THE DETERMINANTS OF FIRM EXIT IN AN EMERGING ECONOMY: EVIDENCE FROM KAZAKHSTAN

by

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Abstract

This paper examines the determinants of firm exit in emerging economy of Kazakhstan. Using cross-sectional data of all legal entities in Kazakhstan, I show that mature firms (5-10 years) are more likely to fail than young (0-5 years) and old firms (10 years and more). I confirm for the case of Kazakhstan the widely-established results for developed and most of the developing countries that bigger firms are less likely to exit. By controlling for competition, I find that firms in the major cities of Kazakhstan are more likely to exit, and by controlling for technology, I find that an old firm in the Mining or Agriculture industries is equally likely to exit as the young firm. These higher risks of exit are significantly dampened for partially or fully state-owned enterprises.

1. Introduction

Kazakhstan is one of the largest and strongest economies in Central Asia, generating 60% of the region's GDP, mainly due to the oil and gas industry and high prices of oil in the past. According to the National Statistics Agency, Kazakhstan's economy grew at an average rate of 8% per year until 2013. In 2014, the economy grew by 4.6%, which can be associated with falling oil prices. Since then the country has devalued its currency by 19% in February 2014 and in August 2015 the national currency was set free to float, which resulted in another series of devaluations. Despite the series of adverse shocks, the statistics show an unexpected trend. According to the National Statistics Agency of Kazakhstan, the number of firms registered was increasing, as shown in table 1. For instance, compared to 2015, more than 18,000 new firms have registered in 2016.

Table 1. Number of firms entering and exiting the market by year

Date	2011	2012	2013	2014	2015	1 Oct 2016
Total number of registered firms	301 372	317 926	338 981	353 833	360 287	379 934
Number of firms registered in a year	16 613	17 688	21 056	22 387	21 651	18 074
Number of firms declared bankrupt in a year	128	201	417	406	683	1 220
Number of firms declared inactive in a year	9 791	5 844	4 612	7 131	5 500	7 224

This can be rationalized in a several ways; the currency devaluation has made the products produced inside cheaper for export, which stimulated the entrepreneurial activity of the country. Furthermore, a major part of the economy constitutes the service and distribution industries, the products of which cannot be really exported, but for which there may be high domestic demand as the economy is evolving towards a full-fledged market economy. While the number of new firms entering has increased, we also can observe that the number of firms exiting the industry has also been increasing (see table 1) recently. Firm dynamics and in particular the process of entry and exit is important if an

economy wants to increase its efficiency and hence growth, through a Schumpeterian process of creative destruction. However, in emerging economies, like Kazakhstan, it is often argued that such an entry and exit process has been dampened due to the limited amount of competition, soft budget constraints and the dominance of state-owned enterprises (e.g. Konings, Van Cayseele and Warzynski, 2005). It is, therefore, important to assess how this firm dynamics and in particular the process of firm exit takes place and whether the typical market economic drivers that usually govern exit are also present in an emerging economy like Kazakhstan.

The focus of this master thesis is hence on firm exit, which I first define as follows: The firm exits the market when it is declared bankrupt or inactive. The firm might also exit the market on its own, which would be a liquidation. I will relax my definition of exit to analyze whether exit as a result of bankruptcy or inactivity is driven by different factors than exit driven by liquidation.

This paper is organized as follows, section 2 provides an overview of the relevant literature, section 3 describes the data used, section 4 presents the results and discussion, and section 5 draws the conclusion. Section 6 provides possible improvements to be made in the future.

