# A Mechanism Design for the Firm Performance Analysis of Transition Economies

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**Abstract**: Ever since the Soviet Union collapsed in 1991, transition countries have adopted the market economy system. However, some of these countries are currently more tied in reciprocal economic relationships with European Union members, the pro-EU group, while[ others continue to maintain pre-existing ties, the pro-Russia group. The purpose of this paper is set to tackle how firms perform differently across two groups both theoretically and empirically. In particular, a game model is first developed to evaluate if an ex-communist country networking effect persists. Second, if it has resulted in deterioration of the firm performance of the pro-Russia group compared to that of the pro-EU group, and third if a networking effect is able to enhance the firm performance of the pro-Russia group. The predictions of the model are tested empirically with two regression models controlling for the size effect of the firms within the transitional economies. Because long-lasting political ties with Russia in CEE countries can generate endogeneity, a 2SLS estimation using a secondary data is attempted for testing some propositions. The dataset is collected from the Business Environment and Enterprise Performance Survey jointly constructed by the World Bank and the European Bank for Reconstruction and Development. The empirical results have two important findings based on the secondary data. First, in terms of innovative capability and input-output efficiency, firms in the pro-EU group outperform those in the pro-Russia group. Second, the networking effect can compensate for firm performance in the pro-Russia group even though firm efficiency is lower than the pro-EU group. The findings of the paper suggest two kinds of business strategies. First, between transitional economies and pro-Russian countries, the former is a better place for making investments as the former can request to pay higher embedded costs. Second, the networking effect of pro-Russian countries cannot be discounted. Indirect exports based on a mutual long-term relationship across pro-Russian countries while pivoting on Russia are a non-negligible factor.

**Keywords**: Communism, Performance, Transition, Innovation, Transition

## 1. Introduction

The economies of the Soviet bloc were closely tied to each other under a command economy[1]. However, in 1991, the Soviet Union collapsed. In 1993, the European Union (EU) was launched, and since then former Soviet bloc countries began to expand their business relationships with European countries and undertook institutional and legal reforms along with corporate governance restructuring. These countries, which are now adopting market capitalism, are called transition economies.

Transition economies have three distinctive characteristics. First, the economic growth of a few transition countries has been mainly due to development assistant programs designed to introduce a free market system, privatization, and institutional revolution. According to [2] and [3], they are the biggest experiments in the history of the modern economy. Nevertheless, they are still closely tied with Russia

both politically and economically. For instance, the so-called Russian Commonwealth (CIS: Commonwealth of Independent States) have eleven member states (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan). Second, market openness increases inbound foreign direct investment (FDI) into their territories. In addition, the privatization drive creates a handful of new startups while the private subsidiaries of state-owned firms are also launched. In contrast to [4] and [5], this paper is designed to demonstrate that inbound FDI increases employment in transition economies. Third, cost inefficiency due to traditional Soviet ties remains a significant factor despite the transition to a market economy.

Building on these significant features of transition economies, this paper focuses on how the fundamental characteristics of transition economies affect firm performance. In pursuit of this question, sharing an ex-communist history cannot simply be neglected because strong political and economic ties with Russia are an important impetus to the firm performance of transition countries. This type of institutional role can be understood as a pragmatic response because a strong tie with Russia can play the role of a cash-cow to firms in transition economies, which in turn can compensate for country-specific cost inefficiency. The main questions of this paper are even more critical after the Ukraine–Russia war began in 2022. Historically pro-Russian countries have chosen either their current strategic stance or a new growth path toward pro-EU countries. If a majority of pro-Russia countries turned into pro-EU countries, then Russia would encounter weaker economic and political ties with its long-lasting allies. In particular, this study directly examines how an implicitly embedded networking effect prevailing amongst pro-Russian countries affects the behaviors of these two different groups. According to [6], the MNEs from the EU take advantage of firms in the region of the transition countries as local part suppliers and final assemblers. Their FDIs can generate positive contributions to the economic development of transnational countries.

