size of share of *de novo* firms is generally higher in CEE than in FSU. Furthermore, Djankov, and Murrell (2002) noted the positive and statistically significant impact of privatization on firm performance in CEE, whereas the impact was negative and insignificant in FSU. Ticha (2012) suggested that the positive impact of private ownership on economic performance could occur only in an appropriate institutional environment with relevant legal standards. Zinnes, Eliat, and Sachs (2001) argued that privatization positively affect corporate performance when privatization occurs in a good institutional environment. Nellis (1999) noted that privatization in institutionally weak countries led to stagnation and decapitalization of companies instead of improving their efficiency. One study concluded that the relationship between privatization and the creation of new firms is not linear. Privatization does not actually increase the number of new firms, but it can exert a positive influence only when privatization is accompanied by a proper business environment and institutions with good quality.

### III. Estimation Strategy

#### A. Model Specification

We begin by addressing the question of whether or not privatization reform is associated with the subsequent entry of new formal businesses. The extent of privatization is measured by the large-scale and the small-scale privatization index provided by EBRD. The following equation is constructed in a panel data setting.

$$NewfirmD_{i,t} = \beta_1 P\_large_{i,t-1} + \beta_2 P\_small_{i,t-1} + \beta_3 X_{i,t-1} + \alpha_i + \mu_t + \epsilon_{i,t} \quad (1)$$

where  $NewfirmD_{i,t}$  is the new firm density in country  $i$  at time  $t$ ;  $P\_large_{i,t-1}$  is the reform index of large-scale privatization in country  $i$  at time  $t - 1$ ;  $P\_small_{i,t-1}$  is the reform index of small-scale privatization in country  $i$  at time  $t - 1$ ;  $X_{i,t-1}$  pertains to trade openness (% of GDP), ratio of urban population to total population (%), real GDP per capita, domestic credit to private sector by bank (% of GDP), and gross capital formation (% of GDP) in country  $i$  at time  $t - 1$ ;  $\alpha_i$  is the country-specific effect;  $\mu_t$  is the time-specific effects;  $\epsilon_{i,t}$  is the error term. To reflect the stage of economic development and structure, we include urbanization measured by the ratio of urban population, real GDP per capita, and gross capital formation. Trade openness is included to control for competition in product market. The development of the financial market is a crucial factor in starting a new business. Thus, domestic credit to a firm in the private sector (domestic credit to the private sector – domestic credit to household) is added by banks as a percentage of GDP. We also include time dummies to control for any macroeconomic shock in the global economy that may affect new firm registrations in transition countries. This specification is similar to Klapper, and Love (2010).

As indicated in Section II, we believe that large-scale privatization is not a sufficient condition to foster new private firms, but a necessary one because it changes a firm's ownership from state to private. Given that we consider start-up costs are a critical factor in the creation of new firms, we add the variable of start-up cost into Equation (1). This variable is measures in terms of level ( $cost\_startup_{i,t-1}$ ) and interaction term ( $P\_large \times cost\_startup_{i,t-1}$ ) similar to Equation (2). We estimate Equation (2) using the following three models according to the methods

used to measure start-up costs. In Model 1, we measure start-up costs using the cost of business start-up procedures (% of GNI per capita). Model 2 employs an alternative way to measure start-up costs, which is the time required to start a business (days). Model 3 uses information on the start-up procedure to register a business (number).

$$\begin{aligned} NewfirmD_{i,t} = & \beta_1 P\_large_{i,t-1} + \beta_2 cost\_startup_{i,t-1} \\ & + \beta_3 P\_large \times cost\_startup_{i,t-1} + \beta_4 P\_small_{i,t-1} \\ & + \beta_5 X_{i,t-1} + \alpha_i + \mu_t + \epsilon_{i,t} \end{aligned} \quad (2)$$

where  $cost\_startup_{i,t-1}$  is the cost of start-up in country  $i$  at time  $t - 1$ .