2. Literature Review

One of the first papers that have inspired a lot of work on analyzing firm dynamics and exit is Jovanovic (1982), which develops a model of passive learning. In particular, firms learn about their efficiency as they operate in the industry, efficient firms grow and

survive, inefficient firms decline and fail. In a related paper by Hopenhayn (1992) the author explains that firms exit when they experience a series of adverse productivity shocks. Currency devaluation, which happened in Kazakhstan several times in 2014-2015, is a good example of an external factor that could be related to these adverse productivity shocks. Another theoretical framework is given by Ericson and Pakes (1995), where one of the main conclusions was that young firms tend to be smaller than average and to exit more frequently. Since the overall distribution of firms remains stable, it must be the case that to maintain a stable firm distribution, the firm entry must be correlated with exit. In fact, works performed on U.S. data concludes that entry and exit rates are correlated and that older and larger firms are less likely to fail (Dunne, Roberts, and Samuelson (1988, 1989)). More recent work by Aleksanyan and Huiban (2016) shows firms in the French food industry with a significantly negative relationship between firm's probability to exit and its individual efficiency and age. Individual efficiencies of firms are measured in comparison of estimated firms' productivity levels. These papers validate the well-known results in developed countries.

Several papers that focus on developing countries reveal additional insights about firm survival. Roberts and Tybout (1996) have concluded based on observed sizable exit rates in Chile, Colombia, and Morocco, that in the short run the firms that replace old firms are only slightly more productive, however, in the long run the productivity increases substantially because the new firms that survive record significant productivity gains in the early years. In the case of Indian computer hardware industry, Das and Srinivasan (1997) conclude with results consistent with previous papers on developed countries, that exit is concentrated in smaller and younger plants. Liedholm, McPherson, and Chuta (1994) concluded that firm's exit in Swaziland, Botswana, Zimbabwe, Malawi, and

Kenya is only partly related to business reasons. Political factors and soft budget constraints for government affiliated firms can play a role in determining firm's survival chances. This result contradicts the literature on developed countries. McPherson (1995) in another paper concluded that size of the enterprise has no significant effect on the firm's survival chances in Swaziland or Botswana and that larger firms are actually less likely to survive in Zimbabwe. Work that is more recent looks at the manufacturing sector of Ghana and shows evidence that less productive firms do not survive in the Ghanaian economic environment (Frazer (2005)). Unfortunately, their result cannot be extended to all African countries. Therefore, the results, obtained for developed countries, cannot be applied to developing countries. I also conclude that results for one developing country or region cannot be generalized for other regions or even industries in the same region.

In the current study, I establish the determinants of firm exit in Kazakhstan and lay out the groundwork for the study of firm exit in CIS or former USSR countries. Paper by Roberts and Thompson (2003) looks at the firm entry and exit in Poland economy, which like CIS or former USSR countries moved from predominantly state-owned productive system, and concludes that entry and exit patterns closely correspond to those of more mature market economies. As Liedholm, McPherson, and Chuta (1994), I show that firm exit chances in Kazakhstan are related to non-business reasons, such as that government affiliation significantly reduces the likelihood of firm exit in Kazakhstan. I also look at the three types of state-owned enterprises and determine that fully state-owned enterprises are less likely to exit than partially state-owned firms. Also, I confirm the results for the case of Kazakhstan, that younger and smaller firms are more likely to exit the market. Additionally, I discover industry-region effect on the likelihood of firm exit.

3. Data Description

For my analysis, I use the cross-sectional firm micro-level data from the National Statistics Agency of the Republic of Kazakhstan[1] and from the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan[2]. For clarification purposes, when I am referring to the firm, I am referring to all legal entities registered in Kazakhstan. This data set does not include self-employed people. On October 1, 2016, there were 379 934 firms in Kazakhstan. I consider firm exit when the firm has gone bankrupt or declared inactive. I pool these types of exit together, because both types of firms are not contributing to the economy. The firm that fails to meet its contractual obligations goes through the bankruptcy procedure, which might take several years to implement. In the model, I use the official date of the court decision on bankruptcy as a bankruptcy date. The State Revenue Committee declares the firms that report zero revenue and cost for more than a year inactive. The data on bankruptcy and inactive firms was obtained from the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan. Firm characteristics, such as firm identifiers, registration dates, locations, economic activity codes and intervals of the number of employees was obtained from the National Statistics Agency of the Republic of Kazakhstan. During the data collection and merging of five different data sources, some of the observations had missing values. The observations with missing values were omitted and left out of the dataset. It is assumed that missing values were selected at random and therefore do not

[1] Portal Home. Accessed April 15, 2017. http://stat.gov.kz/.
[2] http://kgd.gov.kz/ru/section/reabilitaciya-i-bankrotstvo
http://kgd.gov.kz/ru/services/taxpayer_search_liquid

affect accuracy and unbiasedness of the results. Omitted observations constitute 6.5% of the dataset, and since the dataset is large enough, the accuracy of the results is maintained.

