

Charles University in Prague

Faculty of Social Sciences
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MASTER THESIS

**Estimation Elasticities of Labor Supply for
SMEs. The case study of Belarus**

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Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

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Prague, June 22, 2012

Signature

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Abstract

This Master thesis tests the intertemporal substitution hypothesis (ISH) for Belarusian small and medium enterprises. The hypothesis predicts a positive relationship between hours worked and transitory changes in wages. We tested this prediction using the data on daily income and worked hours collected via survey of entrepreneurs in Belarus, whose wages constant within days and uncorrelated across days. The estimated wage elasticities are small and negative, what rejects the ISH. We interpret this result by “one-day targeting hypothesis”. We also argue the reasons why entrepreneurs have very short planning horizon could be explained unstable business environment in the country. With this aim we provide analysis of the business environment in Belarus and economic development of the SMEs sector in general.

JEL Classification C13, C23, D90, J02, J22

Keywords labour supply, elasticity, intertemporal substitution, SMEs, Belarus

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Abstrakt

Tato magisterská práce se zabývá testováním hypotézy mezičasové substituce (HMS) aplikované na malé a střední podniky v Bělorusku. Hypotéza předpovídá pozitivní vztah mezi odpracovanými hodinami a přechodnými změnami ve mzdách. Při testování daných předpokladů jsme vycházeli z dat na základě denního příjmu a odpracovaných hodin, jež byla shromážděna v rámci průzkumu mezi běloruskými podnikateli pobírajícími mzdu, která je neměnná v rámci dnů a nevykazuje korelaci napříč jednotlivými dny. Změřená elasticita mezd má negativní charakter, což vede k zamítnutí HMS. Vysvětlujeme tyto výsledky pomocí tzv. “hypotéza stanovení denního cíle”. Také dokazujeme příčiny velmi krátkého plánovacího horizontu podnikatelů, které mohou být objasněny nestabilním podnikatelským prostředím v zemi. S tímto cílem představujeme analýzu podnikatelského prostředí v Bělorusku a celkový ekonomický rozvoj MSP.

Klasifikace JEL	C13, C23, D90, J02, J22
Klíčová slova	nabídka práce, elasticita, mezičasové substituce, MSP, Bělorusko
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Acronyms

CEECs	Central and Eastern European Countries
EU	European Union
FE	Fixed Effects
IPM	the Institute for Privatization and Management
ISH	Intertemporal substitution hypothesis
SMEs	Small and Medium Enterprises
RE	Random Effects

Master Thesis Proposal

Author	Aliona Krauchenia
Supervisor	PhDr. Wadim Strielkowski, Ph.D.
Proposed topic	Estimation Elasticities of Labor Supply for SMEs. The case study of Belarus

Topic characteristics This diploma thesis will deal with studying the intertemporal supply of labor and elasticities of labor supply in case of micro-enterprises in CEECs using the case study of Belarus. In spite of the well-known economic heuristics that sees labor supply as the function with the intertemporal substitution properties, evidence suggests that quite often it might not be so. Especially in the case of micro-entrepreneurs, labor supply might follow different pattern: it might have negatively significant wage elasticity. In another words, this might mean that some groups of workers tend to have short time horizon in their decision about how much labor they will supply and the unexpected daily increase in daily income might lead them to the decision to quit work early.

Hypotheses

1. The entrepreneurs make labor supply decisions one day at a time;
2. The entrepreneurs averse to falling below a target income;
3. There is no evidence for intertemporal substitution;
4. The elasticities of labour supply are positive significant.

Methodology Economic models that explain the life-cycle of labor supply predict a positive relationship between supplied hours of work and transitory changes in wages. The current work tests this prediction using a sample of wages and hours for Belarusian micro-entrepreneurs collected in summer of

2011. The wages of these entrepreneurs are correlated within days but uncorrelated between days (they can choose how many hours they can work every day). The methodology and the results of the field survey described in this thesis are of a special importance for defining and understanding the success of small Belarusian entrepreneurs. The perception of success, the factors leading to the success are all dependent on the psychological motives of the entrepreneurs.

Outline

Chapter 1: Introduction

Chapter 2: Belarusian Labour Market

Chapter 3: Data and Empirical Strategy

Chapter 4: Econometrical Model

Chapter 5: Results and Conclusion

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Chapter 1

Introduction

The sensitivity of labor supply to intertemporal variation in wage is an important aspect often raised in the labor market analysis. For example, it indicates the significance of the employment effect in response to the tax rate change (Graafland *et al.* 2001) or allows firms to adjust wages during economic cycles (Depew & Sorensen 2011). The elasticity of labor supply with respect to wage rate allows to measure the intertemporal substitution effect, which predicts that people might be willing to substitute labor and leisure intertemporally, working harder and longer in those periods when work is more profitable (Lucas & Rapping 1969).

In the light of its importance, a large number of research literature focused on the so-called “intertemporal substitution hypothesis” (ISH). However, it appears that there exists a great variation in observed elasticity of labor supply, whether it is based on aggregate (Alogoskoufis 1987) or individual panel data (Altonji 1986). Moreover, these results are difficult to interpret because the ISH assumes that wage changes are transitory, i.e. wage fluctuations are relative constant within a day but uncorrelated across days, while actual wage changes are rarely transitory. As a result, there is a little agreement among researchers on the value of the elasticity that should be used in labor market analysis.

This Master thesis contributes to the studies mentioned above by attempting to estimate the elasticity of labor supply in the case of small entrepreneurs in Belarus. Our focus on entrepreneurs is governed by the ability of these individuals to choose how many hours they are to work each day. Another advantage of studying small entrepreneurs is that they face daily wage fluctuations due to demand shocks. The source of these shocks could be explained by such factors as holidays, weather, economic situation within the country, etc.

Using the data collected by the means of the questionnaire survey of Belarusian small enterprises (see Appendix B), we estimated the relationship between wages and hours worked, and found no evidence for the ISH. The estimated elasticities are small and negative, which tells that relationship between wage and hours worked are weak and entrepreneurs are not willing to substitute their labor supply by working longer in more profitable days. This evidence arises assumption about psychological factors are influenced by entrepreneurs' behavior which we do not consider in this thesis. All this brings us to the idea that some "one-day targeting hypothesis" might hold in this case — e.g. entrepreneurs make labor supply decisions at one day at a time and thus have very short planning horizon.

Further research question we addressed in this thesis is whether negative elasticity and the one-day targeting hypothesis for entrepreneurs might be explained by characteristics of the business environment in the country and economic development of the SMEs sector in general. This question is particular crucial for transition economies of Central and East European countries Central and Eastern European Countries (CEECs), which is the case of Belarusian economy. Scase (1997) argues that striving to protect themselves from the uncertain economic conditions of emerging market economies, the majority of small businesses in CEECs generate cash flows that can be consumed for satisfying general living needs, rather than for business expansions. To support this claim, our study aims at giving adequate assessment of the SMEs sector in Belarus. Using the official statistics and the data from survey-based researches, we analyze SMEs development in Belarus and evaluate the business environment within the country. The thesis is structured as follows: Chapter 2 summarizes the literature on estimation of labor supply elasticities. Chapter 3 covers the theory of intertemporal substitution and provides the derivation of the dynamic model of labor supply. Chapter 4 analyses the SMEs sector in Belarus. Chapter 5 describes our empirical approach, gives overview of data sample, discusses methodology and presents our results.

