DETERMINANTS OF ENTRY OF FIRMS IN UKRAINE

by

Suleimanov Seit-Bekir

A thesis submitted in partial fulfillment of
the requirements for the degree of

MA in Economic Analysis

Kyiv School of Economics

2015

Thesis Supervisor: Professor Volodymyr Vakhitov

Approved by _____
Head of the KSE Defense Committee, Professor Irwin Collier

_____

_____

_____

Date _____

Kyiv School of Economics

Abstract

DETERMINANTS OF ENTRY OF FIRMS IN UKRAINE

by Suleimanov Seit-Bekir

Thesis Supervisor: Professor Volodymyr Vakhitov

The aim of the paper is to study the determinants of entry of firms in Ukraine. To estimate the determinants we use the panel data for years 2002-2008 coming from the National Statistics Department and the data archive of the Kyiv School of Economics. There are firm specific, industry specific and region specific factors. The paper in contrast with previous works concentrated on the Ukrainian market. As in the case with Sweden we found that the agglomeration factors almost do not affect the entry choice. There is also an evidence that the increase in available job positions decrease the entry rate.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my thesis advisor, Professor Volodymyr Vakhitov, for his encouragement and guidance in the process of working on this research. His thorough reviewing of numerous drafts and valuable comments always made me work hard but also provided with enthusiasm, and that was exactly what I needed.

Chapter 1

INTRODUCTION

The problem of firms' survival is poorly explored while it is very important in terms of overall economy of the country. To be able to influence the situation it is necessary to understand the main factors which affects the firms' entry and exit. It is useful from both sides – for entrepreneurs who wants to enter or continue working in the market and for government, which could improve the conditions in which the companies operate.

The empirical works on firms` survival started to appear in late 80s in developed countries such as USA, UK and Canada. Most of the works belongs to the study of manufacturing sector. The main issue behind such study is the data. It requires a country spread statistical system, which could properly gather the data and be open for the society. Relatively similar datasets in Ukraine started to appear in the mid of 2000s.

With this work we want to explore the determinants of entry and exit in Ukraine`s market and to provide the base for the future studies in this filed, either theoretical or empirical. We use the data provided by National Statistical Agency and the data archive of Kyiv School of Economics. It covers the observations for the period from 2000 until 2009. It includes the firms within each industry, both 2- and 4-digit, which operates in Ukrainian market for particular year.

The data contains 1.4 mil observations. Almost 261 thousands relates to the manufacturing, which is one of the largest sector in Ukraine. The exit rate of firms in manufacturing was flat during the chosen period (~12%). At the same time, the share of entrants declined monotonically each year, started from 18% in

2002 up to 10% in 2008. This significant drop caused decline in total firms` number.

What is more interesting, that there was overall economic growth in Ukraine. Gross domestic product during this period increased by 174% in dollar terms. However, the entry rate decreased almost two times from 16% to 7.3%. Exit rate increased from 9% to 14%. We definitely spectate the convergence of entry and exit in Ukraine, which is seems to be bad sign.

Browsing the data we can identify when the firm entered the market, exited (if this is true), we can also identify the level of output of each firm, number of employees and some other options. This helps us to compare the firms between themselves, between industries, between entrants and incumbents, etc.

We introduce two different approaches to this study. We will start with simple analysis of the data. Then we apply couple of specifications to test the hypothesis. The main tool we use is the logistic regression analysis, there are three different types of it (simple logistic, longitudinal logistic, multinomial logistic). We do it for firms within industry and for the market itself.

As the topic is not explored in Ukraine before there are also a row of hypothesis, which need a verification. Does the entry and exit differs across industries, does it exist the correlation between these two? It is also important to find do the rates of entry and exit have an impact on the following years?

By introducing cross-tabulation analysis we open the main tendencies in the market. But it is also important to understand the determinants of such patterns. That is why we introduce the regression analysis. It disclose the causes of corresponding behavior. There are a list of hypothesizes belonging this issue. We also open up the industry-specific factors importance.

The article constructed in such a way. The next chapter discovers the literature review, which is the analysis of the papers wrote before in this field. Further we have the methodology section, where we choose and discuss the approach to study the issue. After the methodology there is a data description part. It describes the dataset, we work with, in details. Chapter 4 contains the empirical results, which was obtained due to methodology described in chapter 2. And the last section includes the conclusions.

Chapter 2

LITERATURE REVIEW

Agarwal and Audretsch (2000) studied the relationship between the entry size of a firm and its survival. They found that this relation is negative. For the new entrant it is hard to compete with the incumbent. In small-scale industries the entry is easier for businesses but the survival rate is smaller than in the case where only large-scale firms can enter the market. Still in latter case the survival is higher. That is the entry size decrease the probability of failure. They also stated about the negative relation between growth rate and firm`s size: bigger the firm – less the growth rate. As a measure of size the authors used a dollar asset size. Moreover, Agarwal and Audretsch introduced a t-year survival rate as "as the fraction of the total number of firms that survived at least t years".

The effects of industry, location and strategy on firm survival are studied by Stearns, Carter, Reynolds and Williams (1995). Things we are interested in are location and industry. The authors made hypothesis about the coefficients behind the variables. They supposed that firms in urban area have more chances to survive because there are many resources. They also made an assumption that as closer the particular industry to the final consumer there is more competition (because there is no need in high technologies). That is why the survival chances decrease over the industry chain. The results were unexpected. Location became significant but with a negative sign. It means that the survival chance decrease in urban area compared to rural area. The latter could belong to the higher competition in cities. As for industry variable, the coefficient became insignificant. The same result with interaction between them.