Each firm in the data is identified by its unique twelve-digit code, called BIN. In total there are 355 013 firms in the data set. For each firm, I have information on the number interval of employees working for that firm. This KRP classification of the firm size is given in the table 2.

Table 2. KRP classification

KRP	100	105	110	120	130	140	150	200	210	215	220	225	300	305	310	311
# of employees	0 - 50	<= 5	6 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 250	51 - 100	101 - 150	151 - 200	201 - 250	> 250	251 - 500	501 - 1000	> 1000

In the model, I classify the size of the firm based on the number of employees working for that firm. Firms are grouped into Small, Medium and Large, and the table below shows a standard classification[3] used generally in Kazakhstan.

Table 3. Firm size classification

	Small	Medium	Large
KRP	100	200	300
# of employees	0 - 50	51 - 250	> 250

The shortcoming of the above classification is that it does not take into account the profits made by the firm, and according to Kazakhstan legislation, the firms are also classified

[3] "Об утверждении Инструкции по государственной регистрации юридических лиц и учетной регистрации филиалов и представительств." Электронное правительство Республики Казахстан. Accessed April 15, 2017. http://egov.kz/wps/portal/!ut/p/b0/04_Sj9CPykssy0xPLMnMz0vMAfIjc7PyChKtUvKTS3NT80r0w_Wj9KNgPM8U_cgwA3MDAwMTMyPTeJBUTmJeemlieqp-ZFGpfkFurkW5o6IiAJwEvio!/#z8.

based on their profits. If they exceed a certain profit level, they must register as a firm of another type. The literature suggests (e.g. Melitz (2000)) that productivity of the firm is correlated with the average number of employees; therefore, the firm size classification based on the number of employees seems logical. Table 4 shows the frequency table by the firm sizes, it is observed that 97.3% of the firms are small. High concentration of small firms can be explained by the government attempts to propel SME sector, by simplifying the firm registration procedure[4].

Table 4. Frequency table by firm size

	Frequency	Percent	Cumulative
Small	345 446	97,31%	97,31%
Medium	6 644	1,87%	99,18%
Large	2 923	0,82%	100,00%
Total	**355 013**	**100,00%**	

Another important identifier is the OKED code, which groups the firms according to their economic activity. This classification is similar to the NACE 4-digit classification. The OKED codes are grouped into sections of economic activity, as shown in table 5. Most firms are concentrated in the wholesale and retail trade industries. Second largest industry, is the construction industry.

[4]"Об утверждении Инструкции по государственной регистрации юридических лиц и учетной регистрации филиалов и представительств." Электронное правительство Республики Казахстан. Accessed April 15, 2017. http://egov.kz/wps/portal/!ut/p/b0/04_Sj9CPykssy0xPLMnMz0vMAfIjc7PyChKtUvKTS3NT80r0w_Wj9KNgPM8U_cgwA3MDAwMTMyPTeJBUTmJeemlieqp-ZFGpfkFurkW5o6IiAJwEvio!/#z8.

Table 5. Economic activity classification

Section	Economic activity
A	Agriculture, forestry and fishery
B	Mining and quarrying
C	Processing industry
D	Electricity, gas, steam and air conditioning
E	Water supply; sewerage system, control over the collection and distribution of waste
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transportation and warehousing
I	Accommodation and catering services
J	Information & Communication
K	Financial and insurance activities
L	Retail estate operations
M	Professional, scientific and technical activities
N	Administrative and Suport services
O	Public administration and defense; compulsory social security
P	Education
Q	Healthcare and social services
R	Arts, entertainment and recreation
S	Other services

Since the problem of firm entry and exit is likely to depend on the nature of competition and the technology that prevails, I distinguish between the different sectors in the economy. Typically levels of competition vary across sectors, therefore for my analysis, I need to capture the effects of Manufacturing/Construction, Services, and Mining/Agriculture industries. Economic activities sectors were grouped accordingly as shown in table 6.

