

Tran, Hien Thu; Santarelli, Enrico

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# Successful Transition to a Market Economy in Vietnam: An Interpretation from Organizational Ecology Theory

by

Hien Thu Tran

*Business School, MacEwan University; 10700-104 AVE NW Edmonton, Canada*

*e-mail: [tranh63@macewan.ca](mailto:tranh63@macewan.ca)*

Enrico Santarelli

*University of Bologna – Department of Economics, Piazza Scaravilli, 2 – 40121 Bologna, Italy*

*e-mail: [enrico.santarelli@unibo.it](mailto:enrico.santarelli@unibo.it)*

## Abstract

*This paper investigates the rationales for the successful economic transition in Vietnam by applying organizational ecology theory. We claim that Vietnam could achieve a smooth transition because the country preserved the strong institutional capacity of the state in parallel with an instant market liberalization approach. Instead of transforming state-owned firms directly into private-owned firms, the economy produced a population of collectively owned and mixed-ownership enterprises that coexisted with state-owned firms to pave the way for the large-scale emergence of privately owned firms afterward. The mechanism underpinning this transition path lies in the evolution and interaction among three organizational forms during the various stages of the transition. Initially, the new private sector emerges and survives because of receiving “legitimacy spillovers” from the well-legitimized collective and mixed sector that shares some “identity overlap”. Overtime, as the private sector accumulates its constitutive legitimacy it competes with and challenges the existence of the old state and collective sector. Finally, the Schumpeterian “creative destruction” process replaces the old sector with the new dominant sector. Empirically, we test this mechanism using the census data of firms operating in Vietnam during 2000-2010, a period following the “doimoi” policy in 1986 that officially recognized private firms in the constitution and included them in the government’s annual statistical coverage. We apply Blundell and Bond’s generalized method of moments (GMM) estimation technique and Cox’s proportional hazard model to study the interaction effects of economic sectors in terms of profitability and survival respectively.*

**Keywords:** ecology theory, ecological process, ownership type, organizational form, economic sector, transition country, Vietnam.

**JEL Codes:** L2; O2; O5.

## 1. Introduction

The collapse of the Berlin Wall in November 1989 is the moment that marked the beginning of the transition towards a market economy in the former socialist countries. Nearly three decades later, most of these countries are fully recognized as market economies. However, the celebratory road to a market economy does not produce the same economic performance for every transition country. While China and Vietnam performed well and experienced quite a smooth transition, the Baltic states of Estonia, Latvia, and Lithuania and the Balkan states of Bulgaria and Romania went through an unexpected sharp decrease in output before regaining the growth momentum, which led them to perform even better than Russia, Ukraine and countries in the Commonwealth of Independent States (Puffer et al, 2010; Sonin, 2013, Malesky and London, 2014).

Economic discussion has so far attributed this phenomenon to the speed of transition, particularly “shock therapy” versus “gradualism”. While shock therapists took the case of East European countries and Baltic states as a typical example of fast liberalizers and successful stabilizers, gradualists cited the success of China’s gradual liberalization approach as a direct result of smooth economic transformation and high growth rate (Huyghebaert and Quan, 2015; Tang et al 2017). Despite sharing significant similarities in initial conditions and achieving the same positive economic results, Vietnam applied the “Polish style shock therapy” policy, i.e., the overnight deregulation of the pricing system and the immediate unification of multiple and black-market exchange rates in March 1989, and still managed to avoid transformational recession (Popov, 2000: 2). Why could Vietnam create a uniquely successful combination of the “shock therapy” policy and the typical smooth transition outcome of the “gradualism” approach? Both shock therapists and gradualists have failed to answer this question. In addition, until now, no existing research has sought to interpret the rationales behind the unique but successful transition path of Vietnam.

In this paper, we aim to address this lacuna with the support of the ecology theory of organizational forms. We claim that Vietnam could achieve a smooth transition because the country preserved strong institutional capacity of the state in parallel with an instant market liberalization approach. Liberalization alone, when it is not complemented with strong institutions, cannot ensure good performance (Popov, 2000). In particular, Vietnam created a favorable transition institution to support its liberalization efforts by maintaining the mix ownership structure through which it could gradually conserve and convert state-owned and collective entrepreneurship and productive capabilities accumulated from the past into private

entrepreneurship and market-oriented productive capabilities during the transition process. To get a thorough understanding of how this transformation process works, we analyze the interaction of the three organizational forms. Initially, the new private organizational form emerges and survives because of receiving “legitimacy spillovers” from an existing well-legitimized collective and mixed organizational form that shares some “identity overlap” (Hannan et al, 2007; Audia et al, 2006; Xu et al, 2014). Overtime as the private organizational form accumulates its constitutive legitimacy, it competes and challenges the existence of the old organizational forms. Finally, the Schumpeterian “creative destruction” process replaces the out-of-date forms with the new dominant organizational form.

For empirical evidence, we apply this theoretical logic to study the ecological evolution from a dominantly state-owned enterprise (SOE) form to a dominantly privately-owned enterprise (POE) form in Vietnam. Instead of transforming SOEs directly into POEs, the economy produced a population of collectively owned and mixed ownership enterprises (CMOEs) that coexisted with SOEs to pave the way for the large-scale emergence of POEs afterward. In order to support the “shock therapy” approach in market liberalization, this gradual institutional transition aimed to conserve the existing rare productive capabilities and sophisticated expertise of public entrepreneurs in a transitional collective and mixed ownership form, which should gradually fade out as a market economy becomes fully established (Xu et al, 2014). We attempt to understand the dynamic interdependencies of these organizational forms, in either a complementary (supporting) or a substitutive (competing) relationship, using the census data of firms operating in Vietnam during the period 2000-2010, a decade after the *doimoi* policy in 1986 that officially recognized POEs in the Vietnamese constitution and included them in the government’s annual statistical coverage.

Since the implementation of *doimoi*, Vietnam’s impressive economic performance has attracted substantial academic interests (Dollar, 1994; de Vylder and Fforde, 1996). However, these early studies are descriptive, policy-oriented and not based on a consistent theory. We will address this gap by drawing a comprehensive picture of the unique economic transition path in one of the world’s fastest growing countries. We also contribute to the currently overlooked debate about the crucial importance of strong institutions for good performance in economic transition.

## **2. Literature Discussion and Theory**

### **2.1.The Concept of “Transition”**

Most economic theories have not provided a clear-cut meaning of “transition” at the outset when they attempt to explain the rationales underpinning the economic passage from a central planned to a market economy. While the neoclassical tradition sees transition as “the rapid, or gradual move from a position well inside the production possibility frontier to a more efficient position close to the frontier [...] a major change in the coordination and allocative system [...], a change in efficiency” (Allsopp and Kierzkowski 1997:5), the institutionalist tradition considers the transition as an evolutionary process from the formal institutions under the socialist regime to those under the capitalist regime. Based on the insights of Neo-Austrian economics (Colombatto 2002, Boettke and Coyne, 2004), we argue that the term “transition” entails a connection between two opposite kinds of economic system: centrally planned economy and market economy. While the two systems exploit similar production factors (capital, labor, natural resources), they use different strategies for combining these factors to generate more wealth for people. While the centrally planned economy tends to use administrative and arbitrary commands to enforce relationships among economic agents whose assets are mostly owned by SOEs, the market economy tends to use the rule of law to enforce spontaneous relationships agreed upon by private economic agents (POEs). As the centrally planned model is rejected in terms of economic efficiency in both theory and practice, the term ‘transition’ strictly implies a continuous process where the elements of such model are eliminated and substituted by those of the market-compatible one, not vice versa. Implicitly, SOEs are gradually eliminated or transformed into POEs through the privatization process. They cannot support each other or even compete with each other.

### **2.2.Economic Transition: An Interpretation from Organizational Ecology Theory**

Numerous studies over the last two decades have sought to interpret the rationales behind the transition path of former socialist countries. Since almost all such countries experienced a U-shaped growth pattern - an initial decline in growth followed by a gradual rise back to its previous peak - different theories reach a consensus on explaining this pattern. Orthodox transition theorists suggest that the initial and unexpected sharp decrease in output is due to the structural change and the reallocation of resources from the old state ownership sector to the emerging private ownership sector (Lipton and Sachs 1992, Boycko et al, 1993). Heterodox economic schools such as new institutional economics, evolutionary or Neo-Schumpeterian economics, and Neo-Austrian economics departing from the idea of path-

dependence attribute the U-shaped path of transition to the interaction between formal and informal institutions and between new private-owned and existing state-owned organizational forms (Voigt and Engerer 2002, Murrell 1992, Fritsch and Werker 1999). However, despite experiencing the same relocation of resources and structural change, China and Vietnam did not undergo a U-shaped adjustment of output and employment during their transition. Economic performance in Vietnam was impressive during the transition, with constantly rising growth rate from 3.4% in 1986 to the peak 9.5% in 1995 and averaging at 8% afterwards.