The research question of this paper is straightforward. Acknowledging strong political ties with Russian economy, how transition becomes to affect firm performances in two different groups is a key question. So, it is intended to develop a mechanism design, and by this process, some propositions are aimed to be derived. Then, the objectives of this paper are first set to analyze the firm performance of transition countries, second, to scrutinize which firms from the pro-EU group can perform better than those from the pro-Russia group, and third to identify some important explanatory variables that determine the firm performance of transition economies. In the paper, twenty-eight transition economies are classified into either a pro-EU group or a pro-Russia group.

## 2. Model

### 2.1 Basic Framework

A theoretic model is designed to explore four questions. First, are firms in the pro-EU group more likely to rely on their businesses relationship with the EU? This necessitates a subsequent question of if they need to maintain a business relationship with Russia. Second, how do ex-communist oriented external networking effects, still prevailing across transition countries, affect domestic firm performance and is there a mechanism whereby they can they perform better than firms in pro-EU countries? Third, how do networking effects compensate for cost inefficiency amongst the pro-Russia group? This problem is frequently noted as a major obstacle for enhancing firm performance. These questions are analyzed using a game model. The empirical part of the paper is designed to demonstrate how firm characteristics affect performance by taking the networking effect into consideration. With limited information, this paper attempts to establish proxies for the networking effect as well as firm characteristics.

Denote $i$ as a firm in a transition country $j$. Initially, all transition countries belong to the pro-Russia

group $(R)$ and this country factor affects $i$'s behavior in any case. Therefore, $i$ has no choice but to produce $q^R$ where the superscript $R$ represents the pro-Russia group, and $q$ represents the production quantity. Any country in $R$ can transit to the pro-EU group $(E)$ while producing $q^E$ where the superscript $E$ represents the pro-EU group, but $j$ must experience a transition period $(RE)$. In the model, it should be noted that any country within $R$ is an element of $R$ while any country within $E$ is an element of $E$. During $RE$, $i$'s production strategy is to mix $q^E$ and $q^R$ according to $\theta q^R + (1-\theta)q^E$ where $0 \leq \theta \leq 1$. The value of $i$'s profit in $j$ is defined as (1) where $j \in (R, RE, E)$. The market price is $p$ and the marginal cost is $c$, so $(p-c)$ represents profitability as follows:

$$\pi_i = (p-c)(\theta q^R + (1-\theta)q^E). \tag{1}$$

Transition countries are located in a gray zone politically, which deters an effective free competition mechanism[7]. However, due to the legacy of communism, an external synergy effect throughout the reciprocal interaction is still outstanding in $R$. Traditionally, not only with political relationships, but also in economic relationships are transition countries in $R$ tied with Russia. For instance, mutual economic interactions within ex-communist countries along with traditional country-wise external networking or locational closeness can affect firm performance of $R$. In the model, $\mu$ represents the external networking effect originating from such political-economic ties within $R$. Thus, $\mu$ is assumed to be greater than zero. Reflecting $\mu$, $\pi_{i,t}^R$ is defined as (2) where $c^E$ represents the marginal cost when it belongs to $E$. Similarly, $i$'s profit in $E$ is defined as (3). Then, $\pi_i^j$ under $RE$ is given in (4) as follows:

$$\pi_i^R = (1+\mu)\{(p-c^R)q^R\} \tag{2}$$

$$\pi_i^E = (p-c^E)q^E \tag{3}$$

$$\pi_i^{RE} = (1+\mu)[(p-c^R)\{q^E + \theta(q^R - q^E)\}] \tag{4}$$

When exposed to comparatively competitive business environments, $i^E$ does not take advantage of $\mu$ as it can reduce firm-specific innovative capability. At the same time, there is a tendency for $i^R$ to show cost inefficiency due to inferior production technology as well as communist-oriented social practices and corruption whilst $i^E$, by actively inviting Western European firms' investments or joint partnerships, are relatively more cost-effective; hence, it is assumed to be $c^R > c^E$.