Table 6. Industry classification

Manufacturing/ Construction	C,F,J
Services	D,E,G,H,I,K,M,N,O,P,Q,R,S
Mining/Agriculture	A,B

As shown in the table 10, the Service industry contains the most number of firms, with Manufacturing/Construction industry being second largest. Mining/Agriculture industry being the smallest is interesting, since most of the country revenue comes from taxes on this sector[5] and the firms in this sector earn the highest profits on average. This can be explained by the barriers to entry, such as high governmental involvement, which leads to almost monopolistic market conditions. The rise in the Manufacturing sector can be associated with government attempts for import substitution[6].

As was mentioned in the literature review section, regional effects play a significant role on the performance of the firm, especially together with industry type. I would expect that an agricultural firm in the south of Kazakhstan has better chances of surviving than a manufacturing firm because of the favorable climate conditions for agricultural activity in the south. In my dataset, KATO identifier groups the firms based on locations. Kazakhstan consists of sixteen regional districts. I group these districts into six regions

[5]http://kgd.gov.kz/ru/content/perechen-krupnyh-nalogoplatelshchikov-podlezhashchih-monitoringu-1
http://www.kursiv.kz/news/top_ratings/Kormiltsy_nashi_30_krupneyshikh_nalogoplatelshchikov_Kazakhstana/

[6]"Стратегии и программы Республики Казахстан." Стратегии и программы Республики Казахстан — Официальный сайт Президента Республики Казахстан. Accessed April 15, 2017. http://www.akorda.kz/ru/official_documents/strategies_and_programs.

as shown below. From table 7 it is seen that capital cities are the attraction of most firms. The second largest region by the number firms is South of Kazakhstan.

Table 7. Distribution of districts by regions

Regions	Districts	Number of firms
South	Kyzylorda, Shymkent, Zhambyl, Taldykorgan	78 092
North	Petropavlovsk, Pavlodar, Akmola, Kostanay	54 499
Central	Karaganda	29 025
East	Semey	23 079
West	Aktau, Atyrau, Mangistau, Aktobe	54 476
Capital cities	Almaty, Astana	115 842

Another variable of interest is the number of firms that are affiliated with the government. The dataset contains 22 090 firms that are partially or fully owned by the government. I divide them into three subgroups: firms where the government owns all 100% of the firm, firms where the government owns the majority of the firm (50% or more), and firms where the government owns a minority of the firm (less than 50%). In table 8 it is observed that most firms where the government holds a share are fully owned by the government and they are of medium or large size on average. On the contrast, the entire industry is dominated by small firms (97%).

Table 8. Distribution of government-affiliated firms

Share of the firm owned by government	Number of firms	Average size
Fully (100 %)	21 472	Medium
Majority (>50 %)	212	Large
Minority (<50 %)	406	Medium
Total	22 090	

The bankruptcy and inactivity data is organized as a binary variable. If the firm exits the market during the whole period, it is one, and zero otherwise. Firm inactivity is the type of firm exit, which dominates it. From table 10 it is observed, that there are much more inactive firms than bankrupt. Exit rate due to inactivity is 14.52%, when the exit rate due to bankruptcy is only 0.9%. Overall exit is 15.21%, which is relatively high when comparing to countries in Europe where the average firm exit rate is 6.3%[7].

The date of exit is recorded as another variable and together with the registration date, the age of the firm is computed. In my analysis, I group all firms into three groups: firms that are younger than 5 years old, firms that are older than 5 and younger than 10 years old, and firms that are older than 10 years old. The table below shows firms distribution by age group.