The reasons lie in the distinctive reform policies adopted by the two countries. While Vietnam applied a hold-and-see approach that maintains the mixed ownership structure through which it could gradually transform bureaucratic entrepreneurship and valuable productive capabilities accumulated in the past into market-oriented ones during the transition process, China followed the “dual track” liberalization approach to maintain the co-existence of a market track and a planned track (Lau et al, 1997, 2000; Huyghebaert and Quan, 2015; Cai and Liu, 2015; Du and Liu, 2015). The two approaches are similar in the sense that a strong and unified government under the management of the single political Communist Party can use its absolute power to actively conserve pre-accumulated productive capabilities from the previous central planned system and at the same time passively allow the market selection process to bring in the expected evolution of the whole production system.

The national production system consists of the four nearly independent organizational forms: SOE, POE, CMOE, and FOE. Each form is characterized by distinctive way of allocating and exploiting resources and technologies. In particular, while SOEs tend to use administrative and arbitrary commands to enforce relationships among economic agents whose assets are mostly owned by the state, POEs tend to use the rule of law to enforce spontaneous relationships agreed upon by private economic agents. However, it is misleading to consider SOEs and POEs as being totally independent or having little ‘synergistic specificity’. The replacement of the old SOE sector with the new POE and FOE sector during the transition may even require extensive interaction to conserve and transfer central planned productive or entrepreneurial capabilities to market-oriented product systems. To facilitate this interaction, Vietnam created and maintained a mixed and collective organizational form that exhibits characteristics of both central planned and market production system. This mixed organizational form enabled state officers who were equipped with sophisticated

expertise from the central planned economic system to play a role as bureaucratic entrepreneurs to conserve existing rare productive capabilities while waiting for the development of private entrepreneurship, market institutions, and market-based productive capabilities. To some extent, this form replaces the boundary separating the state sector and the private sector with “thick crossing points” where knowledge transfers are crucial, complex, numerous, and interdependent to reduce Williamsonian (1985) transaction costs (Baldwin, 2008: 187). As a result, the combination of distinctive resources and productive capabilities among the old, the transitional, and the new organizational form would provide greater functionality and effectiveness for a smooth and successful transition.

After necessary interaction, over time, the out-of-date state organizational form is gradually replaced by the new innovative private organizational form. Although this “creative destruction” process is well understood and studied at the firm and industry levels, how the process works at the level of the national economic system is still beyond our knowledge. In this sense, going beyond the economic field, we apply organizational ecology theory to explore these selection processes or evolutionary dynamics of organizational forms. The theory investigates how social conditions influence the rate of creation, demise and change of new organizational forms and new organizations (Singh and Lumsden, 1990).

### *2.2.1 State-owned organizational form*

Influenced by the belief in the inherent superiority of public ownership and the central planning mechanism, the socialist economy is characterized by the commanded institutional system and the disappearance of economic institutions supporting private transactions (Kornai 1992). SOEs can mobilize huge amounts of productive resources to achieve their ambitious plans at low transaction costs (Sachs et al, 2000). Further, following the linear model of innovation which has been popular in market economies, SOEs can generate a large skilled labor force and provides a positive spillover effect across the whole economy during the transition period (Fritsch and Werker, 1999). As a result, the state-owned organizational form does play a fundamental role in setting up a solid base of productive capabilities and innovation that creates momentum and boosts economic growth during the transition. However, over time, central planned institutions set up rigid relationships, entrench bureaucracy and cause agent-principal problems, leading to high transaction costs and inefficient use of productive resources (Voigt and Engerer 2002). Thus, although state ownership continued to enjoy full legitimacy in Vietnam’s political institutions and in the

mind of the public, bureaucratic entrepreneurs would have gradually become unproductive entrepreneurs and harmed a sustainable economic growth by their tendency of seeking privileges and protections from the state (Douhan and Henrekson 2008).

### *2.2.2. Private-owned organizational form*

Although SOEs play a pivotal role in the economic system of a socialist economy, market economic institutions and private firms actually do exist in the central planned economy to fulfil the need of informal trade transactions. Due to the lack of legal recognition, private entrepreneurs from POEs have limitation in accessing materials, machines, laborers, and consumers; and thus are capable of providing only simple and less innovative products for the society (for the case of China, see Long, 2010, and Lu et al, 2015; for the case of Vietnam, see Johnson et al, 2002, and McMillan and Woodruff, 1999 ). For the survival and proliferation of POEs as the new organizational form during the transition period, organizational theorists posit that they require recognition and legitimation (Hsu and Hannan, 2005; Perretti et al, 2008). On one hand, the political and constitutive legitimation from governments, laws, and industry associations sets up the legal foundation for the emergence of a new organizational form (Aldrich and Fiol, 1994; Zimmerman and Zeitz, 2002). Indeed, from the master planning of transition countries, two main goals of transition are clearly set as follows: abolishing the centrally planning mechanism and restoring private ownership. The results of this process are the emergence of formal institutions to secure private property and market transactions, and the removal of internal trade barriers to allow both SOEs and POEs to transact freely with any customers.

On the other hand, even when the government has paved the legal way for the existence of private ownership, if the density of POEs is too low, such enterprises still lack legitimacy to proliferate and attract valuable resources. In fact, although many new POEs may have already engaged in small-scale business activities in the past, their small population and limited experience in simple market operations challenge their survival and sustainable growth. As more members “join the club” over time, their collective actions provide legitimation to one another, which decreases their organizational failure rate (Xu et al 2014). Therefore, only when these two conditions are met, can POEs spread from small-scale household production to large-scale industrial production and from simple product systems to complex product systems to capture higher value from realized entrepreneurial opportunities. They can move from spot-exchange transactions in informal markets to transactions based on



various sorts of more or less complex contract structures in formal markets. However, after reaching a certain density level, competition for limited space and resources among POEs begins, resulting in rising exit rates (Hannan and Freeman, 1988; Hannan, 2005; Hannan and Carroll, 1992).

In addition, in the hostile institutional environment of transition countries, the liability of newness requires another source of legitimation for the proliferation of new organizational forms (Singh et al, 1986), that is, the inter-population ecological process between the new organizational form and an existing one (Ruef, 2004; Dobrev et al, 2006), which posits that the density of one form affects the entry and exit rates of the other form. In other words, the current organizational form may exert either a beneficial effect (Audia et al, 2006) or a crowding-out effect (Hannan and Freeman, 1988; Ingram and Baum, 1997) on the new form. State ownership, as an organizational form with higher legal/formal status can transfer legitimacy to private ownership with lower legal/formal status through the large-scale privatization of SOEs and then let privatized enterprises determine their own internal structure and boundaries. This legitimation source is able to quickly create a new emerging private sector and new market-based organizational modes<sup>1</sup>.

The development of both *privatized* enterprises and *new* private enterprises, most of which are small and medium-sized, enables production systems to be more dynamic and innovative. Under favorable market institutions, POEs fill up a number of opportunities to contribute to the national economic growth. Via the linkages with large enterprises, entrepreneurs of small and medium POEs have many opportunities to access capital markets and technological markets (Santarelli and Tran, 2012). They become competitive rivals against corporate or bureaucratic entrepreneurs of large SOEs, which tend to seek privileges and protection from the government.

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<sup>1</sup> Since the promulgation of the Law on Foreign Investment in Vietnam in 1987, the Company Law in 1990 and the Law on Private Enterprises in 1991, there has been a sharp increase in the number of private enterprises. However, the growth of the private sector was still lower than that of the state-owned sector during the period 1991-2000. The output share of the private sector in industries was reduced from 26.7% in 1991 to 21.6% in 2000. This was due to (i) the requirement of a large number of licenses before actual business operations; (ii) the difficulty in accessing state-owned commercial banks, in using land and infrastructure, and in accessing foreign partners (World Bank 1995:68); and (iii) the slow progress of equitization of SOEs, especially large SOEs. The most important milestones of the transition to a market economy were the official application of the Enterprise Law in January of 2000, the signing of the bilateral agreement between the U.S and Vietnam in 2001, and the official accession to the WTO in 2007. The number of registered private enterprises in the three years 2001-2003 was equivalent to the total number registered during the 1990s. Many private enterprises penetrated into heavy industries such as production of steel, cement, and electricity. Moreover, with the emergence of stock markets, private enterprises could obtain capital through the initial public offer (IPO) procedure. Consequently, the output share of the private sector increased to 38.8% in 2005.