Dunne, Roberts and Samuelson (1988) proposed a simple cross-tabulation approach to the entry and exit of firms in U.S. manufacturing. They used cohort

division of the data. The data covered the interval from 1963 to 1982. The authors divided the data into 5 year cohorts. The first cohort was the base one and started from the 2nd they checked for the new entries and exits. With such data they developed a ratios for the entry, exit, market share and relative size. As the outcome the authors constructed a tables which represent the dynamics of the ratios for all firms and separately for each industry. Dunne, Roberts and Samuelson found that "the market share of each entering cohort of firms declines as the cohort ages". At the same time they found that new entrants that survive become larger every subsequent year. It means that the firm exit process overwhelming the firm expanding process which creates a space for new firms to enter. This is quite natural thing.

What is interesting is that there is another similar work to that one which is made by Dunne, Roberts and Samuelson (1988). Jarmin, Klimek and Miranda (2004) repeated the steps of those authors but instead of manufacturing choose the retail sector. They used the data period from 1977 to 1997 with almost 23 million establishments in it. They found similar patterns as Dunne, Roberts and Samuelson when studying the manufacturing sector.

The productivity and size of survived firms increase each year. It was found by Liu (1991) in the paper "Entry-Exit, Learning, and Productivity Change". This mostly relates to the competition. The least efficient firms drop while more efficient continue to work. This process increases the barriers of entry for the new firms. That is why each new entrant should be more efficient in terms of factors productivity. Liu marked that "the gap in productivity between surviving and exiting plants and between exiting and entering plants has widened over time; while the gap between surviving and entering plants has narrowed". Also author took a look on a skilled labor versus unskilled labor. The tendency is in favor of

skilled labor which fraction rapidly increased compared to unskilled. Liu suggested that this is the main contributor to increase in productivity.

There exists another approach to the survival analysis of the firms. One can introduce so-called hazard functions. It represents the rate of exit for particular firm. Disney, Haskel and Heden (2000) applied them in studying the UK manufacturing. Based on previous findings the hazard function should depend on size and age. The authors "estimated a Cox proportional hazard model". As a result they found couple relations. "An industry with a high entry rate will also have a high exit rate over time". Scientists explain this by small fixed costs, which makes entry and exit comparatively easy. They also found the dependence between size and exit rate, which is negative. The novel outcome the authors found is that "age/hazard profiles are highly non-linear for single plants, although the age/hazard profile exhibits an inverted 'U' shape rather than a monotonic decline". From the other side "the hazard for group establishments is fairly flat".

The role of agglomeration factors in entry decision are studied by Nystrom (2005). She worked with the Sweden market. The author found that the effect of the agglomeration factors is very limited on the aggregate level. But at the industry level they definitely influence the entry and exit choice.

The determinants of entry in Slovenian market were studied by Mognik (2010). She found significant difference in the economic environment for the new startups between the regions. She also found a negative correlation between the employment in particular region and the entry rate. With this the author proposed another hypothesis that the increase in vacancies decrease the occurring of new startups.

Chapter 2

METHODOLOGY

We will study the entry and exit patterns in Ukraine by two methods. Firstly, we will introduce simple cross-tabulation analysis. With this method, we will check for different hypothesis just analyzing the data. Second part will describe the regression analysis. It will give us numerical results.

Regression analysis

The regression analysis will be provided with different specifications.

We will start with the new firm`s entry issue. We create a specific variable which is equal to 1 for a firm for a particular year if it is the first year for firm`s operating in the market. We also created the variable for firms, which exit the market. That variable is equal to one if it is the last year we have observation in the data set for this particular firm.

As the dependent variable has only two outcomes, 0 and 1, we have to use according regression type. We choose the logistic regression in favor of probit due to computational constraints.

We divide independent variables by categories: firm specific, sector specific, relative sector specific. We create all the variables on the territory basis.

To firm specific variables we address the factors, which are individual and comparable at first year of existing. One of the parameters we choose the total fixed assets and another is employment. We believe these parameters describe the entry size of the firm.

For sector`s control we create a variable, which is equal to the total employment in own industry (with 2-digit code) excluding own employment of particular firm. We will also control for number of firms in 2-digit industry. Moreover, we add the variable, which represents the total employment in manufacturing excluding own 2-digit industry employment and similar variable indicating the number of firms.

We define a list of sectors, which are closely related to the manufacturing sector. Sector "G" (services), sector "K" (business services), sector "J" (finance), sector "I" (transportation), sector "F" (construction) are all closely work with manufacturing. That is why we create a variables representing the total number of firms in each particular sector and employment in each sector.

Our basic equation (1):

$$entrynt = \beta_0 + \beta_1 * lnempl + \beta_2 * lnkep + \beta_3 * kv2empl1 + \beta_4 * emplDex + \beta_5 * emplGall + \beta_6 * emplJall + \beta_7 * emplKall + \beta_8 * emplFall + \beta_9 * emplIall + \beta_{10} * kv2nf1 + \beta_{11} * nfDex + \beta_{12} * nfGall + \beta_{13} * nfJall + \beta_{14} * nfKall + \beta_{15} * nfFall + \beta_{16} * nfIall + \beta_i * i.year + \beta_j * j.kv2n$$

The variable *lnempl* is simply the logarithm of own employment. It is hard to predict which sign has the coefficient in front of this variable. As we know from literature – bigger the new firm, easier to enter and survive. From the other side, the turnover is higher for small firms with less total costs, which is seen from the data. We expect this coefficient to have negative sign.