Table 9. Age group distribution of the firms

Age group of the firm	Number of firms
Young (0 to 5 yeas)	118 503
Mature (5 to 10 years)	93 375
Old (10 years and more)	143 135
Total	355 013

It is seen from table 10 that the most number of firm exits is in the Service industry and the biggest proportion of exits is in the Manufacturing / Construction industry. The attempts[8] of the government to stimulate the manufacturing and processing industry by

[7] Eurostat Business Demography Statistics, manufacturing sector, "Business demography statistics - Statistics Explained." Accessed April 15, 2017. http://www.bing.com/cr?IG=DC35474DAEAB449FB3D797F9E2535FBC&CID=29BFDD560B7D6847318FD7330AED69DC&rd=1&h=VA5JtjQOanZfqH_uUOX4ZZjORYz7m1KcMT2DSsDBBm8&v=1&r=http%3a%2f%2fec.europa.eu%2feurostat%2fstatistics-explained%2findex.php%2fBusiness_demography_statistics&p=DevEx,5063.1.

[8] http://akorda.kz/upload/%D0%93%D0%9F%D0%98%D0%98%D0%A0%20%D0%BD%D0%B0%202015-2019%20%D0%B3%D0%B3.doc

increasing government spending on manufacturing and processing plants leads to appearance of many one-time firms, which often shutdown soon after the benefits of the government programs stop.

Table 10. Overall summary statistics by industry sector

Industry	# of firms	Bankruptcy %	Inactivity %	Exit rate %	Firm age (years)
Manufacturing/ Construction	77 922	1,39%	16,61%	17,68%	8,17
Services	260 250	0,72%	14,16%	14,71%	9,22
Mining/Agriculture	16 841	1,88%	10,55%	11,54%	9,52
Total	**355 013**	**0,89%**	**14,52%**	**15,21%**	**9**

Table 11 shows summary statistics by firm size. It is seen that most number of firm exits is between small firms. On average, the firm in Kazakhstan is expected to exit after 9 years. This trend is mostly driven by small firms. The exit rate is the highest among small firms, which supports literature claims made earlier for developed countries.

Table 11. Overall summary statistics by firm size

Size	# of firms	Bankruptcy %	Inactivity %	Exit rate %	Firm age (years)
Small	345 446	0,90%	14,91%	15,60%	8,89
Medium	6 644	0,48%	0,72%	1,16%	13,61
Large	2 923	0,55%	0,58%	0.99%	12,18
Total	**355 013**	**0,89%**	**14,52%**	**15,21%**	**9**

4. Results and Discussion

As Jovanovic (1982) suggested and Ericson and Pakes (1995) supported, firm's exit depends on firm's age and size. This relationship holds true for developed and most of the developing countries as was shown in the literature review section. Therefore, I include them in my model as well. Liedholm, McPherson, and Chuta (1994) showed that

firm exit can be related to non-business reasons (government forced them to close, soft budget constraints (Kornai (1979))). Therefore, I explore the government affiliation factor in the model. In addition, as I have already mentioned, it is important to capture industry and regional effects to control for external factors such as competition and technology. At the end, the model of interest to us looks as follows.

$$P(exit = 1) = f(age, size, gov_{owned}, industry, region)$$

I use probit estimation technique since the probability of exit is the dependent variable. The literature suggests that as the size or age of the firm increases the probability of the firm going bankrupt decreases and this holds true in case of Kazakhstan as well.

4.1 Baseline Results

The baseline results of the probit regressions for the entire population of the firms are shown in the table 12. The results table consists of four models, where each model is the extension of the previous model. The model 1 includes the age of the firm as the only independent variable. The model 2 extends the model 1 by the addition of the dummy variable for the size of the firm. The results of the model 1 suggest that initially as firm matures the probability of the firm exit increases. As the firm reaches certain maturity age in the range between 5 to 10 years, its likelihood of exit is much lower. Firms that are 10 years old or more are less likely to fail than young firms. In the model 2 addition of the firm size, shows that medium and large firms are less likely fail than small firms, which is consistent with the Dunne, Roberts, and Samuelson (1988, 1989). As McPherson (1995) suggested, addition of the regional effects shows in model 3 that firms in North of

Kazakhstan are less likely to fail and that firms in the capital cities are more likely to fail. Higher risks in the capital cities are associated with higher competition. This trend is like a shakeout of firms due to competition pressure. Results of the model 4 suggest that firms with government share in them are much less likely to fail than private firms, and firms that are fully government owned have the greatest certainty of not exiting the market. This result contradicts the results of Frazer (2005), where he states that state-owned enterprises in Ghana are capital intensive, and therefore are more likely to exit.