Chapter 2

Literature Review

This section shortly reviews a number of the empirical literature papers and studies on labor supply elasticities. Our Master thesis contributes to this literature with the aim to search for evidence favoring the intertemporal substitution hypothesis. One of the first who emphasizes the significance of research on the Intertemporal substitution hypothesis (ISH) was Alogoskoufis (1987, pg. 938):

“The labor market intertemporal substitution hypothesis, which states that labor supply responds positively to transitory increases in real wages and increases in the real interest rate, is a central hypothesis of modern, competitive models of the business cycle.”

For more comprehensive review on the topic we refer to Mulligan (1995), Blundell & MaCurdy (1999).

The first empirical work on estimation of labor supply “Theory of Wages” by Douglas (1934). The author used aggregated data with age-sex groups for 38 U.S. cities and examined both time series and cross-section data. He found that the elasticity of hours with respect to hourly earnings is between -0.1 and -0.2. Further analysis of the related literature we divide by two groups according to used data — micro data and aggregate (macro) data.

2.1 Aggregate data evidence

The labor supply elasticity tells us how much the labor supply responds to wage changes. It appears crucial in understanding what is happening on the labor market. In this case macro-estimation helps to see the aggregate behavior of the economy. One of the first researches on the intertemporal labor supply

response was the study by Lucas & Rapping (1969). Using the U.S. annual data, they confirm the Keynesian-type assumption of a relative elastic short-run supply.¹ Their estimated elasticity with respect to the real wage rate was 1.4. Using the similar data, Mankiw *et al.* (1985) rejected the ISH. They provided estimation using the nonlinear instrument variables procedure suggested by Hansen & Singleton (1982). To assure that their conclusions are robust to changes they experiment with different measures of consumption, different lists of instruments, and different frequency data, they tried various functional forms for the utility function just to be sure. The resulting short-run elasticity of leisure with respect to the current wages was from -0.0027 to -0.99, which implies the labor supply elasticity between 0.01 and 17. In contrast, Alogoskoufis (1987) showed that when applied to aggregate employment the intertemporal substitution hypothesis was not rejected by the U.S. data. He used a variety of measures of aggregate labor supply — aggregate employment hours and aggregate number of employees, adjusted by working population. In the regressions for the first measure he used hourly earnings, while for the second — three alternative wage variables, based on annual, weekly, and hourly earnings. His obtained elasticity of labor supply was between 0.5 and 1.5.

In order to better accommodate the data other works explore several cases of the benchmark RBC. One of the first who discussed this approach was Prescott (1986) who extended the work by Kydland & Prescott (1982) based on non-separability of leisure at different points in time. Prescott's study was followed by Rogerson (1988) with the model of invisible labor and lotteries which facilitates computation of equilibrium. Among the other relevant extensions, Bencivenga (1991) studied output variations and their inter-dependence with preference shocks. Comparing with U.S. postwar data, he concludes that preference shocks generate “sufficient variation in hours relative to productivity, and in consumption relative to output, as well as predicting a negative correlation between hours and productivity”. Chang & Kim (2006) investigated a relationship between income shocks of incomplete market and labor supply in their heterogeneous-agent model. They estimated “the aggregate labor supply of an economy populated by many families”, which “have identical preferences but face uninsurable income shocks”. The resulting labor elasticity is around 1 for this economy. The authors also found that “the responses of key aggregate variables from our heterogeneous-agent economy are comparable to those in

¹See Romer (2006) for details.

the representative-agent economy with Frisch labor-supply elasticity between 1 and 2”.

Benhabib *et al.* (1991) explored the standard macroeconomic implication of the RBC model by including household production. They found that it “significantly improves the quantitative performance of the standard model”. McGrattan (1981) applied the RBC model to study how the taxation affects the business cycles of economy and people’s welfare. Last but not least study dealing with the benchmark RBC model, Depew & Sorensen (2011), proposed the idea of the relationship between the elasticity of labor supply and the business cycle. The main result is that the elasticity tends to be lower during recession and higher during expansions.

2.2 Micro data evidence

Micro-founded data studies are based on household data analysis. The representative household is defined by preferences about leisure which are measured by the labor supply elasticity. Microeconomic studies are typically reported a small real-wage elasticity for cross-sectional and panel data estimation. Ghez & Becker (1975) use cross-section data aggregated by age cohort. They obtain elasticity range from -0.68 to 0.44 by estimating the hourly earnings of employed white men aged 22 to 65. Altonji (1986) estimates panel micro data to find the intertemporal substitution elasticity for married men. His analysis based on similar work by MaCurdy (1981). Estimated elasticities by Altonji is between 0 and 0.35, which are in the same range as MaCurdy’s results. Similar specification is used by Rogerson & Rupert (1991), except that they consider two dimensions of the labor supply decisions: weeks per year and hours per week, while Altonji and MaCurdy’s use only weeks per year. Rogerson and Rupert obtain very similar result — their estimated elasticity is equal 0.2.

Another way to estimate the elasticity of intertemporal substitution is to compare anticipated changes in productivity with labor supply variations. Such approach is used for example by Fafchamps (1993) who studies African farmers’ labor supply variations within a year. Assuming that weather affects the expected marginal product of labor, his result of the estimated intertemporal substitution elasticity for leisure is 20 and more. Gine *et al.* (1975) arranged their research within South Indian fishermen. Particularly, they estimated two hypothesis of labor supply: intertemporal substitution and reference dependent preferences. Their estimated elasticities between 0.5 and 0.6 provide a

strong evidence of intertemporal substitution. They also concluded that fishermen “take into account expected earnings as well as recent earnings in their daily labor supply decisions”, i.e. have reference depend preference. However, they found that recent earnings effects appear less significant than substitution effects do.

Labor supply of cab drivers may also have predictable productivity variations. The study of New York City cab drivers by Camerer *et al.* (1997) uses a context in which wages are relatively constant within a day but uncorrelated across days, i.e. exhibited a transitory pattern. The authors argued that cab drivers wage showed considerable variations response on demand shocks in “good” and “bad” days. On the good days cab drivers typically spend less time searching for customers and thus earn a higher income. According to the ISH, they should work longer on such days to cover their loss on bad days. Using panel data from drivers’ trip sheets, they estimate negative elasticities (around -1), and thus, find “little evidence for intertemporal substitution”. Authors suggest income target hypothesis to explain the negative results, e.g. drivers are not willing to fall below a target income each day.

Some studies try to explain the difference in the estimated labor supply elasticities. Ericson & Flood (1997) conclude that different estimators perform dissimilar both under perfect and under imperfect conditions (with presence of measurement error). Eklof & Sackeln (2000) have the same conclusion among their findings. Using the same estimation procedures as Hausman (1981) and MaCurdy *et al.* (1990) they highlight how sensitive estimators to the variables constructed from raw data. In addition to the works named above Fiorito & Zanella (2008) compare individual and aggregate elasticities of labor supply by estimating both micro and macro data. Using the fact that micro estimates deal with individual hours of work per unit of time (intensive margin), while macro estimates deal with total hours of work (extensive margin), they refer the macro and micro elasticities of labor supply to the same units in the same dataset. They find a low value (0.11) for the micro elasticity and a relatively large value (1.06) for the macro elasticity what is in line with empirical estimates of previous studies. The authors conclude that the difference comes from a variance in data definition mentioned before, in particular that the extensive margin explains most of the difference. More recent relevant study which reviews intensive and extensive margins is presented by Chetty *et al.* (2011). In their study they provide an interesting statement that “the importance of reconciling micro and macro evidence on both the intensive and extensive margins

can be seen by simulating the impacts of quasi-experiments such as tax policy changes in macro models”. Further, they “recommend calibrating macro models to match a Frisch extensive margin elasticity of 0.25 and a Frisch intensive margin elasticity of 0.5”.