This study checks the robustness of results using revenue data from privatization, instead of the index of privatization. Given that one can raise concerns on variations at privatization index that ranges from 0 to 4.3, we use the range of revenue from privatization.<sup>2</sup>

$$\begin{aligned} NewfirmD_{i,t} = & \beta_1 P\_revenue_{i,t-1} + \beta_2 cost\_startup_{i,t-1} \\ & + \beta_3 P\_revenue \times cost\_startup_{i,t-1} \\ & + \beta_5 X_{i,t-1} + \alpha_i + \mu_t + \epsilon_{i,t} \end{aligned} \quad (3)$$

where  $P\_revenue_{i,t-1}$  is the revenue from privatization in country  $i$  at time  $t - 1$ .

We employ within estimator to control for time-invariant heterogeneity, including initial conditions that might cause omitted variable bias. For example, industrial distortion in a pre-transition period may be related to new firm density during the transition process because it can constantly decrease the creation of new firms because of bad business conditions. Thus, a means for controlling for this bias should be provided. In addition, we use one-year lagged values for all control variables in Equations (1)–(3). Endogeneity concerns should be mitigated because of differences in timing.

<sup>2</sup> However, there are some limitations in this variable as well; firstly, some of countries do not report the revenue, and so the number of sample countries reduces; secondly, we cannot distinguished which size group of firms contribute to the revenue.



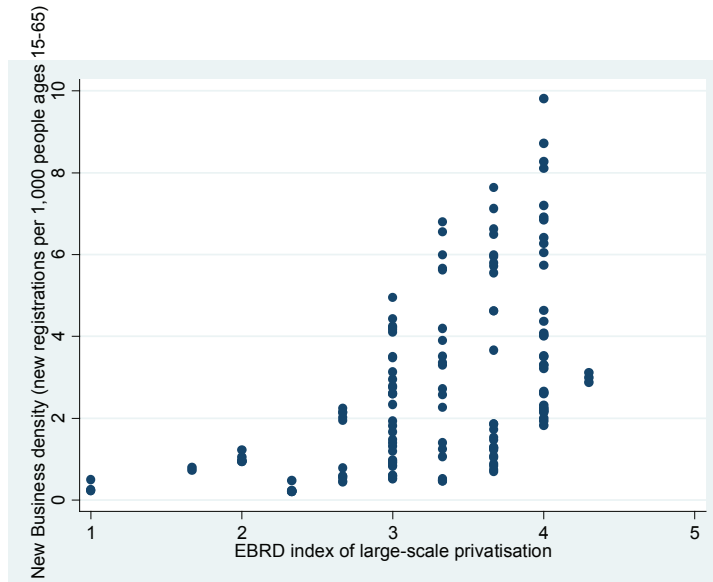


FIGURE 1

NEW BUSINESS DENSITY AND LARGE-SCALE PRIVATIZATION

### B. Data

This study extracts information from two datasets, namely, WDI and EBRD reform index. WDI provides information on new firm density, start-up costs, private credit, and real GDP per capita. For the dependent variable, namely, *new firm density*, we use new business density, which is calculated as the number of new limited liability corporations registered in a calendar year per 1,000 people aged 15–64. Data are collected directly from the local Registrar of Companies, which is the entry point for entrepreneurs who are joining or transitioning to the formal sector in most countries; data are also obtained from other statistical offices and are not based on surveys or estimations (Klapper, and Love 2011).