Evidence from Kazakhstan supports the relationship between firm size and age on the firm's exit chances. In general, I can also say that government support significantly improves the firm's survival chances. Firm's location matters in determining its exit chances, with firms in the west and capital cities having the least chances to survive. High risks in these regions are dampened for partially or fully state-owned enterprises. Table12 indicates that general effect of firm age and size remains robust across various specifications.

4.2 Results by Industry Sector

Next, I take the effects of the industry into account to control for technology. The similar analysis is performed for the firms working in the Manufacturing/Construction, Services and Mining/Agriculture sectors. The results are shown in the tables 13, 14 and 15.

According to table 13, the model 1 shows a similar trend with respect to age of the firm. Firms in the manufacturing industry that are 10 years old are much less likely to exit the market. From model 2 it is seen that larger firms are less likely to exit. When looking at the regions, it is observed that manufacturing/construction firms in the west, central and capital cities of Kazakhstan are more likely to fail than in the rest of Kazakhstan. Model

4 shows that government affiliation in manufacturing/construction sector does not help companies to stay afloat. Only firms that are fully owned by the government have statistically different odds of exiting. Other government supported organizations in manufacturing/construction have the same odds of failing as the rest of the market. Table13 indicates that effect of firm age and size in Manufacturing/Construction industry remains robust across various specifications.

The survival chances of a firm in Manufacturing/Construction sector of Kazakhstan depend on its location. Manufacturing and construction firms in capital cities account for 37 percent of the entire manufacturing and construction industry. Therefore, high exit chances in capital cities could be due to high competition. West and central Kazakhstan have a lot of processing plants (oil and mineral processing). This industry is known for its high costs and since the world prices for their products in 2016-2017 were falling, it was hard to stay on the market. Therefore, these all could be a potential reason for high exit rates in these regions. Even partial government affiliation does not help companies to stay competitive because the government is not capable of controlling the world market. For example, huge currency devaluation could hurt the manufacturing and construction industries, because of the dependence on the imports. Only fully government supported organizations are safer, and only because there is not much of them in general and because those organizations most of the time serve a strategic purpose for the government, therefore softening their budget constraints.

As can be seen from the model 1 and model 2 of table 14, Service industry is no different than the rest of the market with respect to age or size of the firm. Older firms are much less likely to exit than younger firms. Model 3 shows that firms in Service industry from

Central and capital cities of Kazakhstan are more likely to fail than firms from South and West of Kazakhstan. Also, firms from North of Kazakhstan are less likely to exit the Service industry. The fully government-supported firms and firms with a minor share of the government in the service industry are much more stable.

High exit probability among firms in Service industry in Capital cities is likely due to high competition. Capital cities account for 33 percent of the entire service industry. According to the National Statistics Agency[9] people have been migrating from Central and East of Kazakhstan for the last 10 years. At the same time, capital cities were rapidly increasing. Some of these people were entrepreneurs in Service industry. Even though I cannot show a causal relationship, these are possible explanations for higher than average exit chances in Central, East and capital cities of Kazakhstan. Table14 indicates that effect of firm age and size in Service industry remains robust across various specifications.

For Mining and Agriculture sector as shown in table 15, the probability of exit is the highest among firms that are 5 to 10 years old. Young and old firms statistically have the same odds of failing. Similar to other industries, larger firms are less likely to exit the market. Model 3 tells us that firms in the Mining and Agriculture industry from the north of Kazakhstan are less likely to fail than the rest of Kazakhstan. Firms in this sector that are fully or partially (minority share) owned by the government have significantly fewer chances of exiting the market. Firms where the government holds the majority of the shares is no different than the rest of the market.

[9]Негізгі әлеуметтік-экономикалық көрсеткіштердің серпіні. Accessed April 15, 2017. http://stat.gov.kz/faces/homePage/homeDinamika.pokazateli?_afrLoop=17834534190120148#%40%3F_afrLoop%3D17834534190120148%26_adf.ctrl-state%3D1cq8027zu_63.