Chapter 3

Theory of Intertemporal Labor Supply

Using the dynamic theory of labor supply from Cahuc & Zylberberg (2004), in this section we outline the statement of intertemporal labor supply. The dynamic theory of labor supply allows us to understand how agents substitute for their consumption of physical goods and leisure over time. Cahuc and Zylberberg study this possibility constructing a dynamic model of labor supply in discrete time.

3.1 Dynamic Model of Labor Supply

In a general case, the consumer's preferences over a "life cycle" is represented by a temporally separable utility function of the form $\sum_{t=1}^T U(C_t, L_t, t)$, where C_t and L_t indicate respectively the consumption of physical goods and the consumption of leisure at the period t .

This dynamic model also assumes that individuals have opportunity to save with the real rate of interest r_t . For each period, the endowment of time is normalized to 1. Thus, the hours worked during a period t are equal to $(1 - L_t)$. Allow A_t to denote the agent's assets on date t . Then, for a given initial value A_0 , the consumer's wealth could be described by:

$$A_t = (1 + r_t) A_{t-1} + B_t + w_t(1 - L_t) - C_t, \quad \text{for all } t \geq 1 \quad (3.1)$$

In the equation (3.1) $r_t A_{t-1}$ is income from savings, $w_t(1 - L_t)$ is labor income, and B_t denotes some other income on the date t .

3.2 Optimal Solution

At each period of time the consumer maximizes the utility function subject to the budget constraint (3.1). Taking ν_t for the multiplier of this equation, the Lagrangian of the consumer's problem can be written as:

$$\mathfrak{L} = \sum_{t=1}^T U(C_t, L_t, t) - \sum_{t=1}^T \nu_t [A_t - (1 + r_t) A_{t-1} - B_t - w_t (1 - L_t) + C_t]$$

By taking the derivatives of this Lagrangian with respect to variables C_t , L_t and A_t , we obtain the first-order conditions in form:

$$U_C(C_t, L_t, t) \quad \text{and} \quad U_L(C_t, L_t, t) = \nu_t w_t \quad (3.2)$$

$$\nu_t = (1 + r_{t+1}) \nu_{t+1} \quad (3.3)$$

From the relations (3.2) we obtain that $\frac{U_L}{U_C} = w_t$ meaning the equality between the marginal rate of substitution and the current wage for each date t . Omitting the problem solution, the optimal allocations of consumption and leisure can be written in the following way:

$$C_t = C(w_t, \nu_t, t) \quad \text{and} \quad L_t = L(w_t, \nu_t, t) \quad (3.4)$$

Taking a marginal utility of wealth ν_t as given, equations (3.4) define the "Fischian" demands for period t . Thus, the elasticity of labor supply in Frisch's sense, which is known as the intertemporal substitution elasticity, equal to the current wage elasticity of function $h(w_t, \nu_t, t) = 1 - L(w_t, \nu_t, t)$, holding ν_t is constant.

By taking the logarithm of equation (3.3), which represents the Euler equation of this model, we obtain the law of motion of ν_t :

$$\ln \nu_t = - \sum_{\tau=1}^T \ln(1 + r_\tau) + \ln \nu_0 \quad (3.5)$$

Relation (3.5) indicates that the logarithm of ν_t equals an individual fixed effect $\ln \nu_0$ minus an age effect $\sum_{\tau=1}^T \ln(1 + r_\tau)$ common to all agents. As will be shown in the next sections, this equation plays a crucial role in estimating the intertemporal elasticity of labor supply.

3.3 Elasticity Estimation

The basic log-linear empirical model of labor supply has a form:

$$\ln h = \alpha_w \ln w + \alpha_R \ln \mathfrak{R} + x\theta + \varepsilon \quad (3.6)$$

This expression investigates the relation between hours h worked and hourly wage w at each date t . Here, \mathfrak{R} is a measure of income apart the current wage and x is a vector of individual's characteristics. The coefficients θ , α_w and α_R are parameters to be estimated. The error term ε designates unobserved individual heterogeneity.

As was mention above, an age effect $\sum_{t=1}^T \ln(1 + r_\tau)$ from equation (3.5) is common to all agents. It may be written in the form ρt , supposing that r_τ is constant. To obtain the intertemporal elasticity of substitution, we take the marginal utility of wealth ν_t as exogenously given and substitute $\ln \nu_0 + \rho t$ for $\ln \mathfrak{R}$ in relation (3.5). We can eliminate individual fixed effects $\ln \nu_0$ by taking first-differences from the basic equation (3.5):

$$\Delta \ln h_t = \rho + \Delta x_t \theta + \alpha_w \Delta \ln w_t + \Delta \varepsilon_t$$

This equation allows us to estimate the intertemporal elasticity of substitution given by the coefficient α_w .

Chapter 4

SMEs in Belarus

This section aims to present an up-to-date picture of the overall situation of Small and Medium Enterprises (SMEs) development in the Republic of Belarus, giving an overview of their size, structure and performance in the Belarusian economy. Furthermore, we observe the trends that affected Belarusian SMEs during the currency crisis, which took place in the country at the time when this thesis was in progress.

Major part of this section is based on the data extracted from the National Statistical Committee of the Republic of Belarus¹ database (hereinafter referred to as Belstat), which at the time of writing this work had data up to January 1, 2011. To draw a comprehensive picture of the current status of SMEs, we also use survey data of IPM Research Center² representing the findings from the survey which was conducted during March and April 2011.

4.1 SMEs Numbers

4.1.1 SMEs size class definitions

According to the Law of the Republic of Belarus two classes of SMEs can be identified: typically small- and medium-sized enterprises are distinguished. Small-sized enterprises include individual entrepreneurs, micro- and small enterprises. Micro enterprises are enterprises that employ up to 15 people. Small enterprises employ between 16 and 100 people. Medium-sized enterprises are defined as having between 101 and 250 employees.

¹<http://belstat.gov.by/homep/en/main.html>

²<http://research.by/>

4.1.2 Distribution of enterprises by size class

In 2010, there were over 300 thousand enterprises in Belarus. The vast majority (72.7%) of enterprises are individual entrepreneurs (sole traders), which we do not consider in our analyses. Hence, we understand under small-sized enterprises only micro and small enterprises in discussion below.

Within SMEs population, almost 97% are small-sized enterprises, having a staff headcount of less than 100 Table 4.1. There are about 2.7 thousands medium-sized enterprises, representing 3.2% of the stock. On average, an enterprise in Belarus provides work for 14.4 persons; within individual size-classes, average enterprise size varies between 9.3 in small enterprises and about 168 in medium enterprises.