Privatization can be considered large- or small-scale depending on scale and size. Large-scale privatization, as used in this study, means transfer of ownership in large enterprises to the private sector. This process takes time to complete, whereas small-scale privatization is easier to implement and can be observed at the early stage of transition, such as those in the 1990s. According to EBRD indicators (Transition

**TABLE 1**  
SUMMARY STATISTICS OF MAIN VARIABLES

Variable		Mean	St.dev.
$NewfirmD_{i,t}$	New Business density (new registrations per 1,000 people ages 15–64)	2.96	2.25
$trade_{i,t}$	Trade openness (% of GDP)	103.5	28.7
$urban\_pop_{i,t}$	Ratio of urban population to total population	58.5	11.5
$RGDP\ per\ capita_{i,t}$	Real GDP per capita	6229.1	4965.2
$credit\_firm_{i,t}$	Domestic credit to private sector by bank (% of GDP) - the domestic credit to household by bank (% of GDP)	28.1	13.8
$GCF_{i,t-1}$	Gross fixed capital formation (% of GDP)	28.11	6.35
$startup\_costs_{i,t-1}$	Cost of business start-up procedures (% of GNI per capita)	10.1	10.5
$startup\_days_{i,t-1}$	Time required to start a business (days)	26.2	17.3
$startup\_proc_{i,t-1}$	The number of procedures necessary to incorporate a business	8.21	2.81
$small\ privatization_{i,t-1}$	Small-scale privatization	3.98	0.42
$large\ privatization_{i,t-1}$	Large-scale privatization	3.29	0.70
$P\_revenue_{i,t-1}$	Privatization revenue (cumulative, % of GDP)	16.5	9.64

Report), a score of 4.3 for large privatization means that more than 75% of assets of an enterprise are in private ownership with effective corporate governance. By contrast, small-scale privatization does not involve state ownership of small enterprises and has effective tradability of land. Revenue from privatization is cumulative in percentage of GDP.

Figure 1 shows a scatter plot of new firm density and reform index of large privatization. The scatter plot suggests a positive relationship between the two. Furthermore, a large variation of new firm density exists across countries with high levels of large-scale privatization reform. This finding suggests that large-scale privatization reform is a necessary condition for fostering new firms.

This study uses three indexes in WDI to capture the costs of start-up. The first indicator, namely, Starting Costs, captures all official fees and additional fees for the legal and professional services involved in

incorporating a business. This indicator is measured as a percentage of the economy's income per capita. The second indicator, namely, Starting Days, measures the time required to start a business. This indicator is defined as the number of days that incorporation lawyers consider necessary to complete all required procedures with minimum follow-up by government agencies at no extra cost. The third indicator is the number of procedures necessary to incorporate a business.

The final dataset includes an unbalanced panel of 119 observations from 25 countries over a five-year period 2005–2009. The summary statistics are shown in Table 1.<sup>3</sup>

#### IV. Estimation Results

Table 2 presents the results from the estimation of Equation (1) using pooled OLS, random effects, and fixed effects estimator. Pooled OLS assumes that the sample countries have similar intercepts, namely, the same value of time-invariant omitted variable. Early studies on the initial conditions in transition countries suggest heterogeneous intercepts. Thus, we need to consider intercepts differently. We then use panel analysis. However, Hausman test implies that the fixed-effect estimator should be used.

In the column labeled fixed-effects in Table 2, large-scale privatization is positively and significantly associated with increases in new firm density at the 5% level. The estimation implies that one standard deviation (0.70) increases 0.83 new firm registrations per 1,000 people aged 15–64. This result is sizeable. For example, Belarus, which has a population of about 9,560,000 people, can expect 7,935 new firms when large-scale privatization is implemented. Small-scale privatization is insignificantly associated with new firm density at the 10% level. Trade openness is positively and significantly correlated with new firm density at the 1% level, whereas gross capital formation negatively affects new firm density at the 10% level. The following factors do not seem to affect new firm density: urbanization, real GDP per capita, and financial sector development by bank credit to GDP.

<sup>3</sup> The sample includes Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Tajikistan, and Ukraine.