### *2.2.3. Collective- and mixed-owned organizational form*

In practice, the privatization process is not as smooth and efficient as one might expect. SOEs with their planned-economy identity and POEs with their free-market identity are ideological rivals and opposing forces (Xu et al 2014). It is hard to imagine that the POE, as an emerging form, would obtain any legitimation benefit from the old form, SOE. Organizational theorists claim that legitimacy spill-overs can only occur as long as there is some overlap of identity, and thus a new organizational form does not have to conform to all the old codes of an existing form (McKendrick and Carroll, 2001; McKendrick et al, 2003). This line of reasoning implies that when state ownership from socialism and private ownership from capitalism have no identity overlap, a third organizational form will act as an intermediary that transfers legitimation between the old and the new. In this scenario, the new form breaks all the codes of the old form but is only partially “new” to the third form, with which it has some identity overlap. The transitional form has identity overlap with both the new and the old forms so that, on one hand, it enjoys the cognitive recognition and social acceptance associated with the old form, and on the other hand, it can transfer legitimacy to the new form. Without the transitional form, the new form would face a hostile institutional environment and find it difficult to survive.

In this sense, researchers consider the collective and mixed ownership as a hybrid form of property ownership that minimizes transaction costs in uncertain transitional stages (Nee, 1992) and offers some safeguards against state encroachment (Che and Qian, 1998). In the course of the transition, the relationships among the three organizational forms likely develop as follows: (i) the old SOE and the new POE forms crowd each other out; (ii) the old SOE and the transitional CMOE forms benefit each other; and (iii) the transitional CMOE form benefits the new POE form, but the new POE form crowds out the transitional CMOE form.

## **2.3. Hypotheses**

For the empirical evidence, to demonstrate that the smooth growth of the Vietnamese economy during the transition period results from the gradual transformation of entrepreneurial resources and productive capabilities from the old state-owned production system to the new market-oriented private system through the transitional collective and mixed system that share some overlap identity with both the old and the new system, we will investigate the evolution and interaction of the three following organizational forms: state,

mixed/collective, and private organizational form<sup>2</sup>. Initially, the SOE sector was the dominant organizational form and enjoyed absolute ideological supremacy while the proliferation of POEs was constrained due to the form's weak legitimation. In this institutional environment, private entrepreneurs were considered as the "exploiting class" in the public mindset. There was little room for POEs to survive, although where they emerged, survived, and prospered, they challenged the legitimacy and ideological supremacy of SOEs. However, from the economic perspective, the maintenance of the state-owned organizational form and its properties was harmful in the long term, when SOEs did not operate autonomously according to market signals and often faced intervention by politicians. Without protection from the state, SOEs gradually became unprofitable and unproductive under the market mechanism. Thus, the relationship between the SOE and the POE forms was entirely competitive (Ingram and Simons, 2000):

*H1a: The density of SOEs has a negative effect on the entrepreneurial performance of POEs, and thus has a positive effect on the exit rate of POEs.*

*H1b: The density of POEs has a negative effect on the entrepreneurial performance of SOEs, and thus has a positive effect on the exit rate of SOEs.*

With respect to the interdependencies between the state economic sector and the mixed/collective sector, the mixed sector emerged and the collective sector regained prominence in response to institutional constraints and the need for market reform. By nature, CMOEs were treated like SOEs since the majority of CMOEs were controlled directly or indirectly by local governments at various levels (Che and Qian, 1998), and they therefore enjoyed legitimacy from the government and other political institutions. Previous research suggests that CMOEs received knowledge and technological spillovers from SOEs (Peng, 2001) and that the share of CMOEs in relation to POEs in the population was higher where the central government's influence was greater and the local government's power was stronger (Jin and Qian, 1998). Thus, as a semi-public form, CMOEs supported and strengthened the backbone position of SOEs. From the perspective of organizational theorists, the two organizational forms were mutually supportive of and legitimated each other:

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<sup>2</sup> Foreign ownership is excluded from our analysis due to its distinctive characteristics that depend on many other geographical, social and economic features beyond the control of the Communist party and the Vietnamese government.

*H2a: The density of SOEs has a positive effect on the entrepreneurial performance of CMOEs, and thus has a negative effect on the exit rate of CMOEs.*

*H2b: The density of CMOEs has a positive effect on the entrepreneurial performance of SOEs, and thus has a negative effect on the exit rate of SOEs.*

With respect to the interdependencies between the collective and the mixed economic sectors and the private sector, the revival and prominence of CMOEs in the Vietnamese economy offered a unique source of legitimation for POEs, as well as an opportunity for experimenting with a gradualist approach to the transition. Particularly, cooperatives and mixed firms were maintained during the transition to transfer the whole or some parts of SOEs and their own material inputs, technical services, and output markets to the emerging private sector. In addition, since they operated under the democratic mechanism and had to bear profit and loss on their own, CMOEs shared identity with POEs in terms of market incentives and non-state ownership (Nee, 1992). Thus, their proliferation exerted a positive effect on POEs, but not vice versa. POEs did not have a similar effect on CMOEs because the POE form represented a new ideology and identity codes that were adversarial to the old, dominant rules represented by the state and collective ownership (Xu et al 2014):

*H3a: The density of CMOEs has a positive effect on the entrepreneurial performance of POEs, and thus has a negative effect on the exit rate of POEs.*

*H3b: However, the density of POEs has a negative effect on the entrepreneurial performance of CMOEs, and thus has a positive effect on the exit rate of CMOEs.*

### **3. Data description**

To explore the evolution and interdependencies of economic sectors as exclusive components of the Vietnamese “modular economic structure” during the transition period, we use a panel dataset extracted and aggregated from the Annual Enterprise Surveys of Vietnam General Statistics Office (GSO) that covers all existing firms in operation each year from 2000 to 2010, which enables us to track the survival and performance of firms over years in Vietnam<sup>3</sup>. All firms that independently keep business account and acquire their own legal status by adopting a formal ownership form (state-owned, private, limited liability,

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<sup>3</sup> We choose this period, 2000-2010, a decade after the *doimoi* policy in 1986 for our analysis due to the fact that the availability of large-scale census data is only possible after 2000 when the government launched the New Enterprise Law. The Law not only removes the discrimination towards POEs, but also officially and seriously includes them in the government’s annual statistical coverage.

corporation, etc.) are subjects of the Annual Enterprise Survey that is conducted and aggregated annually by the GSO<sup>4</sup>. Along with many merits, the database has some limitations. First, since a large informal sector is poorly represented by official statistics, our dataset does not contain data for small household businesses which are not required to officially register. Second, the dataset does not deal with the issue of mergers and acquisitions. The firms are coded in a way that makes it possible to identify when each individual firm enters or exits. The total number of observations in the dataset for each year ranges from 42,307 firms in 2000 to 286,830 firms in 2010.

We categorize organizational forms according to firms' registration information. SOEs consist of central and local SOEs, state-owned limited and share-holding companies with state capital occupying more than 50% of the charter capital. CMOEs include cooperatives and mixed ownership. The POE represented a more complex category, and we grouped three major types of firms into it: private firms, limited liability firms, and shareholding firms. For this study, the POE represented a market-based, new organizational form, the equivalent of private enterprises in the West. In Vietnam, however, "private firms" are just a segment of such firms; the term refers only to firms owned specifically by private individuals, not to other types of firms operating in the private sector, such as limited liability or shareholding firms. We included all three types in the POE category in order to constitute the domestic private sector in Vietnam. The foreign economic sector includes joint ventures and foreign subsidiaries (100% foreign ownership)<sup>5</sup>.

The period 2000–2010 witnessed a sharp increase in the exit of SOEs and CMOEs due to the privatization or dissolution process strengthened by the launch of the Enterprise law in 2000. Particularly in 2000, 37% of SOEs and 27% of CMOEs exit the market. These percentages increase to 87% of SOEs and 98% of CMOEs respectively in 2002. In these three years, the government strongly privatizes most of large SOEs and dissolves nearly all inefficient CMOEs. From 2003 onwards, the exit rate remains at around 15% to 20% for both SOEs and CMOEs which is the natural exit rate due to poor performance and bankruptcy. While the number of SOEs maintains at around 1500 firms with very few start-ups each year since 2006, there has been a remarkable increase of CMOE entries in 2007 (1171 new firms)

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<sup>4</sup> Surveyed enterprises are currently operating under the stipulation of the Law on State-owned Enterprises, Law on Cooperatives, New Enterprise Law, and Law on Foreign Investment, which include enterprises operating on seasonal contracts; enterprises temporarily closing down for innovation, expansion or refurbishment; enterprises temporarily closing down for merger and acquisition.

<sup>5</sup> As shown by Duc (2013), the flow of foreign direct investment is significantly associated with variations in economic institutions in Vietnam.

and in 2008 (nearly 5000 new firms) under the organizational form of partnership. With respect to POEs, the number of new POEs rockets up by about 43,000 per year. Over the period 2000–2004, gross entry rises significantly, from 477 firms in 2001 to 26,981 firms in 2004. In 2005–2010 period, a moderate and consistent increase in new firms occurs, from 31,017 firms in 2005 to 70,359 firms in 2010.