Lnkep is the log of capital ppi deflated. It is another measure of entrant`s size. We expect the same behavior as with the employment.

Kv2empl1 is a total employment in own 2-digit sector, except own. More employment in the same 2-digit industry means more activity in particular city, both more firms and bigger firms. This is agglomeration effect, which should be positive due to literature.

Kv2nf1 is the number of firms in own 2-digit industry minus the employment of particular firm. It is close to previous variable and should have similar effect.

EmplDex is the employment in manufacturing outside own 2-digit industry. This is similar to *kv2empl1* but more wider term. That is why we expect positive sign.

NfDex is the number of manufacturing firms outside own 2-digit industry. It is also an agglomeration variable, which should stimulate the entry.

EmpGall, empJall, empIall, empKall, empFall represent the total employment in each related sector. *NfGall, nfJall, nfIall, nfKall, nfFall* represent the total number of firms in each related sector.

We also control for years and each 2-digit industry. Here and thereafter we exclude years 2001 and 2009. It is impossible to detect the true entry and exit in this years.

It is also important to see if the firm decided to enter, which place will it choose? To explore this topic we will rearrange the model.

We use the equation (1) but include the restrictions on the city and sector. There are more than 500 different territory codes. Most of the times the activity is close to zero. As we see from the data significant amount of firms concentrate in big cities. That is why we use the big city condition while doing the regression analysis. This will help to reduce the sample and make conclusions that are more relevant.

We choose ten biggest cities in terms of firms` activity and six sectors that we decided are related to each other.

Chapter 3

DATA DESCRIPTION

We use the panel data of firms` statistics for Ukraine for years 2001-2009. There are two sources of the dataset: National Agency of Statistics and Kyiv School of Economics` dataset archive.

There are more than 1.4 million of observations for all firms. Data contains different companies' characteristics for particular year. Each firm has its particular "id". The presence of each particular observation means that a firm exists this year. It could be new establishment or existed one. While the absence of observation could mean the error in data constructing or the unwillingness of the firm to report the data.

Figure 1 represents the dynamic of number of firms alive per year. There is a 4% growth rate of firms` number each year on average up to year 2007 (135713 firms in 2001 and 171026 firms in 2007). As we know, it was a world financial crisis, which has significant consequences in Ukraine. Therefore, in 2009 it was a 6% drop in firms` number (160059 firms in 2009). Average number of firms per year is equal to 158,000.

The data also contain the region distribution of firms. There are 27 regions in the data (24 oblast, Autonomous Republic of Crimea, Kyiv, Sevastopol). The most active region in terms of firms is the Kyiv city. More than 16% of the data belong to the capital of Ukraine, amid less than 4% of data pertain to Kyivska oblast. The oblast which shows small activity is Chernihivska. There are couple explanations why is it so. It could also be that firms could underreport statistic. Still there is only 1.3% of data belongs to this region.

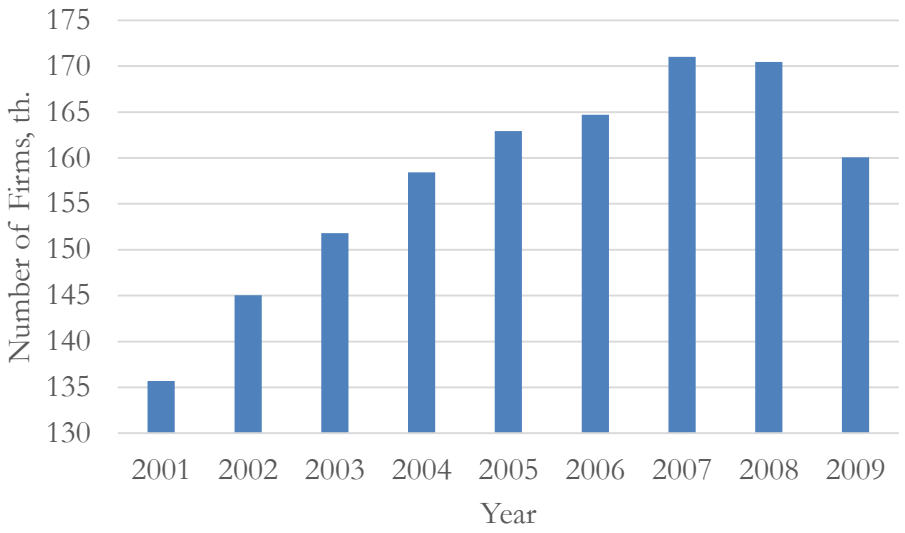

Figure 1. Number of firms per census year

The geographical distribution includes also division on West, East, North and South. The most developed region in terms of firms is the Center-North region. Almost 40% of firms located in this part.

Table 2. The description of the division variables

Variable	Description	Number of groups
Kv2n	Particular firm`s 2-digit industry code	55
Sek	Numeric sector`s code for particular firm	14
Tet5n	Numeric territory code of particular firm	669
Tet2n	Numeric code of oblast for particular firm	27*

* including Kyiv city and Sevastopol

There is also 2-digit distribution by industry, which is called "kv2n" (see Table 2). There are 55 different industries. The "wholesale trade" industry includes 16% of all data, which makes it the most active one. While the uranium, thorium ores extraction has only eleven observations, with at least 1 observation per year

(except for year 2002). There was a substantial expected decline in firms` number at year 2009. This is mostly due to world financial crisis. There are only seven industries out of 55 that posted increase in firms` number in year 2009. Among them the most developing industry is the real estate. There was a substantial increase in number of firms each year started from the very beginning.