**TABLE 2**

POOLED OLS, RANDOM EFFECTS ESTIMATIONS, AND FIXED EFFECTS ESTIMATIONS

Dep: New firm density	Eq.(1)		
	Pooled OLS	Random Effects	Fixed Effects
$trade_{i,t-1}$	-0.003 (0.007)	0.028*** (0.009)	0.034*** (0.011)
$urban\_pop_{i,t-1}$	0.020 (0.016)	0.063* (0.037)	0.144 (0.156)
$credit_{i,t-1}$	0.070*** (0.019)	-0.010 (0.30)	-0.027 (0.033)
$RGDP\ per\ capita_{i,t-1}$	0.00002 (0.00005)	0.000005 (0.00009)	0.0001 (0.0002)
$GCF_{i,t-1}$	0.020 (0.026)	-0.026* (0.015)	-0.029* (0.016)
$small\ privatization_{i,t-1}$	-2.020*** (0.750)	0.394 (0.981)	1.352 (2.005)
$large\ privatization_{i,t-1}$	2.151*** (0.389)	1.202*** (0.392)	1.183** (0.553)
Year dummy	Yes	Yes	Yes
R-squared	0.473	0.402	0.421
Observations	119	119	119
# of countries	25	25	25

Notes: Clustered-adjusted standard errors are reported in brackets. Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

Table 3 presents the results of estimation of Equation (2) using fixed-effects estimator. The interaction term in Equation (2) is expected to show the effect of the level of start-up costs on the impact of large privatization on new firm density. The interaction terms in all columns are negative. In particular, the interaction terms in Models 1 and 2 are statistically significant at the 10% level. Large privatization significantly and positively affects new firm density at the 5% level. Thus, these results imply that the positive impact of large privatization on the new firm density decreases as the cost of start-up increases.

Table 3 presents the results of estimation of Equation (3). The interaction term in Equation (3) is expected to show the effect of the level of start-up costs on the impact of large privatization on new firm density. The interaction terms in all columns are negative. In particular,

**TABLE 3**  
FIXED EFFECTS ESTIMATIONS

Dep: New firm density	Eq.(2)		
	Model 1	Model 2	Model 3
<i>trade<sub>i,t-1</sub></i>	0.030*** (0.007)	0.028*** (0.009)	0.032*** (0.012)
<i>urban_pop<sub>i,t-1</sub></i>	0.343** (0.166)	0.153 (0.172)	0.099 (0.178)
<i>credit<sub>i,t-1</sub></i>	-0.033 (0.033)	-0.026 (0.033)	-0.035 (0.032)
<i>RGDP per capita<sub>i,t-1</sub></i>	0.0003 (0.0002)	0.0001 (0.0002)	0.0002 (0.0002)
<i>GCF<sub>i,t-1</sub></i>	-0.021 (0.012)	-0.014 (0.019)	-0.023 (0.017)
<i>small privatization<sub>i,t-1</sub></i>	1.194 (1.901)	1.753 (2.191)	1.416 (1.685)
<i>startup_costs<sub>i,t-1</sub></i>	0.062 (0.047)		
<i>startup_days<sub>i,t-1</sub></i>		0.017 (0.017)	
<i>startup_proc<sub>i,t-1</sub></i>			-0.056 (0.072)
<i>large privatization<sub>i,t-1</sub></i>	1.871*** (0.572)	1.397** (0.505)	1.122* (0.615)
<i>×startup_costs<sub>i,t-1</sub></i>	-0.036* (0.021)		
<i>×startup_days<sub>i,t-1</sub></i>		-0.011* (0.006)	
<i>× startup_proc<sub>i,t-1</sub></i>			-0.027 (0.024)
Year dummy	Yes	Yes	Yes
R-squared	0.469	0.469	0.459
Observations	119	119	119
# of countries	25	25	25

Notes: Clustered-adjusted standard errors are reported in brackets. Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

**TABLE 4**  
MARGINAL EFFECTS

Panel (a) Marginal effects of large-scale privatization

	Model 1	Model 2	Model 3
Minimum of start-up costs	1.868*** (0.571)	1.364** (0.502)	1.014* (0.581)
Median of start-up costs	1.555*** (0.505)	1.099** (0.503)	0.879 (0.559)
Maximum of start-up costs	-1.156 (1.544)	0.058 (0.838)	0.690 (0.570)