Proposition 1 reveals that even $i$ under $j = E$ is inclined to maintain its production for the Russian market, and this is a fundamental reason why Russia is still considered as a leading country for transition countries. However, one cannot attribute this behavior solely to $j$'s political reliance on Russia. In practice, Russian markets are focused on traditional industry sectors such as minerals, food, and raw materials. In terms of natural resources, not all transition countries are equally endowed, so they are evaluated by the degree of endowment [8][9]. According to [10], private property is the nexus for resource-driven economic growth. In fact, the EU market is understood as a means toward diversification for transition countries, which enhances its production scale and efficiency. This is why trade openness frequently results in higher economic growth across transition countries, ultimately accelerating economic reforms[11].

**Proposition 1.** When $j$ transits from $R$ to $E$, $i$ is generically willing to put more weight on $q^R$ during $RE$ and this is the case even under $j = E$.

Proof. By the definition of a mixed[Fig. 1] The interval for $\mu$

strategy, it should be $\theta q^R + (1-\theta)q^E \geq 0$, which can be rewritten into $\theta \geq \frac{q^E}{q^E - q^R}$. Because $i^E$ would never set $q^E = 0$, it is always $\theta > 0$. For any $\theta > 0$, $q^R > q^E$ is satisfied.
Q.E.D.

As long as transition countries are located in the former USSR, institutional effects cannot be disregarded when it comes to firm performance [12][13]. Proposition 2 reveals that a former Soviet bloc networking effect can increase firm performance. At a glance, one can say that $\mu$ can enhance $i^R$ exogenously; however, there is still a chance to experience $\pi_i^E > \pi_i^R$ if $1 \leq \mu < \frac{p-c^R}{p-c^R}$. This result suggests that a positive external networking effect is not sufficient to secure superior $i^R$ performance compared to $i^E$. Rather, $i^R$ can earn more than their counterparts only when $\mu \geq \frac{p-c^R}{p-c^R}$. Alternatively speaking, they are able to perform better only when $\mu$ strongly outweighs any cost inefficiency pervasive in $R$.

**Proposition 2**. $i$ under $j = R$ can perform better than $i$ under $j = E$ unless $\mu$ is zero.

Proof. The necessary and sufficient conditions for $\pi_i^R$ dominate $\pi_i^E$, which is given to $[\theta q^R + (1-\theta)q^E][\mu(p-c^R) - (p-c^E)]$. Because $\theta q^R + (1-\theta)q^E > 0$, $\pi_i^R > \pi_i^E$ if $\mu \geq \frac{p-c^R}{p-c^R}$. Figure 1 describes how $\mu$ enables $i$ in $j^R$ to perform better than $i$ in $j^E$. Under $1 \leq \mu < \frac{p-c^E}{p-c^R}$, either $\pi_i^R > \pi_i^E$ or $\pi_i^R < \pi_i^E$ is possible; however, it is always $\pi_i^R > \pi_i^E$ if $\mu \geq \frac{p-c^R}{p-c^R}$.
Q.E.D.

Generically, $i^R$ is cost inefficient and such cost inefficiency reduces its performance. According to Proposition 3, $j$'s strong political and economic tie with Russia can compensate for $i^R$'s cost inefficiency.

**Proposition 3**. The higher the cost inefficiency, the more difficult for $i$ under $j = R$ to obtain superior performance unless it is compensated by $\mu$.

Proof. Let $c^{R'}$ be $c^{R'} > c^R$. Then, $\mu' > \mu$; $i$ under $j = R$ can earn $\pi_i^R > \pi_i^E$ if it obtains a higher $\mu$.
Q.E.D.
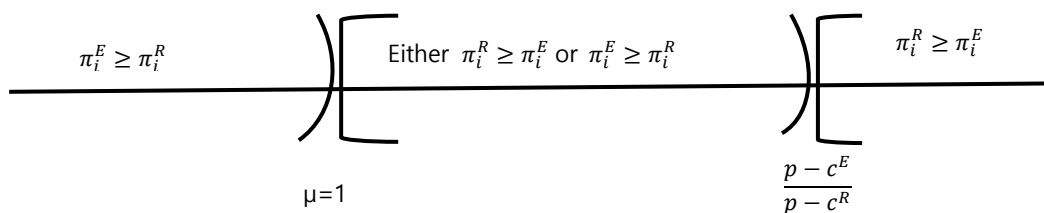