Table 4.1: Number of enterprises and occupied persons per enterprise by size class

	Small	Medium	SMEs
<i>Enterprises</i>			
Number ¹	84164	2753	86917
Number which active ²	74246	2753	76999
%	96.8	3.2	100
<i>Employment</i>			
Number which active ³	785000	462400	1247400
%	62.9	37.0	100
<i>Occupied persons per enterprise</i>			
%	9.3	168.0	14.4

Note: ⁽¹⁾Number of enterprises by the end of year; ⁽²⁾Number of enterprises which are active in the reference year; ⁽³⁾Total average number of employees.

Source: Belstat.

Table 4.2 shows the number and size of enterprises in the private, government and foreign sectors.

Table 4.2: Private, government and foreign enterprises by size class

	Small ¹	Medium
<i>Private</i>		
Number	70509	1824

Table 4.2: (continued)

	Small ¹	Medium
% within individual size-classes	95.0	66.2
<i>Government</i>		
Number	1378	842
% within individual size-classes	1.8	30.6
<i>Foreign</i>		
Number	2359	87
% within individual size-classes	3.2	3.2

Note: ⁽¹⁾Which are active in the reference year.

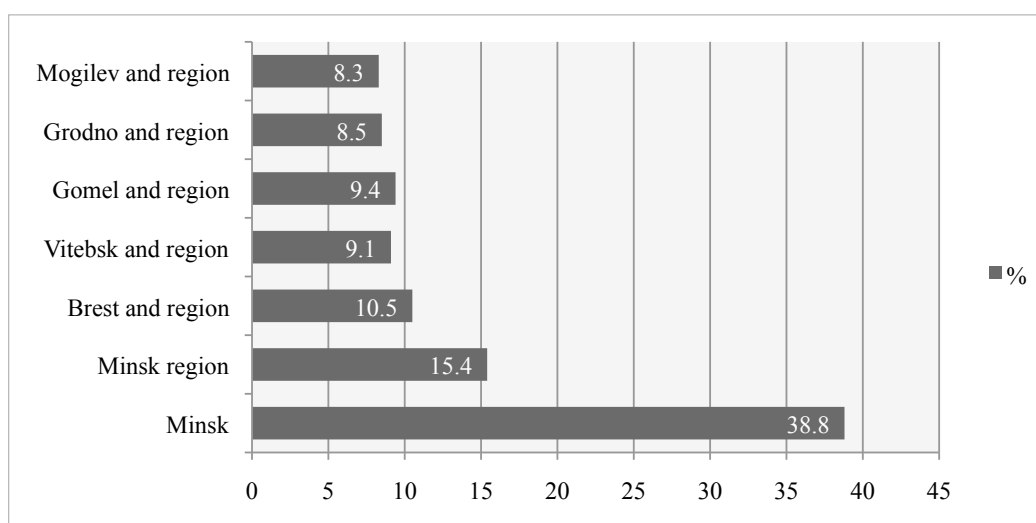
Source: Belstat.

There is a much bigger proportion of SMEs in the private sector — around 95% for small-sized and 66.2% for medium-sized. Within medium-sized enterprises a relative high share (30.6%) belongs to government sector.

4.1.3 Regional difference in SMEs presence

There is a regional difference in SMEs presence in Belarus that has a predominant urban stress. Most Belarusian SMEs are located around large cities and urban centers. Minsk and Minsk region account for more than half of the total number of small-sized enterprises in Belarus (Figure 4.1).

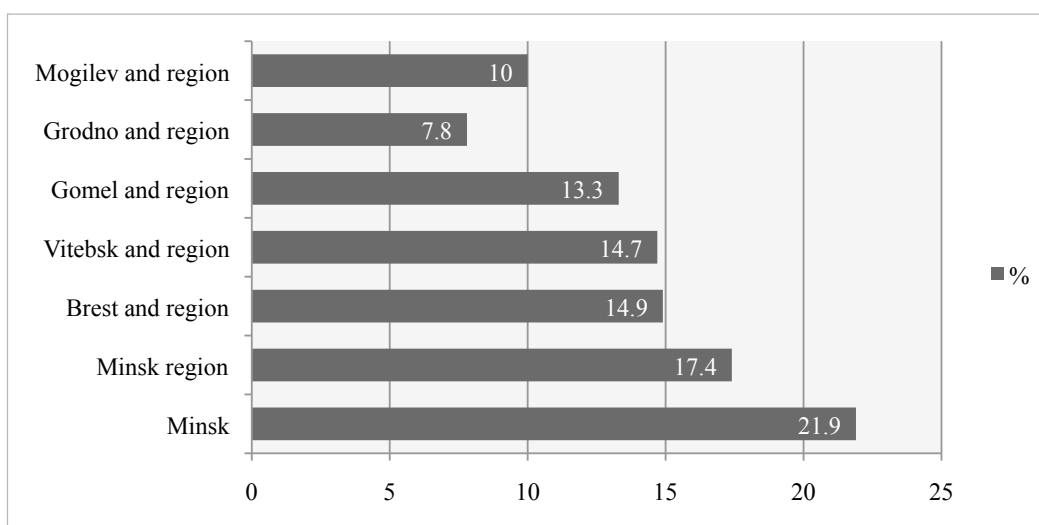
Figure 4.1: Regional distribution of small-sized enterprises



Source: Belstat.

Despite the fact that for medium-size enterprises Minsk makes up the vast majority of enterprises, the distribution of enterprises within regions is quite even (Figure 4.2). This fact can be explained by that medium-size enterprises are less active in service. More that 70% of them these enterprises in production: construction, industry and agriculture. Such enterprises are needed in more mobility, while the region of the country are highly loaded, which force them to set their enterprises in other regions.

Figure 4.2: Regional distribution of medium-sized enterprises



Source: Belstat.

4.1.4 Distribution of enterprises by sectors of economy

Enterprises in Belarus are distributed unevenly over sectors of economy. In 2010 for instance, the largest number of medium-sized enterprises (28.5%) was engaged in agriculture, while the corresponding share (2.9%) for small-sized enterprises indicates very low activity of the enterprises in this sector Table 4.3. Part of the reason for the prominent representation of medium-sized enterprises in agriculture is the fact that the higher share of medium-sized enterprises belongs to government. The industry sector is represented on the second place for both classes of enterprises, for medium-sized enterprises it occupies 20.2% and 24.6% for small-sized enterprises.

Table 4.3: Distribution of SMEs by sectors of economy in 2010, %

	Small	Medium
Industry	20.2	24.6
Agriculture	2.9	28.6
Forestry	0.1	0.0
Transport	8.2	4.8
Communications	0.4	0.4
Constructions	10.5	18.2
Trade and public catering	40.9	11.6
Material supply and sales	0.8	0.3
Information and computer services	0.8	0.4
Real estate activities	2.9	1.0
Consulting	3.1	0.5
Housing and utilities	0.4	3.5
Non-productive personal services	3.2	0.6
Health, physical culture and social security	1.8	1.8
Education	0.5	0.1
Culture and arts	1.5	1.1
Science and science services	0.4	1.5
Finance, credit, insurance, and pension funding	0.4	0.2
Others	1.0	0.9

Source: Belstat.