Mining and Agriculture industries show an unexpected trend with respect to the age of the firm. It contradicts the literature on this topic. Older firms having the same survival odds as the young firms can be explained by the world economic downturn of 2014-2015. A lot of old firms that were enjoying high oil profits, were hit hard by the oil crisis. Since oil rents accounted for about 30% of country GDP, the decline in this sector could force old and once stable firms out of the market. North of Kazakhstan is known for growing wheat, and due to 2014-2015 devaluations its export increases. This would explain advantages of agricultural firms in the North of Kazakhstan. Table15 indicates that effect of firm age and size in Mining/Agriculture industry remains robust across various specifications.

Table 12. Probit results for entire industry

Pr(exit)	Model 1		Model 2		Model 3		Model 4	
5-10 years old	0.302***	(0.00634)	0.307***	(0.00635)	0.280***	(0.00642)	0.293***	(0.00644)
10 years old or more	-0.252***	(0.00633)	-0.234***	(0.00637)	-0.259***	(0.00644)	-0.207***	(0.00653)
Medium firm			-1.183***	(0.0444)	-1.161***	(0.0453)	-0.992***	(0.0483)
Large firm			-1.287***	(0.0707)	-1.294***	(0.0722)	-1.136***	(0.0755)
North					-0.112***	(0.00953)	-0.0920***	(0.00968)
West					0.0425***	(0.00906)	0.0433***	(0.00916)
Central					0.194***	(0.0107)	0.188***	(0.0108)
East					0.0104	(0.0124)	0.0107	(0.0126)
Capital cities					0.363***	(0.00727)	0.332***	(0.00734)
Government (100%)							-1.515***	(0.0446)
Government (50-100%)							-0.460**	(0.146)
Government (0-50%)							-0.542***	(0.104)
Constant	-1.030***	(0.00444)	-1.023***	(0.00445)	-1.148***	(0.00684)	-1.135***	(0.00688)
Observations	355013		355013		355013		355013	

Standard errors in parentheses, Base results are for Small firms, age 0-5 years old, in the South of Kazakhstan, with zero government share

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13. Probit results for Manufacturing/Construction industry

Pr(exit)	Model 1		Model 2		Model 3		Model 4	
5-10 years old	0.279***	(0.0127)	0.284***	(0.0127)	0.277***	(0.0128)	0.277***	(0.0128)
10 years old or more	-0.191***	(0.0132)	-0.173***	(0.0133)	-0.191***	(0.0134)	-0.191***	(0.0134)
Medium firm			-1.049***	(0.0880)	-1.020***	(0.0890)	-1.003***	(0.0894)
Large firm			-1.218***	(0.133)	-1.219***	(0.136)	-1.177***	(0.138)
North					-0.0488*	(0.0207)	-0.0475*	(0.0207)
West					0.135***	(0.0181)	0.135***	(0.0181)
Central					0.135***	(0.0225)	0.134***	(0.0225)
East					-0.0378	(0.0277)	-0.0383	(0.0278)
Capital cities					0.323***	(0.0149)	0.322***	(0.0149)
Government (100%)							-0.985***	(0.187)
Government (50-100%)							-0.536*	(0.259)
Government (0-50%)							-0.192	(0.173)
Constant	-0.960***	(0.00889)	-0.955***	(0.00890)	-1.102***	(0.0141)	-1.100***	(0.0141)
Observations	77922		77922		77922		77922	

Standard errors in parentheses, Base results are for Small firms, age 0-5 years old, in the South of Kazakhstan, with zero government share

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14. Probit results for Service industry