Besides, our data were also extracted from the GSO Provincial Annual Report which includes information about provincial population and density. To clean the data, all of firms with negative total assets, sales and employees are dropped. The outliers are controlled by censoring the top and bottom 1% of observations in the distributions of each variable. The final sample in regressions constitutes 53,546 SOEs; 49,086 CMOEs; and 363,747 POEs operating from 2000 to 2010, which constitute the dataset in the following empirical analysis.

## **4. Methodologies**

### **4.1. Variables**

For our dependent variables, the firm performance equation uses a standard profitability measure, return on sales (ROS), as the dependent variable. Return on sales (ROS) indicates how net income is earned from each thousand Vietnamese dong (VND) of sales. In the firm survival equation we adopt firm exit as the dependent one. We coded 1 if a focal firm at time  $t$  did not exist in our database at time  $t+1$ . Since the census database covers the firm population in Vietnam, the exit of a firm implies bankruptcy or acquisition. In other cases, the firm may have been privatized in case of being a SOE or CMOE. Firm profit is controlled in the firm survival equation.

Our independent variables in both equations are densities of the three major ownership forms, which are the total numbers of firms of a particular form operating in any given year. For SOE density, we counted the number of SOEs each year in an industry, defined at the three-digit standard industrial classification (SIC) level. We constructed CMOE density and POE density in the same way.

We included control variables at various levels: (i) FOE density, combining both wholly foreign-owned subsidiaries and joint ventures; (ii) Firm size, including labor size measured by natural logarithm of total labor of the firm, and economic size measured by natural logarithm of total assets; (iii) Capital intensity is measured as the ratio of total assets to sales in each year; (iv) Debt ratio, measured as the ratio of total debt to total assets, reflects the

firm's financial conditions; (v) Innovation intensity, measured as the ratio of investment into innovation activities to its total sales, is found to be positively associated with firm performance in Vietnam (Santarelli and Tran, 2016); (vi) Industry (two-digit) return on assets (ROA) as a proxy for the industry's profitability level reflects the attractiveness of an industry; (vii) Industry (two-digit) market structure, defined as the mean number of employees per establishment, indicates the dominance by large firms in an industry; (viii) Provincial population density (number of people per square kilometer) indicates the capacity of the regional market; (ix) Entrepreneurial culture is richer in agglomerated cities. We code location, to indicate a more liberal local government policy in a region, as 1 if the firm was located in Hanoi (the capital) and Hochiminh City (the biggest commercial city). Historically, local governments in these regions were more sympathetic to economic reforms and had created more munificent environments for businesses, including private firms; and (x) Year dummies to control for the effect of possible policy changes (due to WTO participation) of the central government during the time period of our study, particularly the year 2007 and 2008.

#### **4.2. Estimation model**

We test our research hypotheses by estimating two equations for each ownership type: performance and survival equation. The performance equation explores how the density of this organizational form influences the performance of the other form, whereas the survival equation explores how the density impacts its survival. The firm performance equation can be written as follows:

$$ROS_{it} = ROS_{it-1}\beta_1 + X_{it}\beta_2 + Z_{it}\beta_3 + v_i + \epsilon_{it} \quad (1)$$

$ROS_{it-1}$  is the one-year lagged dependent variable of firm  $i$  in year  $t$ , which is included to isolate the effect of potential performance shock.  $X_{it}$  is a matrix of independent variables, the density of SOEs, CMOEs, and POEs operating in each three-digit SIC industry.  $Z_{it}$  is a matrix of firm-level, industry-level and province-level control variables.  $v_i$  an unobserved firm-specific time-invariant effect which allows for heterogeneity in the means of the  $ROS_{it}$  series across firms, and  $\epsilon_{it}$  is a disturbance term. A key assumption maintained throughout this work is that the disturbances  $\epsilon_{it}$  are independent across individuals. We also treat the firm-effects  $v_i$  as stochastic, which implies here that they are necessarily correlated with lagged dependent variable  $ROS_{it-1}$ .

Several problems may arise from estimating equation (1): (i) Time-invariant unobserved firm characteristics (fixed effects)  $v_i$  may be correlated with  $X_{it}$  and  $Z_{it}$ ; (ii) The panel dataset has a short time dimension ( $T = 11$ ) and a very large number of firms ( $n > 50,000$ ). Thus, the presence of the lagged dependent variable  $ROS_{it-1}$  may give rise to autocorrelation, since it is correlated with fixed effects. OLS estimators of  $\beta$  are inconsistent, since explanatory variable  $ROS_{it-1}$  is positively correlated with error term ( $v_i + \epsilon_{it}$ ) due to the presence of firm-effects, and this correlation does not vanish as the number of firms in the sample increases. Within groups estimator eliminates this source of inconsistency by transforming the equation to eliminate  $v_i$ . However, for panels in which the number of time periods available is small, this transformation includes a non-negligible correlation between the transformed lagged dependent variable and the transformed error term:  $ROS_{it-1} - \frac{1}{T-1}(ROS_{i1} + \dots + ROS_{iT-1})$  and  $v_{it} - \frac{1}{T-1}(v_{i1} + \dots + v_{iT})$ . Thus within groups estimator is also inconsistent here. To deal with these problems, the system generalized method of moments Blundell and Bond's (1998) GMM estimation technique is the most appropriate method. Compared to the previous difference GMM introduced by Arellano and Bond (1991), the system GMM offers higher efficiency and less finite sample bias.

With respect to the survival equation, to estimate the hazard of exit, we used an event history analysis in which the endogenous variable was the duration until exit, if any. We analyze the *time* from the data collection year until death, i.e. firms exit the market (closing down the business or changing the organizational form). Obviously the 10-year study time does not span enough to observe the death for all entrepreneurs in the sample; and thus, our data are right censored. The variable *exit* is an indicator for whether *time* refers to firm exiting the market (value 1) or end of study (value 0).



In light of the debate about the appropriate parametrizations of waiting time (Ingram and Baum, 1997), we chose to apply Cox's proportion hazard model, which estimates the influence of covariates on the hazard of an exit event without specifying a parametric form of distribution (Cox and Oakes, 1984). The Cox model has been the most frequently used model for duration data (Powers and Xie, 2000); it presumes that hazard rates can be represented as log-linear functions of the covariates. The expression of hazard rate in this model is:

$$H(t) = h_0(t) \exp \sum (X_{it}\beta_1 + Z_{it}\beta_2)$$

where  $h_0(t)$  is the unspecified baseline hazard rate at time  $t$ ;  $X_{it}$  are independent variables for firm  $i$  at time  $t$ ;  $Z_{it}$  are control variables for firm  $i$ ; and  $\beta_1$  and  $\beta_2$  are coefficient to be estimated. The probability of firm exit increases if  $\beta$  is positive and decreases if  $\beta$  is negative.

## 5. Estimation results

Figure 1 depicts the changing densities of firms by ownership form. Between 2000 and 2010 SOEs declined substantially in number, from nearly 30,000 in 2000 to less than 2000 firms in 2010. While SOEs still kept exiting the market with a slight increase accounting for no more than 10 percent of the population, for CMOEs we observe a U-shaped trend: a sharp reduction from 2000 to 2007 (from 23,000 to 6,700), and then a strong revival from 2008 onwards (up to 12,000 in 2010). In contrast, the number of POEs increased drastically, from about 400 firms in 2000 to more than 250,000 ones in 2010. Figure 2 presents the graphs of hazard estimate for each ownership form. In general SOEs and CMOEs face higher hazard estimates. After 5 years in observation, about 50% of POEs still survive while less than 10% of SOEs and around 20% of CMOEs are survivors.

Table 1 contains the descriptive statistics for each ownership type, whereas Table 2 presents the respective correlation matrix. To check for multicollinearity, we calculate the variance inflation factors, and these values were all below 10. Thus, multicollinearity is not a serious problem for our regression analyses.

One thing to note in the descriptive statistics is the high mean exit rate (0.21), which likely reflects the dynamic nature of entrepreneurship during the economic transition of the period 2000-2010. Firms easily enter the market given the abundance of entrepreneurial opportunities in a fast emerging market economy, and also easily exit the market due to the challenges from the business environment characterized by under-developed market

institutions and productive capabilities (Santarelli and Tran, 2012). Thus, it is worth noting that the exit rate in our study captures all forms of exit – bankruptcy, mergers and acquisition, privatization or dissolution – making the exit rate of the new entrants especially high.