[Fig. 1] The Interval for $\mu$

# 3. Research Method

## 3.1 Research Design

In this paper, $j$ is considered as $R$ if its exports are sent to Russia the most, and $E$ if its exports head to one of the EU members the most. Albania, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Macedonia, Montenegro, Poland, Romania, Russia, Serbia, Estonia, Hungary, Slovakia, and Slovenia are $E$ while Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Mongolia, Tajikistan, Ukraine, and Uzbekistan are $R$. On average, $E$ shows a higher export sales ratio compared to $R$; the average export ratio of $E$ towards its largest EU partner country is 22.11% while that of $E$ to Russia remains at 16.96%.

## 3.2 Research Instrument

The transition countries are classified into regional blocs. Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Kosovo, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, and Macedonia are Central and Eastern Europe (CEE) members. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan are Commonwealth of Independent States (CIS) members. This dichotomy is worth pursuing because previous studies have reported that Central Eastern European countries show similar business cycles as the EU whereas other transition economies show idiosyncratic business cycles [7][8].

## 3.3 Dataset

The dataset used in the paper is a secondary data from the Business Environment and Enterprise Performance Survey jointly pursued by the World Bank and the European Bank for Reconstruction and Development for the years 2008, 2009, 2011, 2012, 2013, and 2014. Its salient feature is that firm level activities are included across nations as well as firm characteristics such as size, main market, and foundation year. This information allows firm-level performance analysis; unfortunately, firm performance measurement is limited to sales, and most questionnaires are survey based ones, which limits the applicability of the database. The descriptive statistics along to correlation matrixes are summarized in Tables 1-6.

[Table 1] Descriptive Statistics: Total Sample

| Variables | Obs. | Avg. | S.D. | Min. | Max. |
|---|---|---|---|---|---|
| 2007 | 51,240 | .0034 | .0585 | 0 | 1 |
| 2008 | 27,551 | .3572 | .4791 | 0 | 1 |
| 2009 | 27,551 | .0598 | .2372 | 0 | 1 |
| 2011 | 51,240 | .0564 | .2308 | 0 | 1 |
| 2012 | 51,240 | .0357 | .1857 | 0 | 1 |
| 2013 | 51,240 | .1996 | .3997 | 0 | 1 |
| 2014 | 51,240 | .01803 | .1331 | 0 | 1 |
| $y_{i,t}$ | 21,755 | 16.17561 | 2.9584 | 0 | 37.0764 |
| $ez_{i,t}$ | 51,240 | .1228 | .3282 | 0 | 1 |
| $rd_{i,t}$ | 26,991 | .0825 | .2751 | 0 | 1 |
| $ni_{i,t}$ | 24,948 | 2.0155 | 1.2650 | 1 | 6 |
| $d3_{i,t}$ | 27,271 | .0299 | .1317 | 0 | 1 |
| $na_{i,t}$ | 21,617 | 7.1020 | 3.0557 | -6.9077 | 23.6677 |
| $op_{i,t}$ | 27,192 | 2.9827 | .4625 | 1.6094 | 5.2626 |
| $em_{i,t}$ | 27,352 | 3.2355 | 1.3641 | 0 | 10.5393 |

[Table 2] Correlation Matrix: Total Sample

|  | $y_{i,t}$ | $ez_{i,t}$ | $rd_{i,t}$ | $ni_{i,t}$ | $d3_{i,t}$ | $na_{i,t}$ | $op_{i,t}$ | $em_{i,t}$ |
|---|---|---|---|---|---|---|---|---|
| $y_{i,t}$ | 1.0000 | | | | | | | |
| $ez_{i,t}$ | 0.0800 | 1.0000 | | | | | | |
| $rd_{i,t}$ | 0.0504 | 0.0668 | 1.0000 | | | | | |
| $ni_{i,t}$ | 0.0774 | 0.0668 | -0.0437 | 1.0000 | | | | |
| $d3_{i,t}$ | -0.0094 | -0.0112 | 0.0558 | -0.0261 | 1.0000 | | | |
| $na_{i,t}$ | 0.8778 | 0.0690 | 0.0475 | 0.0939 | -0.0030 | 1.0000 | | |
| $op_{i,t}$ | 0.1024 | 0.1955 | 0.0944 | -0.0128 | 0.0199 | 0.1166 | 1.0000 | |
| $em_{i,t}$ | 0.5050 | 0.1790 | 0.1494 | 0.0186 | 0.0868 | 0.5040 | 0.3348 | 1.0000 |