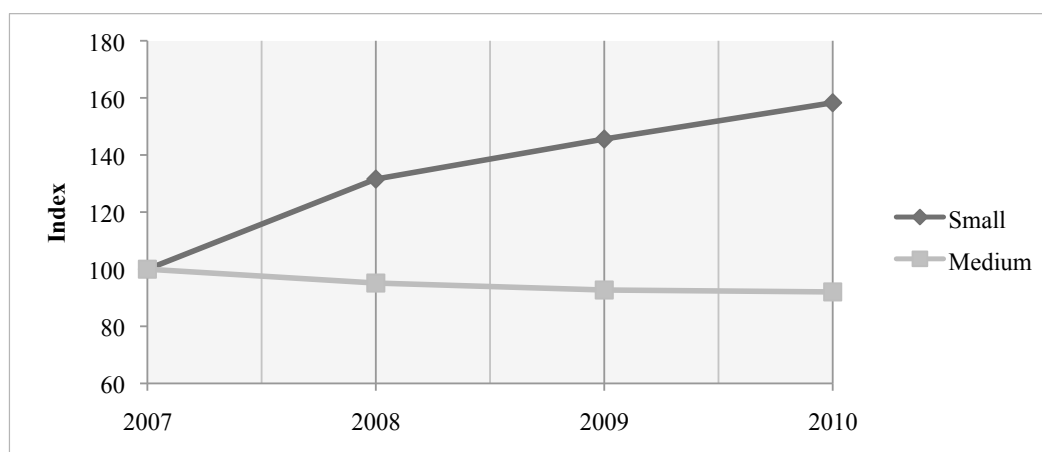
SMEs are relative active in transport, constructions, and trade and public catering. The last mentioned sector, trade and public catering, is the most popular among small-sized enterprises. Traditionally, the largest number (40.9% for 2010) of Belarusian small-sized enterprises belongs to this sector.

Additionally, the structure of SMEs by sectors of economy in Minsk differs from the structure across the country in general. According to the data from the survey that was handled by IPM Research Center the majority of enterprises in Minsk belongs to the service sector (housing and utilities, consulting, education), while industry sector is relative unpopular in Minsk.

4.1.5 Development of Belarusian SMEs in 2007-2010

Figure 4.3 presents evolution in the number of SMEs in Belarus over the period of 2007-2010. The number of small-sized enterprises has increased over this period, however, the rate of growth was decreasing over time. Starting from about 32% in 2008 the growth rate of small-sized enterprises was only 8.7% in 2010. On the contrary, the number of medium-sized enterprises was slightly but constantly decreasing during the period 2007-2010. Altogether, the number of medium-sized enterprises has decreased by 8.6% by the beginning of 2011, while the number of small-sized firms has increased in more that two times (by 58.3%).

Figure 4.3: Development of number of SMEs by size class (Index 2007 = 100)



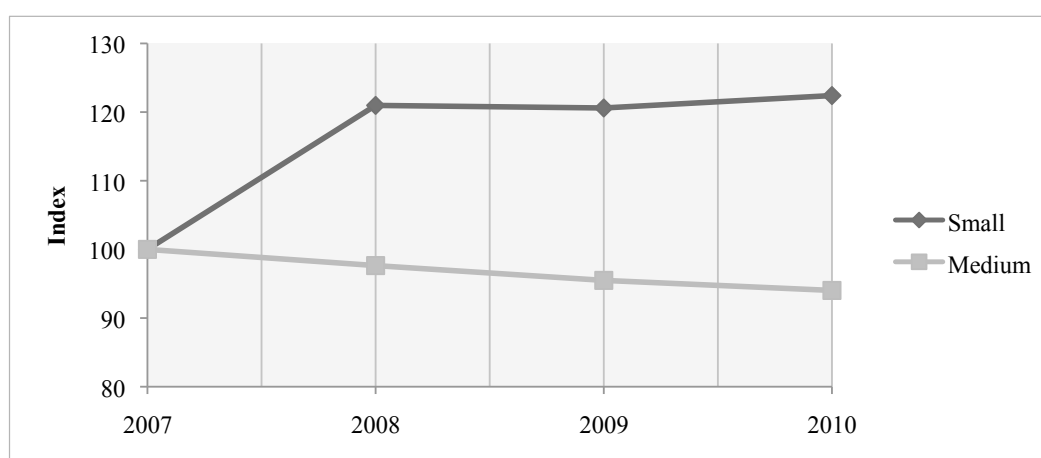
Source: Belstat.

Together, this development in the number of SMEs implies a quite similar pattern for the total average enterprises size over the period 2007-2010 (Figure 4.3.2). The total average number of employees in small-sized firms has increased almost by 21% in 2008, but later in 2009 it can be noted that a short fall took place for the average-sized firms. It can be explained by the reaction of enterprises on the global crises, which reached Belarus by 2009. However, this fall was reversed by a short increase of the average firm size during 2010. In total, the average number of employees within the small-sized enterprises has increased by 22.4% by the beginning of 2011, mostly because of the increase in 2008.

Together, this development in the number of SMEs implies a quite similar pattern for the total average enterprises size over the period 2007-2010 (Figure 4.4). The total average number of employees in small-sized firms has

increased almost by 21% in 2008, but later in 2009 it can be noted that a short fall took place for the average-sized firms. It can be explained by the reaction of enterprises on the global crises, which reached Belarus by 2009. However, this fall was reversed by a short increase of the average firm size during 2010. In total, the average number of employees within the small-sized enterprises has increased by 22.4% by the beginning of 2011, mostly because of the increase in 2008.

Figure 4.4: Development of total average number of employees by enterprises' size class (Index 2007 = 100)



Source: Belstat.

As in case of the number of enterprises, the total average number of employees in medium-sized enterprises was slightly but constantly decreasing over the period 2007-2010. In total, it has decreased by about 6% by the beginning 2011.

Generally, it can be seen that the growth rate of the number of enterprises and the average firm size has decreased after 2008 both for small- and medium-sized enterprises.

While SMEs are the backbone of neighborhood European Union (EU)'s economies (e.g. Poland, Lithuania), they continue to play insignificant role in Belarusian economy. In 2010 small-sized enterprises in Belarus accounted only 12.4% of GDP and about 18% of total average number of employees (Table 4.4). Within medium-size enterprises these numbers are much smaller — share of GDP is only 7.6% and share of total average number of employees is 10.4%.

Table 4.4: Share of SMEs in main economic indicators by enterprises' size class in 2010