Notes: Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

Panel (b) Marginal effects of startup costs

	Model 1	Model 2	Model 3
Minimum of large-scale privatization	0.027 (0.027)	0.006 (0.011)	-0.083 (0.057)
Median of large-scale privatization	-0.056** (0.025)	-0.020** (0.008)	-0.146** (0.058)
Maximum of large-scale privatization	-0.091* (0.044)	-0.031** (0.013)	-0.172** (0.072)

Notes: Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

the interaction term in Model 3 is statistically significant at the 5% level. Large privatization significantly and positively affects new firm density at the 5% level. Thus, these results imply that the positive impact of large privatization on the new firm density decreases as start-up cost increases.

To quantitatively interpret how the cost of start-up affects the positive impact of large-scale privatization, the marginal effects of large-scale privatization are calculated at several values of the start-up cost. In Model 1, Panel (a) of Table 4 reports the marginal effects of large-scale privatization according to the minimum, median, and maximum of start-up costs measured as a percentage of the economy's income per capita. The effects of change of large-scale privatization from positive to negative are insignificant as start-up costs increase. This finding means that in minimum start-up costs, large-scale privatization

**TABLE 5**  
ROBUSTNESS CHECK: FIXED-EFFECTS ESTIMATIONS USING REVENUE

Dep: New firm density	Equation (3)		
	Model 1	Model 2	Model 3
$trade_{i,t-1}$	0.034*** (0.006)	0.033*** (0.006)	0.039*** (0.010)
$urban\_pop_{i,t-1}$	0.440*** (0.136)	0.209 (0.187)	0.234 (0.219)
$credit_{i,t-1}$	0.020 (0.027)	0.034 (0.022)	0.014 (0.023)
$RGDP\ per\ capita_{i,t-1}$	0.0002 (0.0002)	0.00008 (0.0001)	0.0001 (0.0002)
$GCF_{i,t-1}$	0.004 (0.019)	0.004 (0.026)	-0.023 (0.034)
$startup\_costs_{i,t-1}$	0.008 (0.012)		
$startup\_days_{i,t-1}$		-0.009 (0.009)	
$startup\_proc_{i,t-1}$			-0.076 (0.049)
$revenue\_privatization_{i,t-1}$	0.095*** (0.026)	0.078** (0.031)	0.057* (0.030)
$\times startup\_costs_{i,t-1}$	-0.004***		
$\times startup\_days_{i,t-1}$		-0.001 (0.0007)	
$\times startup\_proc_{i,t-1}$			-0.0008 (0.003)
Year dummy	Yes	Yes	Yes
R-squared	0.557	0.539	0.475
Observations	100	100	100
# of countries	23	23	23

Notes: Clustered-adjusted standard errors are reported in brackets. Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

**TABLE 6**  
MARGINAL EFFECTS

Panel (a) marginal effects of revenue from privatization

	Model 1	Model 2	Model 3
Minimum of start-up costs	0.095*** (0.026)	0.075** (0.031)	0.054 (0.036)
Median of start-up costs	0.054 (0.034)	0.052 (0.038)	0.049 (0.050)
Maximum of start-up costs	-0.276* (0.138)	-0.039 (0.099)	0.044 (0.069)

Notes: Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

Panel (b) Marginal effects of startup costs

	Model 1	Model 2	Model 3
Minimum of revenue	-0.004 (0.009)	-0.012 (0.008)	-0.078* (0.044)
Median of revenue	-0.052*** (0.014)	-0.022** (0.008)	-0.087** (0.038)
Maximum of revenue	-0.174*** (0.052)	-0.049* (0.026)	-0.110 (0.097)

Notes: Significant variables at 10%, 5%, and 1% significance level are marked with \*, \*\*, and \*\*\*, respectively.

positively affects the formation of new private firms, whereas large-scale privatization does not help the formation of the new private firms at high start-up costs. A similar pattern can be seen in Table 4, Columns 2 and 3.