[Table 3] Descriptive Statistics: Pro-Russia Group

| Variables | Obs. | Avg. | S.D. | Min. | Max. |
|---|---|---|---|---|---|
| 2007 | 14,899 | 0 | 0 | 0 | 0 |
| 2008 | 14,899 | .3166 | .4651 | 0 | 1 |
| 2009 | 14,899 | .0626 | .2424 | 0 | 1 |
| 2011 | 14,899 | .1942 | .3956 | 0 | 1 |
| 2012 | 14,899 | .1083 | .3108 | 0 | 1 |
| 2013 | 14,899 | .3137 | .4640 | 0 | 1 |
| 2014 | 14,899 | .0042 | .0648 | 0 | 1 |
| $y_{i,t}$ | 11,594 | 16.7012 | 3.0389 | 6.9077 | 32.236 |
| $ez_{i,t}$ | 14,899 | .2102 | .4074 | 0 | 1 |
| $rd_{i,t}$ | 14,757 | .0530 | .2241 | 0 | 1 |
| $ni_{i,t}$ | 13,786 | 2.2067 | 1.3482 | 1 | 6 |
| $d3_{i,t}$ | 14,800 | .0177 | .0968 | 0 | 1 |
| $na_{i,t}$ | 11,840 | 7.5854 | 3.3165 | -6.9077 | 23.6677 |
| $op_{i,t}$ | 14,745 | 2.9032 | .4542 | 1.7917 | 5.2522 |
| $em_{i,t}$ | 14,831 | 3.2446 | 1.3353 | 0 | 10.5393 |

[Table 4] Correlation Matrix: Total Sample

|  | $y_{i,t}$ | $ez_{i,t}$ | $rd_{i,t}$ | $ni_{i,t}$ | $d3_{i,t}$ | $na_{i,t}$ | $op_{i,t}$ | $em_{i,t}$ |
|---|---|---|---|---|---|---|---|---|
| $y_{i,t}$ | 1.0000 | | | | | | | |
| $ez_{i,t}$ | 0.0586 | 1.0000 | | | | | | |
| $rd_{i,t}$ | 0.0262 | 0.0604 | 1.0000 | | | | | |
| $ni_{i,t}$ | 0.0810 | 0.0909 | -0.0197 | 1.0000 | | | | |
| $d3_{i,t}$ | 0.0097 | -0.0054 | 0.0512 | 0.0183 | 1.0000 | | | |
| $na_{i,t}$ | 0.8861 | 0.0611 | 0.0225 | 0.1056 | 0.0142 | 1.0000 | | |
| $op_{i,t}$ | 0.1304 | 0.2082 | 0.0627 | 0.0370 | 0.0356 | 0.1436 | 1.0000 | |
| $em_{i,t}$ | 0.4963 | 0.2008 | 0.1287 | 0.0502 | 0.0687 | 0.4917 | 0.3615 | 1.0000 |