The variable urban represents whether the firm locates in urban settlement. The variable was constructed from the particular location of the firm. From the data description we can state that almost two thirds of the companies situate in urban area.

Along the industry division the data is also divided by sectors. There are forteen sectors with a NACE subscriptions. From the variable`s decription we can mark three biggest sectors in Ukraine. More than 26% of observations relate to the sector G (wholesale and retail trade). The secong biggest sector is D which is manufacturing with almost 19% of observations. The third one is K (real estate) with 17,8% of observations.

There is also a list of variables which describe the firm characteristics. There is an output variable which represents the total revenue PPI deflated with mean value 5545 (see Table 3).

Table 3. The description of firms` characteristics

Variable	Description	Mean	Min	Max
Output	Total revenue per year, PPI deflated, in UAH	5545	0.023	3.41e+07
Kep	Capital, PPI deflated, in UAH	2044.642	0.031	1.38e+07
Empl	Particular firm`s employment	55.2	1	125291

There is also an employment variable which shows the number of employees who work in oarticular firm. It ranges from 1 for the smallest firms up to 125291 (see Table 3) people in huge telecom company, cituated in Kyiv.

We will use the variable "kep" which is capital PPI deflated as a measure for the entry size. It has mean 2044.642 with the standard deviation 44,592 (see Table 3).

We also created variables entry and exit (see Table 4), which are dummy variables. Entry is equal to 1 for the first year of occuring in the data and zero otherwise. The variable exit is equal to 1 for the last year of occurance in the data and zero otherwise. We exclude the first year for the variable entry as it does not reflect the true entry value, because with this year the dataset begins. That is why each firm is considered as the new one. The same implication with the last year in dataset for the variable exit. On average each year almost 24,440 new firms enter the market and almost 20,751 exit the market. We definitely see the convergence of the entry and exit in Ukraine.

We will also take into account the U.S. manufacturing firms` analysis done by Dunne, Roberts and Samuelson (1988) and develop similar analysis for Ukraine. We are going to introduce the list of variables:

$NF_i(t)$ – number of new firms that entered the market in particular year t for industry i;
$TF_i(t)$ – the total number of firms in particular year t for industry i;
$XF_i(t)$ – number of firms that exit the market in particular year t for industry i;
$NQ_i(t)$ – total output of firms that enter the industry in particular year t for industry i;
$XQ_i(t)$ - total output of firms that exit the industry in particular year t for industry i;
$TQ_i(t)$ – total output of all firms in particular year t for industry i.

Table 4. The description of entry and exit

Variable	Description	Number of observations per census year						
		2002	2003	2004	2005	2006	2007	2008
Entrynt	Equal to 1 if for the first occurring in the data	32,242	26,845	25,330	22,400	22,328	22,425	19,513
Exitnt	Equal to 1 for the last year data record	16,807	17,419	17,603	19,391	19,649	23,085	31,303

With the variables introduced above, we are going to define the entry and exit rates for particular industry:

$$ER_i(t) = \frac{NF_i(t)}{TF_i(t-1)}$$

$$XR_i(t-1) = \frac{XF_i(t-1)}{TF_i(t-1)}$$

We will also look at the contribution of the new firms to the market output. Such market share we include both for new firms and for exit firms:

$$NMS_i(t) = \frac{NQ_i(t)}{TQ_i(t)}$$

$$XMS_i(t-1) = \frac{XQ_i(t-1)}{TQ_i(t-1)}$$

Two more measures we are going to use are the average size of the new firms (NFS) and firms, which exit (XFS), relative to the incumbents:

$$NFS_i(t) = \frac{NQ_i(t)/NF_i(t)}{(TQ_i(t) - NQ_i(t))/(TF_i(t) - NF_i(t))}$$

$$XFS_i(t) = \frac{XQ_i(t)/XF_i(t)}{(TQ_i(t-1) - XQ_i(t-1))/(TF_i(t-1) - XF_i(t-1))}$$

We calculated the coefficients for each year starting from 2002 to 2008 (see Table 5). We excluded the first and the last year in the dataset due to correctly calculating the rates.

Table 5. Entry and exit measures of manufacturing sector in Ukraine

	2002	2003	2004	2005	2006	2007	2008
Entry rate (ER)	0,182	0,138	0,118	0,096	0,099	0,091	0,074
New firms Market Share (NMS)	0,094	0,095	0,090	0,093	0,095	0,104	0,137
New firms relative size (NFS)	0,066	0,044	0,034	0,024	0,016	0,017	0,015
Exit rate (XR)	0,021	0,024	0,023	0,034	0,014	0,019	0,021
Exit firms market share (XMS)	0,336	0,289	0,265	0,229	0,149	0,169	0,190
Exit firms relative size (XFS)	0,205	0,303	0,280	0,364	0,141	0,183	0,158

From the Figure (1) we can notice that the entry rate monotonically declined year over year. The average entry rate for particular year varies from 0.073 to 0.182. Thus, on average almost 11% of firms did not work in industry before. The market share of new firms is significantly lower than the entry rate and ranges from 0.015 to 0.066. On average, new firms are responsible for 3% of total industry output in particular year. The relative size ratio ranges from 0.15 to 0.34 and shows us that the new firms, on average, produces 23% of the average

output level of incumbent firms. This tells us that the entrants are much smaller than the incumbents are.

The similar situation is with the exit measures. The average exit ratio varies from 0.089 to 0.137 and on average is equal to 10% for each particular year. The market share of exiting firms differs between 0.020 to 0.037 and on average is equal to 2.5% for particular year. As for average output of exiting firms compared to average output of non-exiting firms – it ranges from 0.142 to 0.301, which is almost 21% on average for each census year.