Panel (b) in Table 4 presents the marginal effects of start-up costs calculated at the minimum, median, maximum degrees of large-scale privatization. All columns show a similar pattern, wherein a high degree of large-scale privatization results in strong positive effect of decreasing start-up barriers on new firm formation. However, the marginal effects in Panel (b) of Models 1–3 as shown in Table 4 are significant in the interval between the median value of large-scale privatization reform index and the maximum degree at the 5% level. By contrast, no significant effects were observed at the minimum degree of large-scale privatization index.



Table 5 shows the results of robustness check. To address the concerns on the low variations of large-scale privatization, we use the revenue from privatization similar to that in Equation (3).<sup>4</sup> The results presented in Tables 5 and 6 are similar to those in Tables 3 and 4.

## V. Conclusion

This paper examined how reform in large-scale privatization and start-up barriers interactively affect the density of new firm formation across transition countries. We measured start-up barriers based on start-up costs, start-up day, and start-up procedures. The empirical results show that large-scale privatization significantly affects new firm density. The positive effect of large-scale privatization on new firm density decreases as start-up cost increases. The positive impact of deregulation related to start-up on new firm formation intensifies when privatization reform works well.

This type of empirical analysis is subject to several limitations. The variation of privatization indicator decreases with the progress of transition because this indicator has a lower and upper bound. Time span is not sufficiently long. Thus, it captures only the effect of privatization at the final stage of transition.

Despite these caveats, the major findings of this study have important policy implications. First, policy makers should implement large-scale privatization because it tends to facilitate the formation of new enterprises during the transition process. Second, policy makers should be aware that privatization is a necessary condition but not a sufficient one. Systemic changes and policy reforms along with privatization are a prerequisite for a successful transition, suggesting the presence of a positive effect of privatization only when accompanied by in-depth institutional reform. Third, policies should focus on creating favorable business environments because they are more important than other reform measures such as the speed of reforms.

*(Received 26 July 2016; Revised 2 January 2017; Accepted 3 January 2017)*

<sup>4</sup> We exclude Czech Republic and Montenegro in the sample because we cannot obtain information on their revenues from privatization.

## References

- Arellano, M. and Bover, O. "Another Look at Instrumental Variable Estimation of Error Component Models." *Journal of Econometrics* 68 (No. 1 1995): 29-51.
- Barberis, N., Boycko, M., Shleife, A., and Tsukanova, N. "How Does Privatisation Work? Evidence from the Russian Shops." *Journal of Political Economy* 104 (No. 4 1996): 764-90.
- Belka, M., Estrin, S., Schaffer, M., and Singh, I. Enterprise Adjustment in Poland: Evidence from a Survey of 200 Private, Privatised, and State-Owned Firms. CEPR Discussion Paper No. 233, London: Centre for Economic Policy Research, 1995.
- Berg, A., Borensztein, E., Sahay, R., and Zettlemeyer, J. The Evolution of Output in the Transition Economies: Explaining the Differences. IMF Working Paper No. 73, 1999.
- Blanchard, O. *The Economics of Post-Communist Transition*. Oxford: Clarendon Press, 1997.
- Djankov, S. and Murrel, P. "Enterprise Restructuring in Transition: A Quantitative Survey." *Journal of Economic Literature* 40 (No. 3 2002): 739-92.
- Earle, J. and Estrin, S. "After Voucher Privatisation: The Structure of Corporate Governance in Central Europe and Russia." In Roman Frydman, Cheryl Gray, and Andrzej Rapaczynski (eds.), Vol. 2, U.K.: Central European University Press, 1997.
- Estrin, S., Hanousek, J., Kogenda, E., and Svejnar, J. "The Effects of Privatisation and Ownership in Transition Economies." *Journal of Economic Literature* 47 (No. 3 2009): 699-728.
- Fischer, Stanley, and Ratna Sahay. The transition economies after ten years. National Bureau of Economic Research No. w7664, 2000.
- Guo, Y., Gan, J., and Xu, C. "A Nationwide Survey of Privatized Firms in China." *Seoul Journal of Economics* 21 (No. 2 2008): 311-31.
- Hanson, P. "The Russian Economic Puzzle: Gong Forwards, Backwards, or Sideways?." *International Affairs* 83 (No. 5 2007): 869-89.
- Hare, P. "Privatisation in Comparative Perspective: An Overview of the Emerging Issues." In Estrin, S. (ed.), *Privatisation in Central and Eastern Europe*. Essex: Longman Group, pp. 31-53, 1994.
- Havrylyshyn, O., and McGettigan, D. "Privatization in Transition Countries." *Post-Soviet Affairs* 16 (No. 3 2000): 257-86.
- Jackson, J., Klich, J., and Poznanska, K. *The Political Economy of*