[Table 5] Descriptive Statistics: Pro-Russia Group

| Variables | Obs. | Avg. | S.D. | Min. | Max. |
|---|---|---|---|---|---|
| 2007 | 12,652 | .0139 | .1171 | 0 | 1 |
| 2008 | 12,652 | .4049 | .4909 | 0 | 1 |
| 2009 | 12,652 | .0565 | .2310 | 0 | 1 |
| 2011 | 12,652 | 0 | 0 | 0 | 1 |
| 2012 | 12,652 | .0172 | .1301 | 0 | 1 |
| 2013 | 12,652 | .4392 | .4963 | 0 | 1 |
| 2014 | 12,652 | .0680 | .2518 | 0 | 1 |
| $y_{i,t}$ | 10,161 | 15.5758 | 2.7436 | 9 | 37.0764 |
| $ez_{i,t}$ | 12,652 | .25 | .4330 | 0 | 1 |
| $rd_{i,t}$ | 12,234 | .1181 | .3227 | 0 | 1 |
| $ni_{i,t}$ | 11,162 | 1.7793 | 1.1095 | 1 | 6 |
| $d3_{i,t}$ | 12,471 | .0445 | .1625 | 0 | 1 |
| $na_{i,t}$ | 9,777 | 6.5165 | 2.5885 | -6.9077 | 17.6785 |
| $op_{i,t}$ | 12,447 | 3.0768 | .4545 | 1.6094 | 5.2626 |
| $em_{i,t}$ | 12,521 | 3.2247 | 1.3972 | 0 | 9.9447 |

[Table 6] Correlation Matrix: Pro-Russia Group

|  | $y_{i,t}$ | $ez_{i,t}$ | $rd_{i,t}$ | $ni_{i,t}$ | $d3_{i,t}$ | $na_{i,t}$ | $op_{i,t}$ | $em_{i,t}$ |
|---|---|---|---|---|---|---|---|---|
| $y_{i,t}$ | 1.0000 | | | | | | | |
| $ez_{i,t}$ | 0.1401 | 1.0000 | | | | | | |
| $rd_{i,t}$ | 0.1317 | 0.0624 | 1.0000 | | | | | |
| $ni_{i,t}$ | -0.0167 | 0.0590 | -0.0310 | 1.0000 | | | | |
| $d3_{i,t}$ | 0.0131 | -0.0252 | 0.0415 | -0.0366 | 1.0000 | | | |
| $na_{i,t}$ | 0.8524 | 0.1138 | 0.1352 | -0.0173 | 0.0214 | 1.0000 | | |
| $op_{i,t}$ | 0.1637 | 0.1675 | 0.0877 | -0.0126 | -0.0209 | 0.1806 | 1.0000 | |
| $em_{i,t}$ | 0.5448 | 0.1558 | 0.1726 | -0.0273 | 0.1049 | 0.5579 | 0.3169 | 1.0000 |

## 3.4 Equations

The main purpose of this section is to construct a research method for test propositions 1-3. Transition countries are homogenous as they share a communist past. This implicates that endogeneity is embedded. For instance, firm age, particularly within pro-Russia group, can be endogeneously associated with firm performance as the older the firm is, the more it is likely to have a keen relationship with Russian economy. In order to circumvent the problem, 2SLS (two-stage least squares) estimation is used. By estimating (5) using instrument variables, the unbiased $\widehat{op}_{i,t}$ is derived in the 1$^{st}$ stage, allowing estimation of the unbiased coefficients from (6). By this technique, one can circumvent endogeneity while deriving orthogonal estimators for explanatory variables.

$$op_{i,t} = \alpha + e1_{i,t} + e2_{i,t} + e3_{i,t} + e4_{i,t} + ej_{i,t} + \varepsilon_{i,t} \tag{5}$$

$$y_{i,t} = t + ez_{i,t} + rd_{i,t} + ni_{i,t} + d3_{i,t} + na_{i,t} + \widehat{op}_{i,t} + em_{i,t} + e_{i,t} \tag{6}$$

Because transition countries are natural resource oriented economies, firm type can affect firm performance and so the following instrument variables are used for (5). For instance, $e1_{i,t}$ is a dummy when $i$ is the privatized firm of a state-owned firm, $e2_{i,t}$ is a dummy when $i$ began as an original private firm, $e3_{i,t}$ is a dummy when $i$ is a private subsidiary of a formerly state-owned firm, $e4_{i,t}$ is a dummy when $i$ is a joint venture with foreign partner(s), and $ej_{i,t}$ is the percentage of total annual sales paid in informal payments.