Pr(exit)	Model 1		Model 2		Model 3		Model 4	
5-10 years old	0.298***	(0.00750)	0.303***	(0.00753)	0.266***	(0.00762)	0.284***	(0.00765)
10 years old or more	-0.273***	(0.00745)	-0.256***	(0.00749)	-0.290***	(0.00761)	-0.221***	(0.00774)
Medium firm			-1.273***	(0.0566)	-1.258***	(0.0582)	-1.035***	(0.0631)
Large firm			-1.380***	(0.0927)	-1.391***	(0.0948)	-1.182***	(0.100)
North					-0.103***	(0.0114)	-0.0787***	(0.0116)
West					0.0177	(0.0110)	0.0163	(0.0111)
Central					0.232***	(0.0125)	0.221***	(0.0127)
East					0.0456**	(0.0145)	0.0410**	(0.0147)
Capital cities					0.391***	(0.00877)	0.347***	(0.00888)
Government (100%)							-1.536***	(0.0476)
Government (50-100%)							-0.424	(0.218)
Government (0-50%)							-0.732***	(0.175)
Constant	-1.040***	(0.00526)	-1.032***	(0.00527)	-1.167***	(0.00824)	-1.149***	(0.00831)
Observations	260250		260250		260250		260250	

Standard errors in parentheses, Base results are for Small firms, age 0-5 years old, in the South of Kazakhstan, with zero government share

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15. Probit results for Mining/Agriculture industry

Pr(exit)	Model 1		Model 2		Model 3		Model 4	
5-10 years old	0.501***	(0.0338)	0.508***	(0.0339)	0.479***	(0.0343)	0.489***	(0.0344)
10 years old or more	-0.0665*	(0.0307)	-0.0460	(0.0309)	-0.0721*	(0.0315)	-0.0758*	(0.0315)
Medium firm			-0.768***	(0.138)	-0.708***	(0.139)	-0.694***	(0.140)
Large firm			-0.866***	(0.202)	-0.850***	(0.203)	-0.782***	(0.206)
North					-0.252***	(0.0337)	-0.256***	(0.0337)
West					-0.00531	(0.0407)	-0.00708	(0.0408)
Central					-0.0369	(0.0645)	-0.0320	(0.0647)
East					-0.122*	(0.0584)	-0.120*	(0.0585)
Capital cities					0.101*	(0.0500)	0.0967	(0.0501)
Government (100%)							-0.749**	(0.267)
Government (50-100%)							-0.486	(0.303)
Government (0-50%)							-0.665**	(0.214)
Constant	-1.295***	(0.0235)	-1.289***	(0.0235)	-1.208***	(0.0294)	-1.201***	(0.0294)
Observations	16841		16841		16841		16841	

Standard errors in parentheses, Base results are for Small firms, age 0-5 years old, in the South of Kazakhstan, with zero government share

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5. Conclusion

This is the first paper exploring the determinants of firm exit in Kazakhstan and it serves as a foundation for future work to be conducted on other CIS or former USSR countries. Several conclusions can be made. Bigger and older firms in Kazakhstan are less likely to exit because of the bankruptcy or long inactivity of the firm. Firms that are affiliated with government are a much less likely fail. This result contradicts Frazer (2005) that government supported organizations are actually more likely to exit. Evidence from Kazakhstan explains why most of the foreign investors that enter the market in Kazakhstan seek government affiliations in the form of joint ventures. This is a form of risk minimization for them. By including the regional dummies, it is concluded that major cities of Kazakhstan, Astana, and Almaty, and West of Kazakhstan are the markets where firms are most likely to exit in Kazakhstan. West of Kazakhstan is the black gold mine that used to generate most of the country's revenue in the past. High likelihood of exit in this region can be explained by high competition and unfavorable external conditions, such as oil price drop. Capturing industry effects, it is concluded that external oil price shocks affected firm's exit in the Mining industry of Kazakhstan. The fact that older firms in the Mining industry are equally likely to exit as the young firms, points to the fact that mining industry heavily depends on the world market condition.

The limitations of this work are that the size classification of the firm does not take into account firm's productivity, which in reality is regulated by the government through profit caps for each firm type. Also, the data does not include the firms which were liquidated on their own. The model also can be reorganized to perform panel data analysis, in order to capture the effect external shocks, such as currency devaluations.

6. Future Work

In my Ph.D. studies, I will reconfigure the model into panel data in order to investigate the effect of external shocks. The goal is to gather sufficient information to track yearly changes happening to the firms. I will add the yearly taxes of firms as a proxy for the firm's productivity.

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