- Poland's Transition: New Firms and Reform Governments*, Cambridge: Cambridge University Press, 2005.
- Johnson, S., Kaufmann, D., and Shleifer, A. Politics and Entrepreneurship in Transition Economies. The William Davidson Institute Working Paper No. 57, 1997.
- Klapper, L., Amit, R., and Guillen, M. "Entrepreneurship and Firm Formation Across Countries." In Lerner, J., and Shoar, A. (eds.), *NBER Volume on International Differences in Entrepreneurship*. U.S.A.: University of Chicago Press, 2010.
- Klapper, L., and Love, I. The Impact of Business Environment Reforms on New Firm Registration. World Bank Paper, 2011.
- Konings, J., and Walsh, P. "Disorganisation in the Process of Transition: Firm Level Evidence from Ukraine." *Economics of Transition* 7 (No. 1 1999): 29-46.
- Kornai, J. "Transformational Recession: The Main Causes." *Journal of Comparative Economics* 19 (No. 1 1994): 39-63.
- Mickiewicz, T. *Economic Transition in Central Europe and Commonwealth of Independent States*. New York: Palgrave Macmillan, 2005.
- Murrell, P. "The Transition According to Cambridge Massachusetts." *The Journal of Economic Literature* 33 (No. 1 1995): 164-78.
- Nellis, J. Time to Rethink Privatization in Transition Economies?. IFC Discussion Paper No. 38, Washington, DC: World Bank, 1999.
- Pohl, G., Anderson, R., Claessens, S., and Djankov, S. Privatisation and Restructuring in Central and Eastern Europe: Evidence and Policy Options. World Bank Technical Paper No. 368, 1997.
- Rajan, R. and Zingales, L. The Emergence of Strong Property Rights. NBER Working Paper No. 9478, 2003.
- Sachs, J., Zinnes, C., and Eliat, Y. The Gains from Privatisation in Transition Economies: Is Change of Ownership Enough?. Harvard Institute for International Development Discussion Paper No. 63, 2000.
- Scarpetta, S., Hemmings, P., Tresselt, T., and Woo, J. The Role of Policy and Institutions for Productivity and Firm Dynamics: Evidence from Micro and Industry Data. OECD Working Paper No. 329, 2002.
- Ticha, M. "State or Private Ownership? A Survey of Empirical Studies." *Review of Economic Perspectives* 12 (No. 2 2012): 120-44.
- Yeager, T. *Institutions, Transition Economies, and Economic Develop-*

ment. Colorado: Westviews Press, 1999.

Zecchini, S. *Lessons from the Transition: Central and Eastern Europe in the 1990s*. Dordrecht: Kluwer Academic, 1997.

Zinnes, C., Y. Eilat, and J. Sachs. The Gains from Privatization in Transition Economies: Is "Change of Ownership" Enough? IMF Staff Paper No. 48, 2001.