As for patterns, all three entry ratios posted substantial decrease over the dataset. The entry rate, market share of entrants and the relative size of new firms decreased by 60%, 77% and 44% respectively in 2008 compared to year 2002.

The exit ratios posted different dynamics. The exit rate was more or less constant through time and the only significant hike was in year 2008. The market share of exiters is the same on sides with a peak in 2005. The dynamics for the average relative size for firms, which exit the market changed through a lot. It motonically increased up to year 2005 with the following drop in 2006 and remained flat to 2008. The corresponding changes are 47% increase in exit rate, 4% increase in market share and 23% decrease in relative size of firms, which exit the market.

The main finding, which approves our hypothesis, states that the size of entering and exiting firms is smaller than of incumbents.

In order to proceed with regression analysis we need to create additional sector specific and related sector specific variables. As we work with manufacturing it is important to measure the employment and the number of firms in the own industry and inside the whole manufacturing within the borders of particular territory.

We define the list of the related sectors to the manufacturing. The description of the sectors provided in the Table 6.

Table 6. Description of sectors (manufacturing and related sectors)

Sector Code	Sector Name	Average number of firms per year	Percent of overall observations (%)
D	Manufacturing	28,000	18,7
G	Wholesale Trade	42,000	26,4
K	Services	27,000	17,7
J	Finance	1,500	0,9
I	Transportation	8,000	5,4
F	Construction	17,000	10,8

Chapter 4

EMPIRICAL RESULTS

In this section, we will represent the results, which we've obtained. It contains three parts: first one – simple logistic regression, second part – longitudinal logistic model, third part – multinomial logistic model.

Logit model

We start with the basic model, which is equation (1). We exclude years 2001 and 2009. The target is the manufacturing sector. We also control for 2-digit industries and years.

All the coefficients are jointly significant. By simply looking at the results of the logistic regression we can speak about the signs and particularly significance of the coefficients. To obtain some numerical results we should calculate margins, which represent the impact of variables.

Firm specific variables have negative and significant coefficients. Both employment and capital decrease the probability of entry choice. One percent increase in *lnempl* decrease the entry probability by 4.6%. This is significant effect. While for surviving the size plays important role and decreases the probability of closing, for the entry decision the situation is different. There is a huge turnover for small firms in the market. This result tells us that there are many more small firms than big one. It is easier to them to enter the market, which as we see has low entry barriers.

Table 7. The determinants of entry for sectors "D" and "G"(logistic regression, marginal effects)[1]

Variable	Sector	
	D	G
lnempl	-.0457***	-.0743***
	(.0006)	(.0007)
lnkeptet5c	.0053***	.0077***
	(.0009)	(.0010)
lnkep	-.0014***	-.0066***
	(.0003)	(.0003)
kv2empl1	3.24e-07**	1.83e-06***
	(1.46e-07)	(1.88e-07)
emplD(G)ex(all)	1.14e-07***	1.39e-07***
	(4.35e-08)	(4.23e-08)
emplG(D)all(ex)	2.17e-07	9.51e-07***
	(1.65e-07)	(1.65e-07)
emplJall	1.55e-06***	8.90e-08***
	(6.73e-07)	(6.59e-07)
emplKall	1.10e-06***	2.09e-06***
	(3.39e-07)	(3.24e-07)
emplFall	-1.94e-06***	-1.09e-06***
	(3.19e-07)	(2.92e-07)
emplIall	2.04e-07***	2.76e-07***
	(7.89e-08)	(7.74e-08)
kv2nf1	.00002**	-.00008***
	(.00001)	(6.93e-06)
nfD(G)ex(all)	-.00002*	-.00001*
	(8.05e-06)	(8.26e-06)
nfG(D)all(ex)	-8.95e-06	-.00006***
	(7.07e-06)	(7.03e-06)
nfJall	.00002	-.0004***
	(.00007)	(.00007)
nfKall	-.00002	7.06e-06
	(8.24e-06)	(8.16e-06)
nfFall	.00003**	.00003*
	(.00001)	(.00001)
nfIall	-.00001	.00007***
	(.00002)	(.00002)
Number of observations	210117	297087

* = p < .1; ** = p < .05; *** = p < .01.

[1] – standard errors in parenthesis.

Similar situation we have with the own capital of firms. While the effect is smaller it is still negative. A 10% increase in capital decreases the probability of entry by 0.1%.

As we expected the employment in manufacturing in the region excluding own employment along with the total employments in the related sectors have positive and statistically significant effect. The only exception is the sector "F", which is the construction sector. It has a negative effect on the entry choice. However, the coefficients are small and play role only in big cities such as Kyiv, Odessa, Kharkiv, Donetsk, Dnipropetrivsk. There is only one insignificant coefficient in front of sector "G".

Number of firms in own 2-digit industry has positive effect. While number of firms in manufacturing excluding own firm decrease the chance to enter. The coefficients are almost similar and offset the effect of each other.

Among the control variables for the firms` number for related sectors the only negative and statistically significant effect has sector "K". The other sectors have either positive or insignificant coefficients.

The coefficients behind years shows the dynamics of entry year over year with the base year 2002. This is simply, what we have seen from the data description. The entry rate declines over time.

We also did the same regression but everything in logs. The tendency is the same and coefficients are similar. Identical situation for the case with levels only, which means that capital, employment and capital by cities minus own capital are in levels.