To test our hypotheses, we ran separate regressions for SOEs, CMOEs, and POEs (table 2). With our large sample, we used  $p < 0.05$  as the minimum acceptable level of statistical significance and suppressed the  $p < 0.1$  level. For each organizational form, we offer two treatments: the first one investigates the density variables only, and the second one adds their pairwise interactions. The objective of including density pairwise interactions is to study how the interdependent relationships of each pair of organizational forms impact on the performance and survival of the remaining organizational form.

We interpret first the estimation results of the first regression: the performance of SOEs, CMOEs and POEs. While the past performance of CMOEs and POEs is positively (associated with their current performance, SOEs in contrast do not have a smooth and stable performance over consecutive years: their profitability this year cannot guarantee an equally profitable performance next year. Supporting our hypotheses H1a and H1b, SOE density is negatively associated with the entrepreneurial performance of POEs, and vice versa POE density is negatively associated with the performance of SOEs. The two organizational forms representing the two opposing economic ideologies: socialism and capitalism are considered as the enemies of each other. There was little room for POEs to grow profitably when SOEs dominate and hold monopoly power in the economy, and vice versa the proliferation of POEs with their efficient production systems and innovative products / services would erode SOEs' profitability.

With respect to the interdependencies between state ownership form and collective one, a large population of SOEs stimulates the entrepreneurial performance of CMOEs, but in contrast, CMOEs' population weakens the profitability performance of SOEs. This supports H2a, but rejects H2b. Previous research suggests that as a supplement form for state ownership, CMOEs receive knowledge and technological spillovers from SOEs (Peng, 2003) and thus SOEs' proliferation would produce greater number of profit opportunities for CMOEs. However, our empirical evidences suggest that CMOEs instead of strengthening the backbone position of SOEs, they with a more market-oriented business approach would become strong and direct competitors of SOEs in the market. Finally, we find evidences to support H3a and H3b. CMOE population benefits POEs' performance, but POE population

has a harmful impact on CMOEs' performance. In Vietnam, cooperatives are maintained during the transition to transfer the whole or some parts of their material inputs, technical services, and output markets to the emerging private sector. Thus, their proliferation exerted a positive effect on POEs. Nevertheless, POEs did not have a similar effect on CMOEs because the POEs with their inherent market ideology would have strong competitive spirit that clear off any weaker competitors.

Looking at the pairwise interactions of the three organizational forms, we obtain some mixed results. For SOEs, as their density grows, the proliferation of either CMOEs or POEs would have a detrimental impact on SOEs' performance. Having opposing ideological properties, SOEs from the centrally-planned model and CMOEs, POEs adopting a more market-oriented approach, are unable to coexist successfully. Estimation results of the interactions in column 4 and 6, on the other hand, suggest a mutual-supporting relationship between CMOEs and POEs. As CMOEs and POEs grow in density, the favorable market forces supporting their proliferation would facilitate knowledge spillover and transfer of market technologies among firms, which then produces abundant profit opportunities available for all (Santarelli and Tran, 2012). This process is spontaneous beyond the control of any market agent.

Regarding the effect of control variables in the performance equation, we find some interesting findings. First, foreign invested firms with their advanced innovation capacities and technologies are strong competitors for all local firms regardless of their organizational forms. However, private firms with their proactiveness and entrepreneurial alertness could enjoy valuable knowledge spillovers, acquire or learn advanced technologies from foreign competitors, and rapidly capture any profitable outsourcing opportunities from their foreign partners. These benefits act as a strong momentum to foster their profitability. Second, in general smaller firms in terms of labor size are more profitable. But we observe the opposing effect of firms' economic size: large size enhances the entrepreneurial performance of POEs, but erodes that of SOEs and CMOEs. Since financial constraint is always reported as the greatest challenge for small and medium private firms in Vietnam (Le and Nguyen 2009; Tran and Santarelli, 2014), those POEs being endowed with more financial assets are more able to invest in their fruitful innovation capacity in order to timely exploit any emerging profitable opportunities. The competitiveness of POEs thus appears to be dependent on their economic scales. Third, consistent with Santarelli and Tran (2016), negative and significant impact of debt ratio on the profitable performance of all three organizational forms indicates

the harmful effect of higher ratio of debt in the firm's capital structure. Indebted firms are less profitable since a large proportion of their residual incomes would be used to pay interest charges. Fourth, innovation intensity appears to benefit the entrepreneurial performance of CMOEs and POEs which are obviously more responsive to market needs and customers' preferences. Fifth, as expected, all firms, regardless of their ownership form, outperform profitably in growing industries (as characterized by high industry ROA). Finally, private firms mainly operating in service and innovation-intensive industries find themselves more profitable in big cities (Hanoi and Hochiminh City) with higher population density, whereas CMOEs and SOEs which mostly reside in large scale and labor-intensive industries, such as farming and mining, etc. are better able to survive profitably in less densely populated provinces.

Now we turn to interpret estimation results of the survival equation of SOEs, CMOEs and POEs in table 3. It is reasonable to expect that the mature and large SOEs would be in tough competition with one another for the government's support and resources; thus their large population is detrimental to their survival. POEs, as an emerging market-oriented organizational form, despite crowding out one another due to the Schumpeterian "creative destruction" process in a fast growing market (Schumpeter 1934), need to increase their density in order to gain legitimacy for proliferation and valuation resources. Thus their density is negatively associated with their exit likelihood. CMOEs, in the same fashion, with the nature of sharing ownership, decision-making rights, and residual incomes would benefit by legitimating each other to maintain their mutual supportive growth in the emerging market. Their density thus exerts a negative impact on their exit (see model 3 and 4).

In general, the estimation results support our hypotheses H1a and H1b. The densities of SOEs and POEs have mutually positive effects on each other's exit rate. Specifically, SOE density shows a positive and significant sign in column 5 and 6, and POE density also reveals a positive and significant effect in column 1 and 2. Thus, on one hand, SOEs' existence does not facilitate the proliferation of POEs since SOEs with their privileged oligopoly positions will capture most of valuable business opportunities and resources in the market, resulting in unfavorable conditions for new and small POEs' survival. On the other hand, the emergence of Schumpeterian private entrepreneurs bringing innovative and efficient products and services into market creatively destroys the old and inefficient SOEs. With H2a and H2b, we should observe a negative effect of the density of SOEs and CMOEs on each other's exit rate. In column 3 and 4, SOE density shows a negative and significant sign, in support of H2a. But

in model 1 and 2, though, CMOE density has a positive and significant sign, rejecting H2b. Since SOEs share their resources, technologies and ‘bureaucratic’ entrepreneurial features with CMOEs due to the nature of their public ownership, they facilitate the survival and growth of CMOEs. CMOEs, nevertheless, given their market-oriented business activities turn out to be direct and strong competitors for SOEs during the transition. H3a and H3b predicted one negative and one positive effect, respectively, between CMOEs and POEs. However, we just only find a competing relationship between CMOEs and POEs: their densities have positive effect on each other’s exit although the impact of CMOEs’ density on POEs’ exit is not statistically significant. Thus contradicting with Xu et al (2014) for the case of China, we find strong support for H3b, but fail to support H3a statistically.

Although four of our six hypotheses received empirical support, the insignificantly positive effect of CMOE density on POE exit is worth exploring further. Theoretically, Xu et al (2014) suggest that legitimacy spillovers from the intermediary organizational form just have strong supporting effect on the new organizational form during the early stage of its life span. As firms of the new organizational form grow older and its density rises, its constitutive legitimacy also increases; thus the benefit of legitimacy transfer from an established form should diminish and could even be replaced by competition from that population. In our case, such a competing relationship between CMOEs and POES may have occurred at the time of our study. Our conjecture suggests that an older organizational form may have a less beneficial effect on a newer form when the newer form reaches a higher density.

Empirically, we conduct further analyses to verify this possibility by adding pair-wise interactions of the three organizational forms into the regressions (column 2, 4, and 6). The results from the interaction terms were mixed. In column 2, all the pair-wise interactions produce a significantly positive effect on SOE exit. This strongly indicates the competing relationship between state ownership and the other collective and private forms, in the sense that the prominence of CMOEs and/or POEs erodes the proliferation of SOEs, subsequently leading to their exit from the transition market. The interaction of CMOE density and POE density exerted a positive and highly significant impact on both CMOE exit and POE exit in model 4 and 6. As POEs grow in density, they crowd out the transitional form CMOEs; and the legitimation benefits they obtained from the CMOEs also fade away. Thus our conjecture received partial support. We can conclude that for the case of Vietnam POEs never receive commensalistic benefits from the transitional CMOEs form as claimed by organizational theorists. They proliferate by gaining their political and constitutive legitimation from

governments, laws, and industry associations. Another source of legitimation for the proliferation of POEs as they grow in density comes from the increasing number of foreign firms (column 6). Foreign firms are actually considered to belong to private ownership form. Foreign investors have expertise and experience on market tools in a well-developed markets with a stable legal system and advanced capital market; thus, to do business in a transitional environment they normally establish joint ventures with local private firms at the beginning and gradually move to wholly foreign-owned enterprises (FOEs) (Lavigne 1999).