In (6), $y_{i,t}$ is natural logged sales, and $t$ is the time dummy for 2007–2014. As an explanatory variable, $ez_{i,t}$ measures how often $i$ is required to make additional payments or informal gifts, which is a proxy for gauging social cost inefficiency. $rd_{i,t}$ is a dummy variable that gives the value of one when $i$ has invested research and development for three years. $ni_{i,t}$ is also a dummy variable that gives the value of one when $i$ has introduced new products or services in the last three years. The percentage of $i$'s indirect sales exports over total exports is $d3_{i,t}$, which is used as a proxy to measure $\mu$. The natural logged total labor cost is $na_{i,t}$. The age ($\widehat{op}_{i,t}$) of $i$ and total employees ($em_{i,t}$) are included to control for the size effect.

## 3.5 Statistical Tools

As a statistical tool, STATA ver14 is used for data analysis.

# 4. Results

## 4.1 Main Findings

In terms of input-output efficiency, $i^R$ is comparatively inefficient relative to $i^E$, and consequently one can presume that $\mu$, prevailing within $R$, would ask for $i^R$ to afford higher unofficial costs, which is consistent with [14][15].

According to Model I in Table 1, additional payments or informal gifts turn out to significantly decrease $i^R$'s sales. Although the coefficients of $d3_{i,t}$ are not significant to both groups, it is worthwhile mentioning that the proxy for $\mu$ enhances the sales of $i^R$ while it lowers $i^E$'s; hence, $i^R$'s cost inefficiency should not necessarily be regarded as a disadvantageous factor because $\mu$ can compensate for such cost inefficiency. When it comes to innovation capability, $i^E$ turns out to be superior to $i^R$ according to Model II in Table 2. In particular, $i^E$ can increase sales if it introduces a new product or service in three years. However, $i^E$ does not benefit from $\mu$. This result is broadly consistent with [16], which argues that pro-market policies are able to develop the economic conditions of transition countries by overcoming bureaucratic barriers. In summary, $i^R$ is more likely to rely on $\mu$, which can compensate for its cost inefficiency; in contrast, $i^E$ is less likely to rely on $\mu$ as it can expand its sales through stronger innovation capability, which reveals some different results from [4][5].

[Table 7] The Impact of $\mu$ and Innovations on Firm Performance: Pro-Russia Group vs. Pro-EU Group

| | Model I | |
| --- | --- | --- |
| | Pro-Russia Group | Pro-EU Group |
| 2007 | - | 10.7551***<br>(.6773) |
| 2008 | 10.0859 ***<br>(.22575) | 9.8707***<br>(.38547) |
| 2009 | 9.9701***<br>(.2867) | 9.4518***<br>(.5476) |
| 2011 | 9.9788***<br>(.2423) | - |
| 2012 | 9.9093***<br>(.2817) | 10.0690***<br>(.5195) |
| 2013 | 10.0176 ***<br>(.2323) | 9.6996***<br>(.4147) |
| 2014 | 9.4953***<br>(.4249) | 9.2646***<br>(.3406) |
| $ez_{i,t}$ | -.0818***<br>(.0213) | -.0121<br>(.0221) |
| $rd_{i,t}$ | - | - |
| $ni_{i,t}$ | - | - |
| $d3_{i,t}$ | .3247<br>(.0024) | -.2009<br>(.00151) |
| $na_{i,t}$ | .9273***<br>(.0516) | .7231***<br>(.1050) |
| $op_{i,t}$ | -.1061**<br>(.0533) | -.0067<br>(.0522) |
| $em_{i,t}$ | .0450<br>(.0684) | .3112***<br>(.0993) |
| R2<br>Obs. | 0.7312<br>4,919 | 0.6919<br>3,168 |