In the second column of the Table 7 we can see the same results but for sector "G", which is wholesale trade and top one sector by the number of observations.

We can state from the coefficient in front of employment that the average size of firms in this sector is smaller. This is predictable; the entry barriers are lower than in manufacturing.

Everything is the same as with manufacturing. Except for the number of firms in own 2-digit industry minus own employment. It is negative, 1000 more firms decrease the probability of new entry by almost 0.09%. Still we see that the impact is not very high.

In the Table 8 we present the coefficients logarithm of employment in own 2-digit industry except for own employment, number of firms in manufacturing except for employment in own 2-digit industry and number if firm in own 2-digit industry except for employment in particular firm. We repeat this for each particular city.

There are three cities for which all of the coefficients listed in the Table 8 are significant: Dnipropetrovsk, Kryvyi Ryh and Lugansk. In this cities the manufacturing has the biggest share comparing with other sectors.

A 1% increase in total capital in Dnipropetrovsk increases the probability of occurring of the new firm by 8.6%. In the same time, number of firms is also positively affects the entry choice but the coefficient is not high. Increasing the number of firms by 100 increases the entry probability by 0.7%. The same coefficient for employees in own 2-digit industry.

As for Kryvyi Ryh, it has very high coefficient in front of total capital stock of the city. Increasing it by 1% increases the probability of enter by 24%. This could say us that the city needs huge investments. It will stimulate the development of

manufacturing in it. But the city is small in terms of population and total area. Perhaps, that is why the total number of firms and total employment in own 2-digit industry decreases the probability of enter. But the effect is very small comparing to the total capital.

Table 8. Capital, number of firms and employment for manufacturing across cities (marginal effects, logistic regression)[1]

City	Manufacturing		
	lnkeptet5c	*nfDex*	*kv2nf1*
Dnipropetrovsk	8.5626***	.0072***	.0074***
	(.2267)	(.0009)	(.0009)
Kryvyi Ryh	24.3063***	-.1595***	-.1628***
	(1.2030)	(.0091)	(.0095)
Donetsk	-6.6930	.0252	.0263
	(-)	(-)	(-)
Mariupol	-5.9678	.3158	.3189
	(15.9528)	(.8741)	(.8777)
Zaporizhia	14.1515	.1341	.1355
	(.4367)	(.0044)	(.1355)
Lugansk	5.9592***	-.0127***	-.0111***
	(.2466)	(.0012)	(.0017)
Lviv	-	-	-
Odesa	.0018	.00002	.0007
	(4.4905)	(.0583)	(.0583)
Kharkiv	.0022	.00002	.0005
	(.2119)	(.0035)	(.0035)
Kyiv	-	-	-

* = p < .1; ** = p < .05; *** = p < .01.
[1] – standard errors in parenthesis.
(-) – not estimable.

Similar dynamics we can see in Luhansk. While total capital in the city increases the entry choice significantly, the total number of firms and total employment decreases it. But this decrease is also very tiny.

For the Dnipropetrovsk it is true that the capital in the city across all the manufacturing firms except for own one is positive.

The next model (Table 9) shows the coefficient behind the employment in sector excluding the employment in 2-digit industry for each industry and big city.

We see the difference between sectors. For manufacturing the coefficients are negative for the cities where it is significant. That is in cities with a big number of employees in this sector the probability of entry is lower.

Table 9. Employment in own sector excluding industry employment for each sector and city independently (marginal effects, logistic regression)[1]

City	Sector					
	D	F	G	J	K	I
Dnipropetrovsk	-.00003*** (4.97e-06)	7.50e-06 (.0004)	-4.96e-06 (.0001)	.00003 (.0004)	-2.29e-06 (.00004)	.00008*** (.00001)
Kryvyi Ryh	-.0002*** (.00004)	.0009*** (.00003)	-4.96e-06 (-)	.00003 (.0139)	- .00008*** (.00002)	-.00009 (.00006)
Donetsk	.0000393 (-)	1.18e-06 (.0003)			-.0001 (.0001)	-.00005*** (2.53e-06)
Mariupol	.00008 (.0002)	9.48e-07 (.0001)		.0026 (-)	-.00009 (.00008)	.001089
Zaporizhia	-.00003*** (2.93e-06)	9.43e-06 (.0007)	-2.37e-06 (.0005)	-.00005 (.0009)	-.0003*** (.00006)	.00002 (.00007)
Lugansk	-.00006*** (.00001)	.00001 (.0008)	-.00001 (.00008)		.0003 (.0003)	-.0002 (.0001)
Lviv			-.0001 (.0001)		-.00009 (.00006)	-4.63e-06 (.00001)
Odesa	1.45e-06 (.0001)	8.42e-06 (.0004)	-5.14e-06 (.00009)	-1.82e-07 (.0003)	-.0002** (.00008)	-6.42e-06 (.00001)
Kharkiv	8.41e-07 (.00001)				.00003 (.00009)	1.69e-06 (.00002)
Kyiv						1.53e-06 (2.48e-06)

* = p < .1; ** = p < .05; *** = p < .01.

[1] – standard errors in parenthesis.

(-) – not estimable.

The situation is opposite for the sector "F". The increase in the number of employees in own sector increase the probability of entry of new firm. Still it is significant only for Kryvyi Ryh.