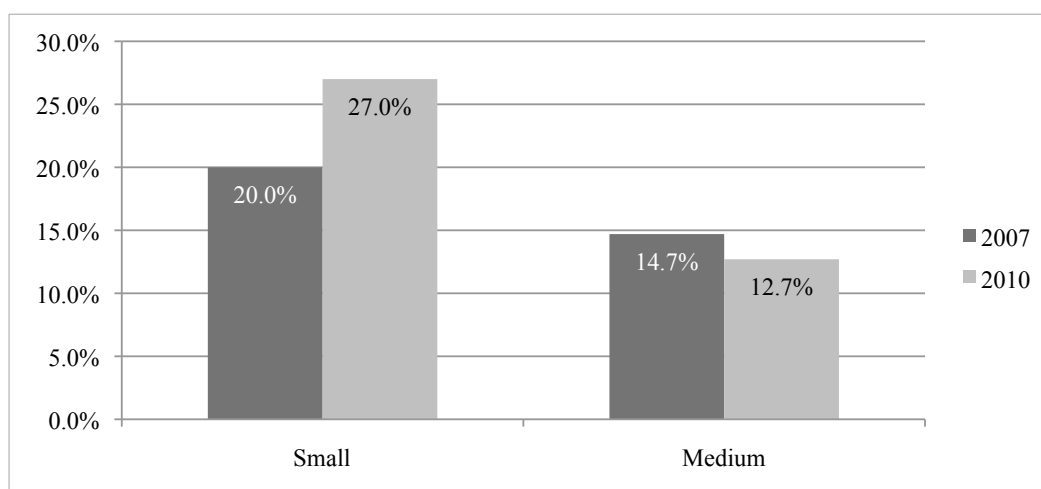
	Small ¹	Medium	SMEs
Gross Domestic Product	12.4	7.6	20.0
Average number of employees	17.6	10.4	28.0
Production volume of goods, works, and services	12.5	8.2	20.7
Fixed capital investment	27.0	12.7	39.7
Revenues from sales of goods, works and services	9.3	28.0	37.3
Foreign trade turnover	6.0	33.7	39.7
Exports of goods	4.0	39.9	42.9
Imports of goods	7.4	30.0	37.4

Note: ⁽¹⁾Which are active in the reference year.

Source: Belstat.

Interestingly, that having revenues from sales, goods, and services in about three times less than medium-sized enterprises, small-sized enterprises are more active in investing. Accounting only 12.4% of GDP and 12.5% of total production volume of goods, works, and services, the small-sized enterprises' share of total fixed capital investment increased from 20% in 2007 to 27.0% in 2010 (Figure 4.5). For the medium-sized enterprises this number fell from 14.7% in 2007 to 12.7% in 2010.

Figure 4.5: Development of fixed capital investment of SMEs

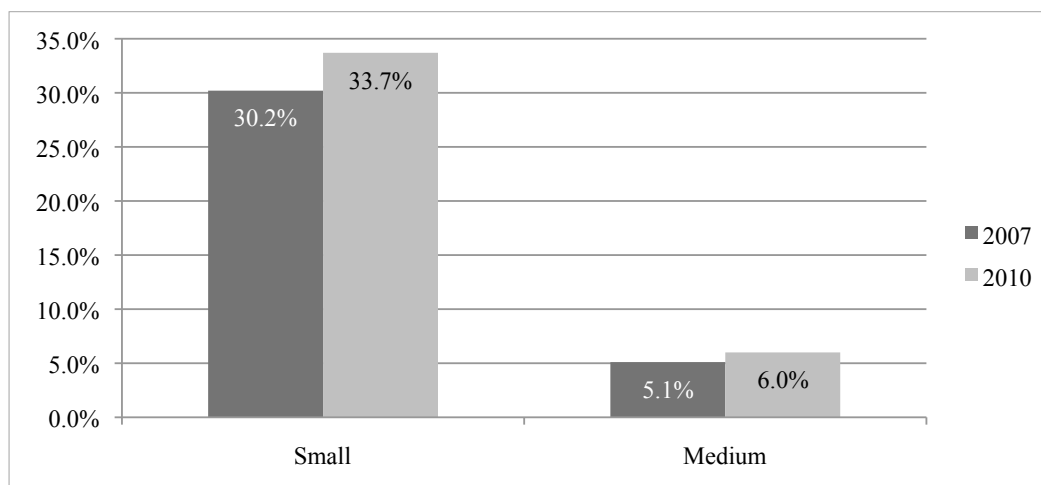


Source: Belstat.

Traditionally, Belarusian SMEs account a relative high share in foreign trade.

Comparing to 2007, the medium-size firms' share increased by only 0.9% in 2010. For the small-sized firms this number increased by 3.5% from 30.2% in 2007 to 33.7% in 2010 (Figure 4.6). According to Belstat, the total volume of exports increased from 26% in 2007 to 42.9% in 2010, and the total volume of imports declined from 43.2% in 2007 to 37.4% in 2010.

Figure 4.6: Development of foreign trade turnover of SMEs



Source: Belstat.

In accordance with official statistical information available on Belarusian SMEs, the average profitability of SMEs in Belarus has a relative small increased from 10.5% in 2007 to 13.3% in 2010. However, the share of loss-making SMEs had a short decline from 22.7% in 2007 to 20.4% in 2010.

Relative small indicators for medium-sized enterprises can be partially explained by the fact that about one third of them belongs to government sector what forces such enterprises to bear some additional social obligations.

Thus, the described above statistics characterize development of SMEs sector in Belarus like an insignificant and with a slow growth. This pattern can be seen over the last ten years.

4.2 Business environment in the Republic of Belarus

Since the late 1990s Belarusian economy characterizes by a rigid government regulation of economical process as well as the governance controls the activity of SMEs in the country. In such conditions, SMEs in Belarus cannot grow and

develop in a full force, what is supported by a poor statistical data from the section above. However, in recent years the government starts doing the first steps to improve business environment within the country. According to The World Bank's "Doing Business" (2010) report Belarus was included in top 10 reformers who made "largest strides in making their regulatory environment more favorable to business". But despite intentions of the government to enter in top 30 of the ease of doing business, Belarus occupied only the 69th place according to "Doing Business" (2011) (see Appendix A).

Apart from the policy restrictions Belarusian economy had to face many another challenges in the last years. First, the global crisis affected Belarus by 2009. It led to sharp increase of foreign debt, decrease of industrial sector's productivity, and to the fall of exports of main Belarusian goods — products of mechanical engineering and machine-tool construction (to Russia), oil products (to Europe), and potash fertilizers (to China and India).

At the beginning of 2011, Belarus still had many serious unresolved economic problems and was facing the necessity to repay the loans obtained from IMF, Russia and Venezuela. This eventually resulted in the currency crises in the country that began in March 2011.

Listed above events resulted in a significant distortion of SMEs' activity. The country was put between two fires. First, it had to stabilize the financial sector of the economy immediately. Second, the country was still in need of further economic liberalization.

Further, we provide the information from the survey that was handled by IPM Research Center and conducted in March-April 2011 to reflect the state of Belarusian business environment in 2010.

The results from SMEs' survey show that the share of those who evaluated their economic situation as "bad" and "below average" increased from 19.9% in 2010 to 25.9% in 2011 (Table 4.5). The proportion of those who evaluated their economic situation as "stable" and "good or above average" fell by 8.3% and 7.7% respectively.

Table 4.5: Distribution of answers the question: "What is the current economic condition of your enterprise?"

	2010		2011	
	Number	%	Number	%
Bad	22	5.63	34	8.4
Below the average	56	14.3	112	27.5

Table 4.5: (continued)

	2010		2011	
	Number	%	Number	%
Stable	220	56.5	196	48.2
Good or above the average	92	23.6	65	15.9
Total	389	100.0	407	100.0

Source: IPM Research Center.

Among the most significant barriers faced by SMEs in Belarus inflation was named as one of the most significant problems (41.8%) from the list of suggested problems (the list included such problems as inflation, regulation of currency market, access to finance resources, crime and theft, unstable policy, tax rates, and ineffective governance) (Table 4.6). On the second and the third places respectively were currency market restrictions (36.4%) and access to financial resources (20.6%). It should be noted that the survey was conducted in the time when the currency crisis just began and its consequences were not such explicit as in May-August 2011.