1. The numbers in parentheses are standard errors.
2. *, **, and *** are significant at the 90%, 95%, and 99% level.

[Table 8] The Impact of $\mu$ and Innovations on Firm Performance: Pro-Russia Group vs. Pro-EU Group

| | Model II | |
| --- | --- | --- |
| | Pro-Russia Group | Pro-EU Group |
| 2007 | - | 11.0857***<br>(.6986) |
| 2008 | 9.6673*** | 10.0130*** |

| | | |
|---|---|---|
| 2009 | (.28838) 9.5487*** | (.3958) 9.6363*** |
| 2011 | (.3558) 9.7386*** | (.5537) - |
| 2012 | (.2778) 9.6383*** | 10.2830*** |
| 2013 | (.3235) 9.7863*** | (.5425) 9.8571*** |
| 2014 | (.2641) 9.1826*** | (.4357) 9.4031*** |
| | (.4347) | (.3589) |
| $ez_{i,t}$ | - | - |
| $rd_{i,t}$ | .0212 (.1300) | -.0164 (.1254) |
| $ni_{i,t}$ | .1384 (.1132) | .1872** (.0787) |
| $d3_{i,t}$ | .2193 (.2578) | -.2647* (.1524) |
| $na_{i,t}$ | .9315*** (.0576) | .6764*** (.1075) |
| $op_{i,t}$ | -.0812 (.0540) | -.0203 (.0523) |
| $em_{i,t}$ | .0418 (.0778) | .3516*** (.1019) |
| R2 Obs. | 0.7171 5,078 | 0.6930 3,774 |

1. The numbers in parentheses are standard errors.
2. *, **, and *** are significant at the 90%, 95%, and 99% level.

**4.2 Discussion**

Main findings of the previous section have three important strategic aspects. First, from the perspective of multinational corporations, it is important to acknowledge that social inefficiency is a hidden cost amongst the pro-Russia group when it comes to foreign direct investment. The hidden cost can explain [17]'s such early forecasting that transition countries would not be able to escape from Dutch disease even though transition countries are endowed with natural resources relative to West Europe [18][19]. Second, [20] points out that the CEE(Central and Eastern Europe) countries, politically tied in USSR under command economic system, are likely to lose integrity each other. By this virtue, firm-type selection becomes a key success factor as it affects firm performance as well as sustainability given the condition that the networking effect is pervasive. Third, the less the capital efficiency is, the lower the innovation would occur in the pro-Russia group and thus its firms are inclined to depend on economic ties with Russia more strongly. In fact, this deters their rapid growth. Awkwardly, this again makes the firms in the pro-Russia group lean toward traditional cooperation with Russia[21]. In the estimation result, indirect exports account for a non-negligible portion of firm performance amongst firms in the pro-Russia group, which is a hidden obstacle to foreign investors as well. Local firms may be able to take advantage of non-accounting methods while foreign firms cannot without having the networking effect in the pro-Russia group.

## 5. Conclusions

The most important feature of this paper is to better understand a fundamental dilemma for transition countries. The game model predicts that an ex-communist networking effect has different impacts on the two groups. The cost inefficiency of the pro-Russia group is compensated for by a networking effect, which can indirectly enhance its firm performance. In comparison, innovation capability plays an

important role in the firm performance of the pro-EU group. The empirical results reveal that the external networking effect enhances the firm performance of the pro-Russia group by reducing intra-group cost inefficiency; this is a fundamental reason why those countries within the pro-Russia group are inclined to choose Russia as their main business counterpart even when more the gains from trade with the EU might be expected. Based on the theoretical and empirical findings of the paper, any foreign investor might prefer making investments in the pro-EU group to the pro-Russia group in order to circumvent such hidden networking effects while overcoming cost inefficiency. Therefore, we can conclude that the pro-Russia group might not be able to attract foreign investments effectively as long as it relies on ex-communist bloc oriented inefficiency, which would cause them to remain as Russia-dependent countries.

The limitations of this paper are as follows. First, the indirect relationship, based on mutual political ties, between the pro-Russia group and Russia is not clearly measured, and so only proxy measures are used for empirical works. This restraints applicability of this paper. Second, the cost variable is not included due to data limitations. Third, for circumventing endogeneity, a simple 2SLS analysis is attempted but a panel analysis would be more desirable. In a future researches, a new attempt that can materialize political ties along to economic ties with Russia would be explored.

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