Table 10. Firm`s employment in the entry year across cities and sectors for each sector and city independently (marginal effects, logistic regression)[1]

City	Sector					
	D	F	G	J	K	I
Dnipropetrovsk	-.0551*** (.0033)	-.0897 (.0079)	-.0850*** (.0041)	-.1514*** (.0270)	-.0595 (-)	-.0778*** (.0067)
Kryvyi Ryh	-.0545*** (.0054)	-.0796*** (.0062)		-.1860** (.0800)	-.0645*** (.0055)	-.0392** (.0161)
Donetsk	-.0499 (-)	-.0858 (.0069)			-.0656*** (.0056)	-.0704*** (.0068)
Mariupol	-.0514 (.0907)	-.0614 (.0082)		-.0354 (.0702)	-.0455*** (.0082)	-.0588 (-)
Zaporizhia	-.0557*** (.0035)	-.0756 (.0097)	-.1011*** (.0055)	-.0938 (.0228)	-.0759 (-)	-.0771*** (.0091)
Lugansk	-.0605*** (.0045)	-.0874 (.0138)	-.1018*** (.0053)		-.0679*** (.0064)	-.0921 (-)
Lviv			-.0688 (.0501)		-.0557*** (.003)	-.0678*** (.0075)
Odesa	-.0517*** (.0048)	-.0853 (.0086)	-.092517*** (.0045)	-.0244 (.0265)	-.0663*** (.0091)	-.0916*** (.0057)
Harkiv	-.0492*** (.0025)			-.1250*** (.0265)	-.0655*** (.0032)	-.0806*** (.0073)
Kyiv				-.1013*** (.0062)		-.0970

* = p < .1; ** = p < .05; *** = p < .01.

[1] – standard errors in parenthesis.

(-) – not estimable.

For sectors "K" and "I" significant coefficients are also positive. The fact that in the particular city there are a lot of employees in the same sector increases the chance of enter of new firm.

For the sectors "G" and "J" there are no significant coefficients. That is the entry choice does not depend on the employees number in the city in the same sector. Sectors "J" and "G" mostly depend on the other sectors development.

We also constructed similar table for the particular firm`s employment in the entry year (see Table 10). We can see that all the significant coefficients are negative. On average, increasing the firm`s entry employment by 10% decreases the probability of enter by 0.7%.

Chapter 5

CONCLUSIONS

In this research we worked with the firms which operate in Ukrainian market. We studied the determinants of the entry choice of the firms. We approached the question with the logistic regression analysis. The data included the observations for almost 150 thousands firms each year. It is taken from the National Department of statistics archive and archive of the Kyiv School of Economics.

We started with equation (1) and applied it for two biggest sectors in the dataset, manufacturing and wholesale trade. We used logistic regression and each time calculated the marginal effects.

For manufacturing we found that own employment of particular firm decreases the entry rate. The coefficient is small but negative. While the effect of own capital stock is negative, the effect of total capital in the city is positive and higher. Employment in own 2-digit industry and in the sector excluding own 2-digit industry have positive impact on the entry choice. The number of firms in own 2-digit industry is positive but in the sector excluding 2-digit industry the marginal effect is negative and has the same volume.

We also repeated it for the sector "G", which is wholesale trade. The overall dynamics is the same.

The results are close to that one which obtained Nystrom (2005). While working with the Sweden market she has also found that on the aggregate level the agglomeration effects are not very important. As in our study they are significant

but do not very affect the entry choice. They are somehow applicable only in the case of big cities.

Our results on employment are different from those one obtained by Mognik (2010). In our case employment in city positively affects the entry decision, while she found the opposite in the Slovenian market. This means that the Ukrainian market is open for the entrepreneurs. Still as we mentioned above, the marginal effects are not high. The market is more or less favorable but the entry barrier is significant. There are big players which increase the employment density in the cities.

We also expanded the analysis of the employment effect to the other sectors for each particular city. By using the logistic regression analysis we found the marginal effects of the employment in the sector excluding 2-digit industry on the entry choice. Most of the times the effect is negative. But the coefficients are small which proves that the agglomeration effect does not play a significant role in the entry decision.

Table 10 constructed by the same approach for the firms` own employment. The coefficients are higher and most of the times negative. That is the increase in employment correspond to the incumbents growth rather than to the open of new firms. It tells us that the occurring of the new jobs decrease the probability of opening new startup.

We found that the relative size of entrants decreases over time which indicates that market become more competitive. At the same time the market share of the entrants increases which also prove the dynamics.

Further extensions of the work should also study the exit patterns. It is important to represent the link between entry and exit, how do they affect each other. It

could be also added the division between domestic and foreign firms. Significant point is the uneven division of economic activity across regions.

WORKS CITED

Agarwal, Rajshree and David B. Audretsch. 2000. Does Entry Size Matter? The Impact of the Life Cycle and Technology on Firm. *State of the University Press.*

Disney, Richard, Jonathan Haskel, and Ylva Heden. 1999. Entry, Exit and Establishment survival in UK Manufacturing.

Dunne, Timothy, Mark J. Roberts and Larry Samuelson. 1988. Patterns of Firm Entry and Exit in U.S. Manufacturing Industries. *The RAND Journal of Economics*, Vol. 19, No. 4 (Winter. 1988), pp. 495-515.

Jarmin, Ron, Shawn D. Klimek and Javier Miranda. 2003. Firm Entry And Exit In The U.S. Retail Sector: 1977-1997. *Center for Economic Studies.*

Liu, Lili. 1991. Entr-Exit, Learning, and Productivity Change: Evidence from Chile.

Mognik, Diana. 2010. Determinants of Firm Entries: Empirical Evidence from Slovenia. *Economics and Business Review,* Vol.12, No. 2, pp. 129-145.