Table 4.6: The most significant barriers for business doing in Belarus

	Significant	Minor
Inflation	41.8	11.1
Regulation of currency market	36.4	9.8
Access to finance resources	20.6	7.4
Crime and theft	18.7	8.4
Unstable policy	17.9	6.4
Tax rates	17.9	5.9
Ineffective governance	17.7	8.6

Source: IPM Research Center.

In such harsh economic conditions Belarusian SMEs required acceleration of liberalization of business environment more than ever.

With regard to the measures applied to liberalize business environment within the country by the governance, Table 4.7 presents the survey data that shows the reaction of SMEs on the government activity in this way. It can be seen that among fourteen possible obstacles for business doing listed below

more than half of the respondents indicate no changes in twelve questions. For the rest two questions (about pricing and credit accessibility) almost half of respondents indicate no changes — 44.9% and 48.9% respectively. More than the quarter of respondents thinks that a situation became better within business regulation (35.1%), obtaining different permissions (33.4%), administrative procedures (30.7%), pricing (27.8%), as well as the number of inspections has decreased (28.2%). It should be noted that within the pricing almost the same number (27.4%) of respondents indicates aggravation of situation.

Table 4.7: Distribution of answers the question: “How did business environment liberalization measures reflect on you business activity?”, %

	Get worse	No changes	Get better
Business registration	2.3	62.6	35.1
Obtaining different permissions	7.6	59.0	33.4
Administrative procedures	11.3	58.0	30.7
Number of inspections	13.0	58.8	28.2
Fine’s amount	29.2	57.5	13.1
Rent payment	24.8	62.2	13.0
Pricing	24.7	44.9	27.8
Tax burden	20.4	63.7	15.9
Accounting difficulty	18.2	62.9	18.9
Credit accessibility	35.6	48.9	15.4
Easiness of foreign trade	32.7	57.9	9.3
Calculation of wage	9.8	74.7	15.4
Cost and difficulty of auctions and tenders	10.1	82.0	7.8
Property rights protection	10.1	77.6	12.2

Source: IPM Research Center.

In general, among 407 respondents 36.6% of them think that the conditions for doing business in Belarus did not change in 2010; 27.3% of respondents think that the conditions improved slightly and only 5.7% of them indicate significant changes (Table 4.8).

Table 4.8: Distribution of answers the question: “How do you think the doing business conditions changed during the last year?”

	Nymber	%
Improved significantly	23	5.7
Improved slightly	111	27.3
Stay are the same	149	36.6
Deteriorated slightly	60	14.7
Deteriorated significantly	41	10.1
No answer/Hard to say	23	5.7
Total	407	100.0

Source: IPM Research Center.

The findings above bring us back to “Doing Business” (2011) report which provides estimation of regulations affecting 10 areas in the life cycle of a business: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. The report presents the country’s economic profile and the “Doing Business” indicators for Belarus. The profile is based on data up to June 1, 2011 (except for the paying taxes indicators, which cover the period January-December 2010). Based on these indicators, the report evaluates Belarusian economy’s performance and the ease of doing business in Belarus in comparison with all other economies in the sample³ as well as against the economies with a good practice (i.e. best performance in the current year). For more comprehensive information the report reflects how the business regulatory environment in an economy has changed over time.

Based on this information we present short summary of providing reforms on the ease of doing business in Belarus by years (Table 4.9).

³The compared sample of countries for Belarus is Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, and Tajikistan.

Table 4.9: Applied reforms on the easy of doing business in Belarus

	DB2009	DB2010	DB2011	DB2012
Starting business	+	+	-	-
Dealing with construction permits	+	+	-	-
Getting electricity	+	+	-	-
Registering permits	+	+	-	+
Getting credits	+	-	+	-
Protecting investors	-	-	-	+
Paying taxes	+	+	+	+
Trading across borders	+	+	+	-
Enforcing contracts	-	-	-	+
Resolving insolvency	-	-	+	-

Note: The data is used in Doing Business (2012) are for June 2011. The data for paying taxes refer to January-December 2010.

Source: Doing Business (2012).

According to relevant year, the table demonstrates a decline in the number of providing reforms in 2010-2011. This is in accord with the results from the previous survey's data that showed that Belarusian SMEs were faced not only with challenging economical situation, especially in the crisis year, but also the governance was providing very poor politics for supporting small business within the country.

Chapter 5

Empirical Analyses

According to MaCurdy (1981), the ideal test of labor supply response to wage increases should use transitory wages, which are correlated within a day and uncorrelated across days. Such data are available for example for Belarusian SMEs. Entrepreneurs more often have flexible self-determined work hours and face daily income that are highly correlated within days, but weakly correlated between days, i.e. fluctuations are transitory. Using these data of hours worked each day and the average daily income, we could estimate the elasticity of labor supply and verify the intertemporal substitution hypothesis.

5.1 Data Sample

The data necessary for this work was collected through an enterprise survey conducted during the summer of 2011. The survey questioned 33 independent and privately owned enterprises randomly distributed all over Minsk and Minsk region in the Republic of Belarus. The questionnaire contained questions about the respondent, organization structure of the enterprise where he or she works in, and daily data of work hours and income within last two weeks. A list of questions from the research survey is presented in Appendix B.

The interviewing process was carried out by the author and included sending a questionnaire to randomly selected enterprises. The owner or head manager were asked to fill the questionnaire with answers and send it back to the author. A summary of the main profile characteristics of surveyed enterprises is described below.

Table 5.1 shows the descriptive statistics for respondents who answered the questions from the survey.

Table 5.1: Descriptive statistics of surveyed respondents

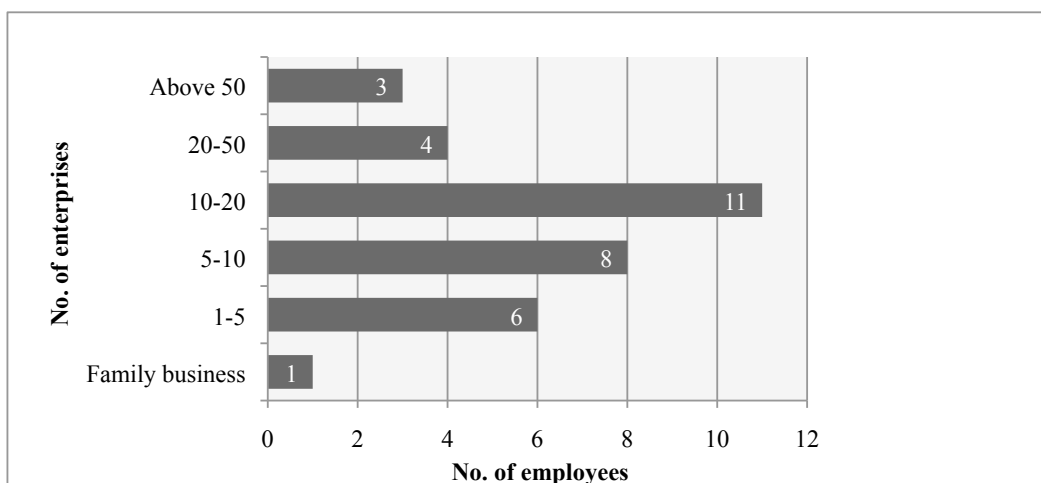
<i>Position</i>	Owner	Manager	Employee
Number of respondents	12	4	17
	Average	Min	Max
Years in the firm	5.3	0.5	20
<i>Highest education obtained</i>	University	Secondary	
Number of respondents	31	2	
<i>Gender</i>	Female	Male	
Number of respondents	19	14	
Average age	38.6	42.6	

Source: Author's data.