Regarding the effect of control variables, the most note-worthy results are: (i) the proliferation of foreign firms while significantly lengthens the survival of CMOEs, erodes the survival of SOEs; (ii) the liability of smallness: smaller firms in terms of labor size and economic size are more likely to exit the market although they could be more profitable once they can survive (as found from the above performance equations). Private firms are different: large size does not enhance their survival chances. If small and inexperienced POEs are endowed with large financial assets, they have more chances to waste the resources and are not able to realize and exploit their efficient bootstrapping skills. The survival of POEs generally does not appear to be dependent on their scales; (iii) negative and significant impact of debt ratio on exit likelihood of CMOEs indicates the beneficial leveraging effect of debt to rescue CMOEs from possible failure risks, but this leveraging benefit disappears for POEs, and turn out to be a heavy burden for SOEs' survival; (iv) innovation intensity benefits the survival of CMOEs and POEs which are obviously more responsive to market needs and customers' preferences; (v) industry ROA and industry MES increase the exit rate for POEs due to the dominance and competition of SOEs and CMOEs in these "hot" and mature industries; and (vi) while SOEs are more likely to survive in big cities (Hanoi and Hochiminh City) where the power of the government is the most influential, CMOEs and POEs are not able to compete fairly with SOEs here and thus have a higher propensity to exit the market.

## **6. Discussion**

Our study makes both theoretical and empirical contributions. Regarding the theoretical contributions, we apply organizational ecology theory to explain the rationales underlying the smooth and successful economic transition of Vietnam. An important implication of our findings is that a radical change in the national economic system is often difficult and unwelcome. The radically new economic sector typically faces a hostile environment such that a partial change with a transitional sector in the initial stage offers a solution to the

legitimation problem for a smooth and successful transition. In particular, private enterprises and market institutions are not yet ready during the early transition period to substitute for the centrally planning mechanism in the coordination of production factors, whereas state-owned incumbents possess some valuable productive capabilities and entrepreneurial resources that could be inherited and integrated into the emerging market structure. The normative implication is that the transition economy may avoid or soften the common U-shaped performance if bureaucratic and collective entrepreneurial and productive capabilities accumulated from SOEs could be successfully protected and transformed correspondingly to private entrepreneurship and market-oriented productive capabilities.

However, such a direct transition from the old SOE form to the new POE form at the national level is not smooth or possible without a bridging form between the two. Any rapid attempt to transform SOEs into POEs would fail and cause an initial decrease in output that may be damaging and long-lasting. Vietnam overcomes this problem by restructuring and strengthening the transitional form, collective and mixed ownership to facilitate the transition process from the old to the new. The transitional form shares some socialist properties with the old form, SOE, in terms of public ownership, intensive support and control from the government, but it also has some market identities overlapping with the new POE form such as a market-oriented business approach, asset contributing members (taking the role of investors) sharing ownership, decision making rights, and residual incomes from the business. Thus, our hypotheses on the inter-dependence of the three economic sectors entail the following critical aspects of the multi-population dynamics from the ecology theory: the old form prevents the survival and good economic performance of the new form, and any knowledge and technology transfer from the old form to the new form is conducted by a transitional form that shares properties with both the old and the new. However, it becomes stronger, the efficient new form crowds out the inefficient old and transitional forms.

Regarding the empirical contribution, using the census panel data extracted from the annual enterprise surveys from 2000 to 2010, we obtain some evidence in support of these interrelated hypotheses. Of our six hypotheses, the two hypotheses that did not receive support in our sample were H2a and H3a—that the density of CMOEs would have a positive effect on the exit rates of SOEs and POEs, although CMOEs do support the entrepreneurial performance of POEs. This does not undermine the overall integrity of our framework. CMOEs emerged at a time when the market rules had not been established and political support from the government was important for securing resources. In Vietnam, CMOEs

benefit private ownership by transferring their assets and technologies to POEs when they are dissolved. This helps private firms enhance their entrepreneurial performance as we determined from the estimation of the performance equation above. After dissolution, many ex-owners of CMOEs become private entrepreneurs themselves. Thus, implicitly, we can observe the positive relationship between CMOEs' exit and the emergence of new private firms, and only when CMOEs exit the market, do they transfer resources and expertise to enhance the performance of private firms. We do not observe the successful coexistence of CMOEs and SOEs in Vietnam as we do in China because CMOEs are treated as SOEs, sharing more properties with SOEs than with POEs. Despite having a more market-oriented approach, the old generations of CMOEs are under strict control of the government and receive significant legitimation from SOEs. When the transition introduces capitalist features and gradually eliminate socialist factors, CMOEs face challenges to survive and prosper. Therefore, it is plausible to observe a mixed impact of CMOEs' density on POEs' performance and survival; CMOEs density enhances POEs' performance but deteriorates their survival. Furthermore, it is worth noting that our data cover the later stage of the transition period when POEs have obtained constitutive legitimacy through legislation and their own proliferation, and they would need less legitimation benefits from the CMOE, which results in diminishing benefits of a mutual supporting relationship and increasing competition between CMOEs and POEs.

With respect to the effects of control variables, several interesting findings are obtained. (i) Foreign invested firms with their advanced innovation capacities and technologies are strong competitors for all local firms regardless of their organizational forms. However, private firms with their proactiveness and entrepreneurial alertness can enjoy valuable knowledge spillover from their foreign counterparts to maximize their profitability. (ii) We observe the liability of smallness here; smaller firms are more likely to exit the market, although they can be more profitable if they can survive. Private firms are different; large firm size does not enhance the chances of survival. If small and inexperienced POEs are endowed with large financial assets, they have more chances to waste resources and are not able to realize and exploit their efficient bootstrapping skills. (iii) Consistent with Santarelli and Tran (2016), the negative and significant impact of debt ratio on the profitability and survival of all three organizational forms indicates the harmful effect of a higher ratio of debt in the firm's capital structure. (iv) Innovation intensity appears to benefit the entrepreneurial performance and survival of CMOEs and POEs which are obviously more responsive to



market needs and customer preferences. (v) Industry ROA and industry MES increase the exit rate for POEs due to the dominance and competition of SOEs and CMOEs in these “hot” and mature industries. (vi) Finally, private firms mainly operating in service and innovation-intensive industries find themselves more profitable but less likely to survive in big cities (Hanoi and Hochiminh City) with higher population density, whereas CMOEs and SOEs which mostly involve large scale and labor-intensive industries, such as farming and mining, are more able to survive profitably in less densely populated provinces.

Regarding policy implications at the micro firm level, we provide a lesson from the past for firms’ and organizations’ current strategic decision making. Path dependence suggests that organizational innovation efforts should be based on the exploitation and gradual transformation of the accumulated pool of entrepreneurial and productive resources into advanced organizational capabilities that help organizations identify, evaluate and capture emerging business opportunities. Any attempts to implement radical organizational changes and reforms rapidly without considering the past constraining forces will produce organizational inertia and unexpected outcomes. In other words, the decisions an organization makes are influenced and limited by the decisions it has made in the past. We suggest that firms can create competitive advantage through acts of innovation and organizational renewal by making most of the knowledge and resources accumulated in the past and then adjusting, updating, and accommodating them to the new competitive market scenario.

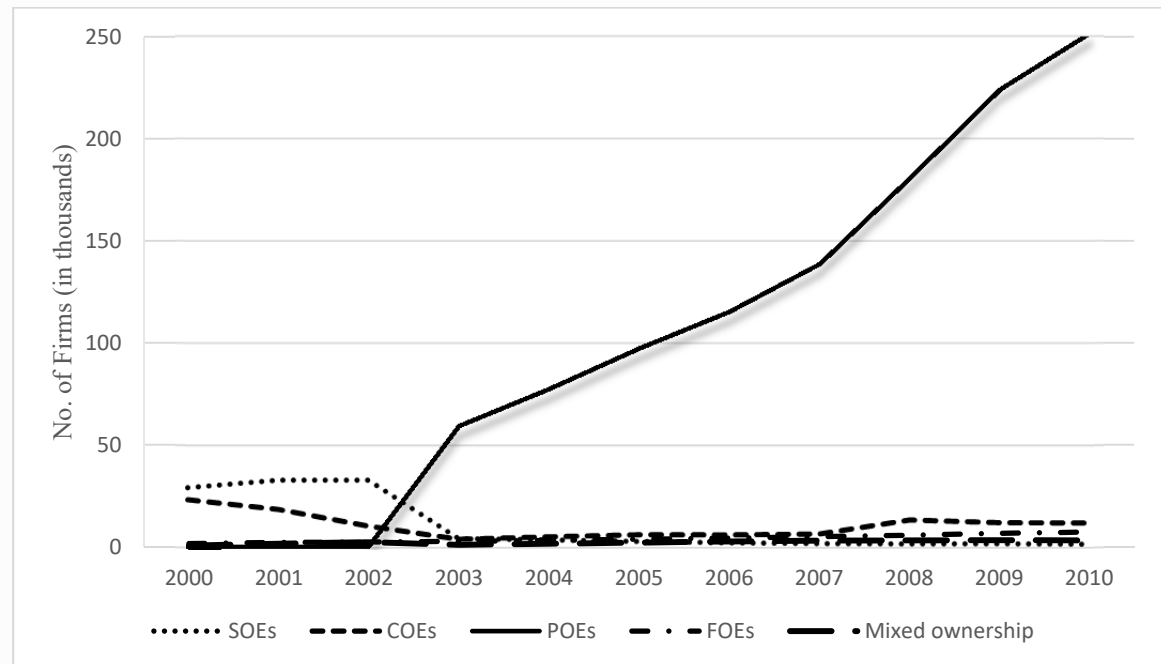
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**Figure 1: Distribution of firms by ownership types from 2000 to 2010**



3.