Nystrom, Kristina. 2005. Determinants of Regional Entry and Exit in Industrial Sectors. JIBS, CESIS. Working paper No. 33.

Stearns, Tymothy, Nancy M. Carter, Paul D. Reynolds and Mary L. Williams. 1995. New Firm Survival: Industry, Strategy, And Location. *Journal of Business Venturing* No. 10, 23-42.

APPENDIX

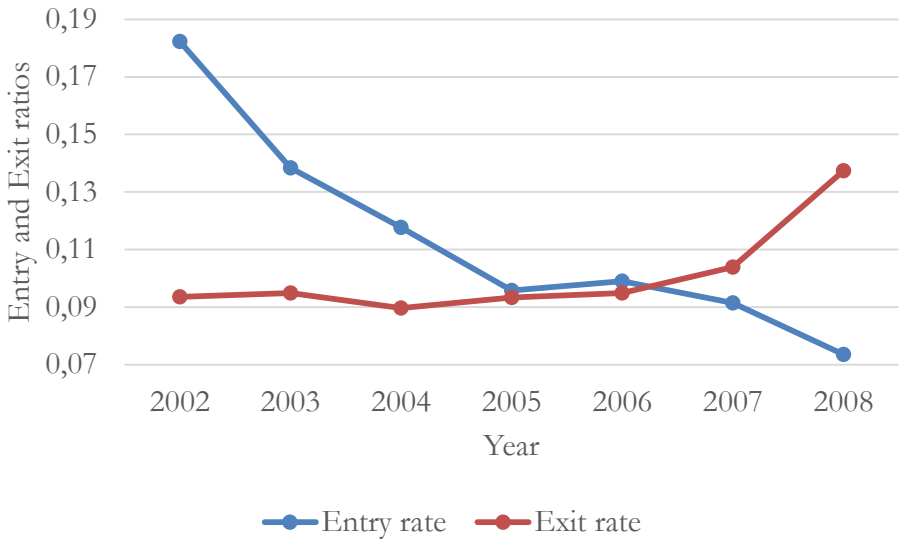

Figure 2. Entry and exit rates for Ukraine manufacturing

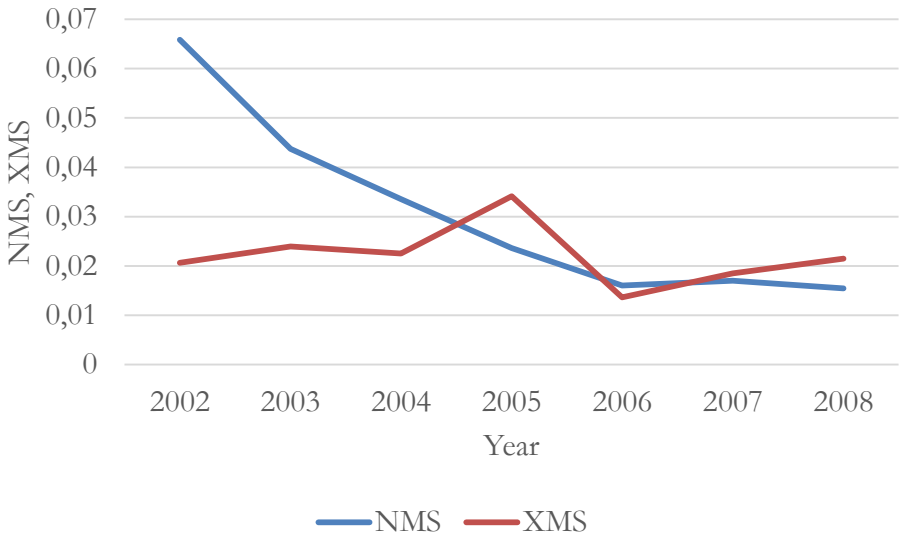

Figure 3. Market shares of entrants and exiters in Ukraine manufacturing

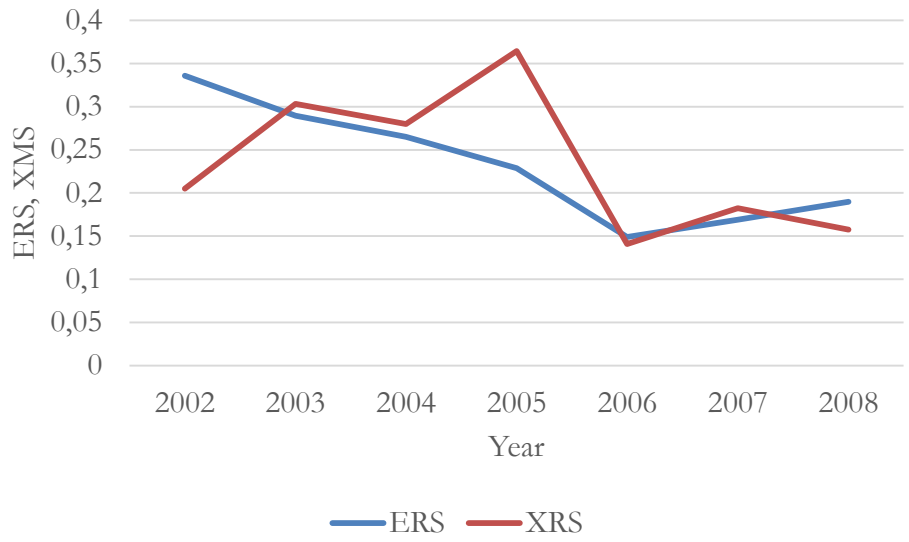

Figure 4. Average relative sizes of entrants and exiters in Ukraine manufacturing