**Table 1: Descriptive Statistics and Correlations of Variables**

Variables	Mean	Std	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.02	0.41	1.00														
2	0.21	0.41	-.019*	1.00													
3	2.32	1.17	.044*	-.117*	1.00												
4	7.71	1.58	-.041*	-.093*	.53*	1.00											
5	0.37	0.29	-.026*	-.046*	.22*	.505*	1.00										
6	68.74	4455	-.007*	.007*	.003*	.033*	.007*	1.00									
7	3.33	810.1	.000	.002	.001	.009*	.003*	.509*	1.00								
8	0.24	0.79	.19*	.174*	-.048*	-.156*	-.128*	-.004*	-.001	1.00							
9	0.28	0.74	.105*	.052*	.029*	-.131*	-.123*	-.003*	-.001	.349*	1.00						
10	7.5	8.99	-.061*	-.048*	-.084*	.205*	.158*	.004*	.001	-.144*	-.109*	1.00					
11	0.057	0.079	-.048*	-.032*	.15*	.159*	.098*	.008*	.001	-.12*	-.121*	.112*	1.00				
12	0.106	0.168	-.019*	-.004*	.109*	.179*	.072*	.003*	.001	.079*	.089*	.678*	.234*	1.00			
13	0.204	3.599	.067*	.007*	-.016*	-.037*	-.023*	-.001	-.001	.081*	.014*	-.047*	-.036*	-.028*	1.00		
14	43.37	78.34	.021*	.001	.268*	.051*	.006*	-.003*	-.001	-.025*	.008*	-.186*	.208*	.031*	1.00		
15	894.3	1176.5	-.029*	.006*	.022*	.084*	.094*	.016*	.004*	-.065*	-.024*	.001	.026*	-.017*	.003*	-.031*	1.00

Note: \*: significant at 1% level

(1) Return on sales (ROS); (2) Exit; (3) Labor size; (4) Economic size; (5) Debt ratio; (6) Capital intensity; (7) Innovation intensity; (8) SOE density; (9) CMOE density; (10) POE density; (11) FOE density; (12) Mixed ownership density; (13) Industry ROA; (14) Industry MES; (15) Population density.

### Variance Inflation Factor VIF

Variables	POE density	Mixed density	Economic size	Labor size	Debt ratio	Capital intensity	Innovation intensity	SOE density	CMOE density	Industry MES	FOE density	Exit	Population density	Industry ROA
VIF	2.4	2.31	1.96	1.69	1.37	1.35	1.35	1.27	1.21	1.17	1.17	1.05	1.02	1.01
1/VIF	0.41	0.43	0.52	0.59	0.73	0.74	0.74	0.78	0.83	0.85	0.86	0.95	0.98	0.98

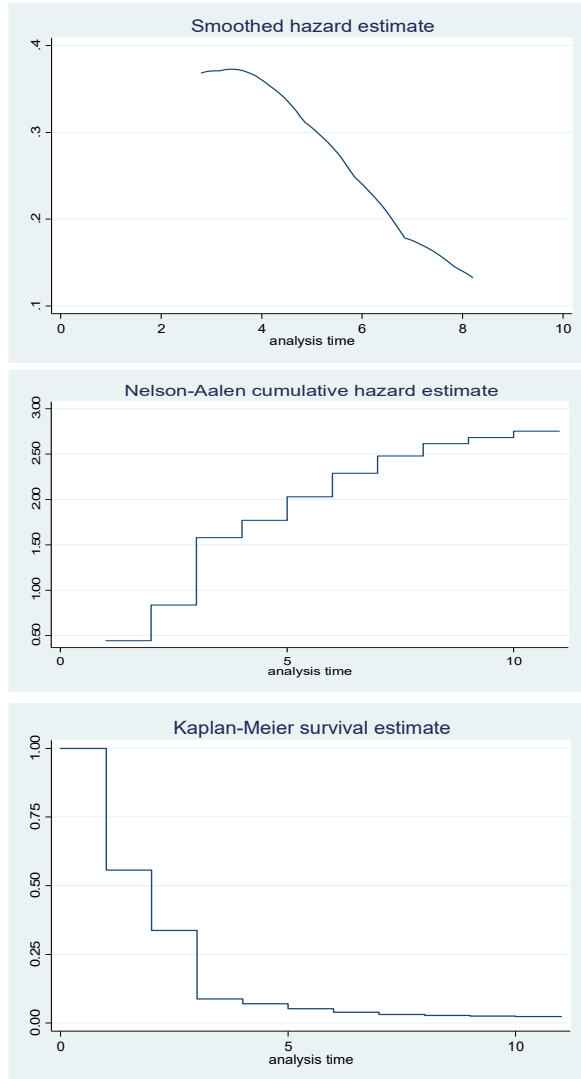
**Table 2: GMM Model of Organizational Forms and Firm Performance**

Variable	SOE		CMOE		POE	
	(1)	(2)	(3)	(4)	(5)	(6)
ROS <sub>t-1</sub>	-0.091** (0.006)	-0.084** (0.007)	0.114** (0.006)	0.115** (0.007)	0.095** (0.002)	0.101** (0.002)
SOE density, t-1	-0.000** (0.000)	-0.0001** (0.000)	0.000** (0.000)	0.000* (0.000)	-0.000** (0.0000)	-0.0001** (0.000)
CMOE density, t-1	-0.0002** (0.000)	-0.0001** (0.000)	-0.000* (0.000)	-0.000 (0.000)	0.000** (0.000)	0.000** (0.000)
POE density, t-1	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
SOE density * CMOE density		-0.000** (0.000)		-0.000 (0.000)		
CMOE density * POE density				0.000** (0.000)		0.000* (0.000)
SOE density * POE density		-0.000** (0.000)				-0.000** (0.000)
FOE density, t-1	-0.0003* (0.0002)	-0.001** (0.0001)	-0.0003** (0.0001)	-0.0003** (.0001)	0.000** (0.000)	0.000** (0.000)
Other mixed density, t-1	-0.002** (0.000)	-0.002** (0.0001)	-0.0017** (0.000)	-0.002** (0.0001)	-0.000** (0.000)	-0.000 (0.000)
Firm labor size	-0.011 (0.0068)	-0.025** (0.006)	-0.001 (0.005)	-0.003 (0.005)	-0.001 (0.0003)	-0.002** (.0004)
Firm economic size	-0.048** (0.005)	-0.056** (0.005)	-0.036** (0.003)	-0.034** (0.003)	0.009** (0.0002)	0.012** (0.0003)
Debt ratio	-0.181** (0.018)	-0.143** (0.018)	-0.041** (0.012)	-0.041** (0.012)	-0.026** (0.001)	-0.03** (0.0009)
Capital intensity	-0.000 (0.000)	-0.000 (0.000)	0.0001** (0.000)	0.0001** (0.000)	-0.001** (0.000)	-0.007** (0.001)
Innovation intensity	0.000 (0.000)	0.000 (0.000)	0.0014** (0.0002)	0.001** (0.0002)	0.000** (0.000)	0.001** (.0003)
Industry ROA	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)
Industry MES	0.001** (0.0001)	0.001** (0.0001)	0.0009** (0.0001)	0.001** (0.000)	0.000 (0.000)	0.000** (0.000)
Population density	-0.000** (0.000)	-0.0001** (0.000)	-0.000* (0.000)	-0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
Location	-0.666** (0.219)	-0.725** (0.221)	-0.016 (0.025)	-0.064** (0.025)	0.065** (0.007)	0.075** (0.006)
Intercept	0.826** (0.039)	0.968** (0.041)	0.407** (0.026)	0.398** (0.026)	-0.085** (0.003)	-0.102** (0.003)
Observations	57,084	57,084	65,755	65,755	645,363	645,363
Wald $\chi^2()$	$\chi^2(15)=40069^{**}$	$\chi^2(18)=41353^{**}$	$\chi^2(15)=17362^{**}$	$\chi^2(18)=17920^{**}$	$\chi^2(15)=7070^{**}$	$\chi^2(18)=9086^{**}$

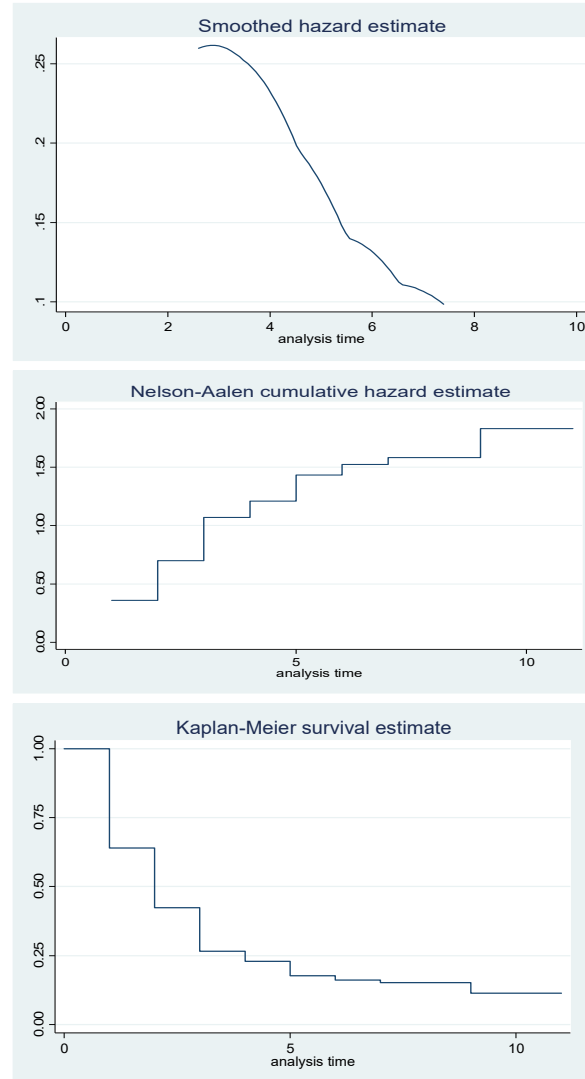
Note: \* significant at 1% level; \*\*: significant at 5% level. Robust standard errors are in parentheses.

**Figure 2: Survival Analysis graphs**

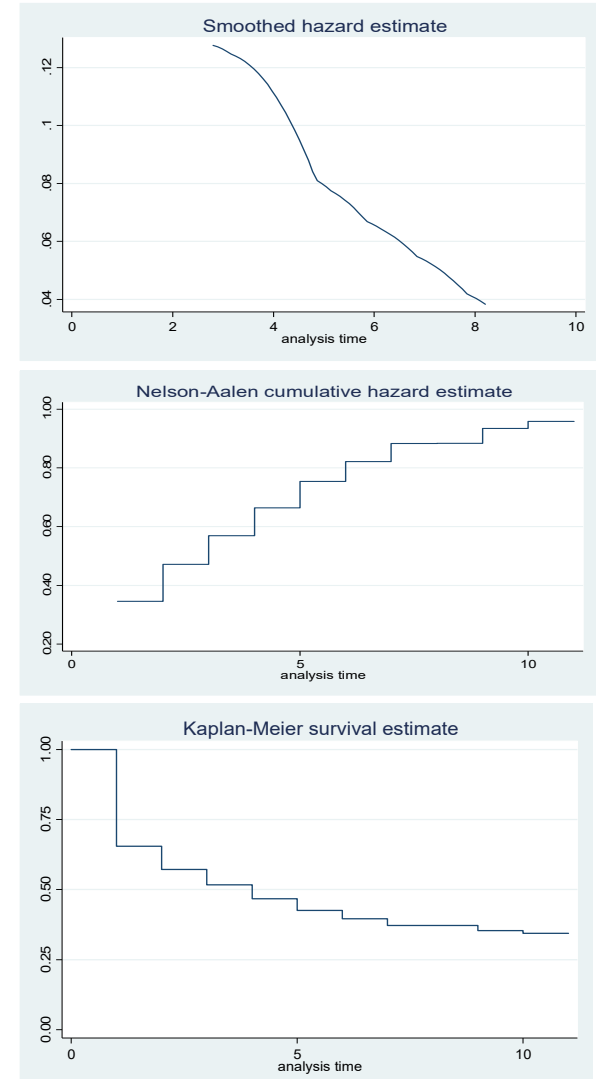
**SOEs**



**CMOE**s



**POEs**





**Table 3: Cox Model of Organizational Forms and Firm Exit**

Variable	SOE		CMOE		POE	
	(1)	(2)	(3)	(4)	(5)	(6)
Firm profitability (ROS)	-0.181** (0.011)	-0.197** (0.012)	-0.239** (0.008)	-0.239** (0.008)	-0.099** (0.004)	-0.095** (0.004)
SOE density, t-1	0.000** (0.000)	0.000** (0.000)	-0.0001** (0.000)	-0.000* (0.000)	0.0002** (0.000)	0.0002** (0.000)
CMOE density, t-1	0.0003** (0.000)	0.000* (0.000)	-0.0003** (0.000)	-0.0002** (0.000)	0.000 (0.000)	0.000 (0.000)
POE density, t-1	0.0001** (0.000)	0.0002** (0.000)	0.0001** (0.000)	0.0001** (0.000)	-0.000** (0.000)	-0.000** (0.000)
SOE density *CMOE density,t-1		0.000** (0.000)		-0.000** (0.000)		
CMOE density *POE density,t-1				0.000** (0.000)		0.000** (0.000)
SOE density * POE density, t-1		0.000 (0.000)				0.000** (0.000)
FOE density	0.0008** (0.0001)	0.0005** (0.0001)	-0.002** (0.0001)	-0.002** (0.0001)	-0.0008** (0.000)	-0.0006** (0.000)
Other mixed density	0.003** (0.0001)	0.004** (0.0001)	0.005** (0.0001)	0.008** (0.0001)	0.0001** (0.000)	-0.0005** (0.000)
Firm labor size	-0.138** (0.006)	-0.123** (0.005)	-0.214** (0.004)	-0.195** (0.004)	-0.370** (0.003)	-0.379** (0.003)
Firm economic size	-0.261** (0.004)	-0.249** (0.004)	-0.005 (0.004)	-0.0001 (0.004)	0.031** (0.002)	0.031** (0.002)
Debt ratio	0.272** (0.019)	0.285** (0.019)	-0.231** (0.019)	-0.249** (0.019)	-0.013 (0.009)	-0.001 (0.009)
Capital intensity	-0.000 (0.000)	-0.000 (0.000)	-0.0001 (0.0001)	-0.0001 (0.0001)	0.000** (0.000)	0.000** (0.000)
Innovation intensity	0.000 (0.000)	0.000 (0.0002)	-0.0001 (0.000)	-0.000 (0.0003)	-0.000** (0.000)	-0.000** (0.000)
Industry ROA	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	0.000** (0.000)	0.000** (0.000)
Industry MES	-0.000 (0.000)	-0.0003** (0.0001)	-0.0001 (0.0001)	-0.0001** (0.000)	0.0007** (0.000)	0.0005** (0.000)
Population density	0.000** (0.000)	0.000** (0.000)	-0.0001* (0.000)	-0.0001* (0.000)	0.000** (0.000)	0.000** (0.000)
Location	-0.183** (0.013)	-0.112** (0.013)	0.675** (0.012)	0.627** (0.012)	0.159** (0.005)	0.164** (0.005)
Year 2007	-1.247** (0.061)	-1.168** (0.061)	-1.029** (0.039)	-1.08** (0.039)	-0.041** (0.007)	-0.002 (0.007)
Year 2008	-1.699** (0.082)	-1.642** (0.082)	-1.029** (0.039)	-0.113** (0.023)	-0.083** (0.006)	-0.071** (0.006)
Observations	103,176	103,176	111,536	111,536	1,057,591	1,057,591
Likelihood ratio $\chi^2()$	$\chi^2(17)=28918**$	$\chi^2(20)=30951**$	$\chi^2(17)=28373**$	$\chi^2(20)=29576**$	$\chi^2(17)=25816**$	$\chi^2(20)=28420**$

Note: \* significant at 1% level; \*\*: significant at 5% level. Standard errors are in parentheses.