Interestingly, that almost all respondents obtained at least University education. This finding is similar to Smallbone *et al.* (2001) for surveyed SMEs in Ukraine and Belarus. They explain it by the high overall education level in some former Soviet bloc countries and by the limited alternative opportunity for educated people in countries with transition economy, which force them “to look towards business ownership both as a source of income and as a potentially satisfying occupation for their abilities”.

All surveyed firms are referred to small-sized enterprises employing between 1 and 100 workers with average employment size less than 20 (Figure 5.1).

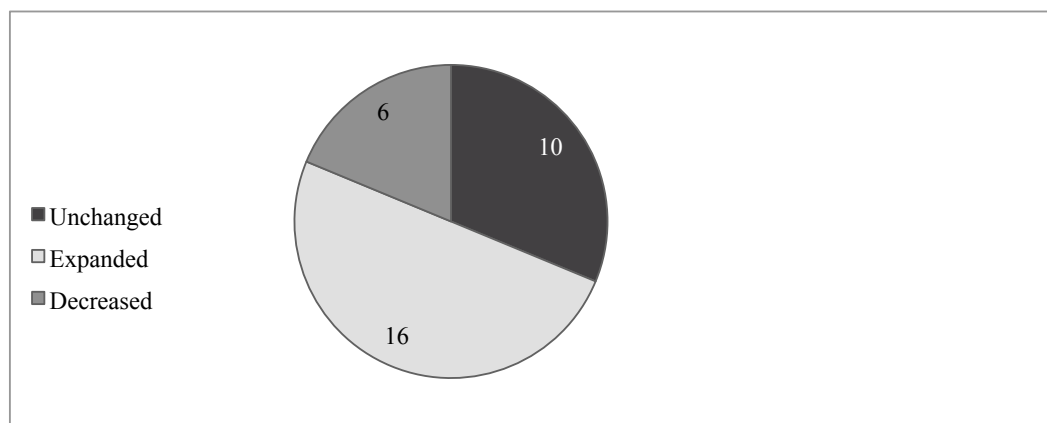
Figure 5.1: Number of employees in surveyed SMEs



Source: Author's data.

To indicate business performance of surveyed enterprises respondents were asked to compare their output market in 2011 with the previous 2 years (Figure 5.2).

Figure 5.2: Answers distribution on the question: “How the market for your firm’s output has changed in the last 3 years?” (No. of employees)



Source: Author’s data.

It should be noted that the vast majority (73%) of surveyed enterprises depend on international market for their output. It could be explained the high competition with government enterprises which dominate on domestic market. Therefore, not surprisingly that 6 respondents, who answered that their market had decreased, explained the reason by the currency crises 2011 (5 of 6) and by the policy restrictions.

The most popular motive to run own business within respondents, 21 of total 33, was “to earn as much as possible”.

Only one third of surveyed enterprises answered that they choose the number of working hours each day, i.e. they are willing to substitute labor and leisure across days by working more in more profitable days (Table 5.2 and Table 5.3). It can be seen from tables below that more that half of the surveyed SMEs prefer to work a fixed number of hours¹, no matter how their business is doing during the day.

¹Surveyed entrepreneurs who prefer to work a fixed number of hours, mean that they have regular eighty hours working day.

Table 5.2: The answers distribution on the question: “What is your firm’s main strategy as it makes its daily business on the market?”

	Number	%
We work by schedule (even if there are no clients)	23	69.7
We work only if we have clients	4	12.1
Other	6	18.2

Source: Author’s data.

Table 5.3: The answers distribution on the question: “Which sentence best describes how many hours you usually work every day?”

	Number	%
We work until we make a certain amount of money	1	3.03
In a “good day” try to work more and quit working early in a “bad day”	6	18.2
We work a fixed hours no matter how we do	22	66.7
Other	4	12.1

Source: Author’s data.

Other key variables concerning the data for estimation of the elasticity of labor supply, such as daily total revenue and daily hours worked, are analyzed and discussed in the next section.

5.2 Methodology

5.2.1 Key Variables

This section aims to indentify the relationship between hours that surveyed entrepreneurs choose to work each day and the average daily wage². To that end, we first drop out the days when the entrepreneur prefers to not work, and then construct an unbalanced panel data sample for 33 firms within 14 days. In total we have 342 observations.

²The average wage is calculated by dividing daily total revenue by hours worked.

Table 5.5 presents means, standard deviations, medians, minimums and maximums of the key variables. Entrepreneurs work about 8.6 hours per day and obtain around 82 thousands of Belarusian rubles per hour in revenue.

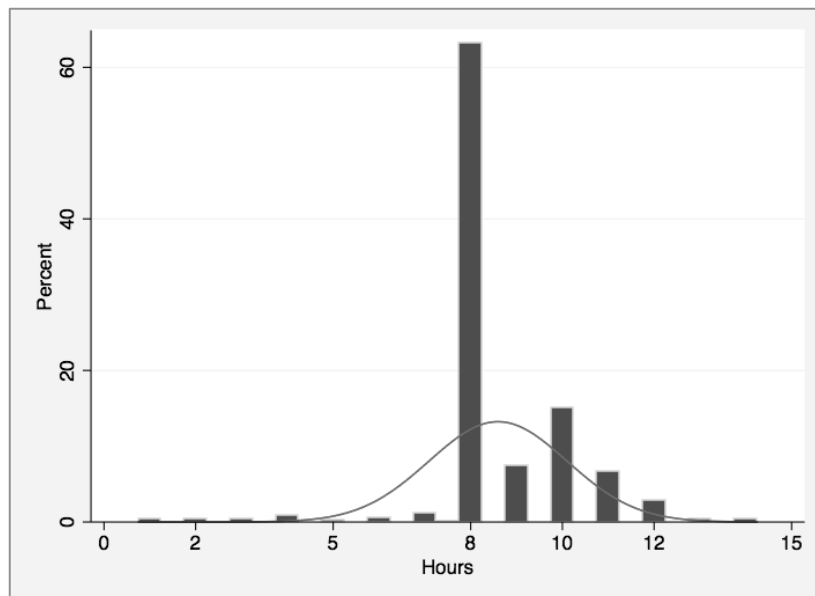
Table 5.4: Summary statistics for surveyed SMEs

	Mean	Std dev	Min	Median	Max
Hours worked	8.60	1.66	1.00	8.00	14
Average wage (in thousands BYR)	82.46	130.89	-20.00	37.50	650.00
Total revenue (in thousands BYR)	690.31	1074.50	-160.00	320.00	6400.00
Correlation log wage and log hours = -0.316					
The standard deviation of log hours = 0.242					
The standard deviation of log wage = 1.422					
The standard deviation of log revenue = 1.374					

Source: Author's data.

Figure 5.2 below presents a distribution of working hours within the surveyed enterprises. It is clear from the histogram that more than 60% of the observations refer to a standard working day with 8 hours.

Figure 5.3: Histogram of daily hours surveyed SMEs



Source: Author's data..

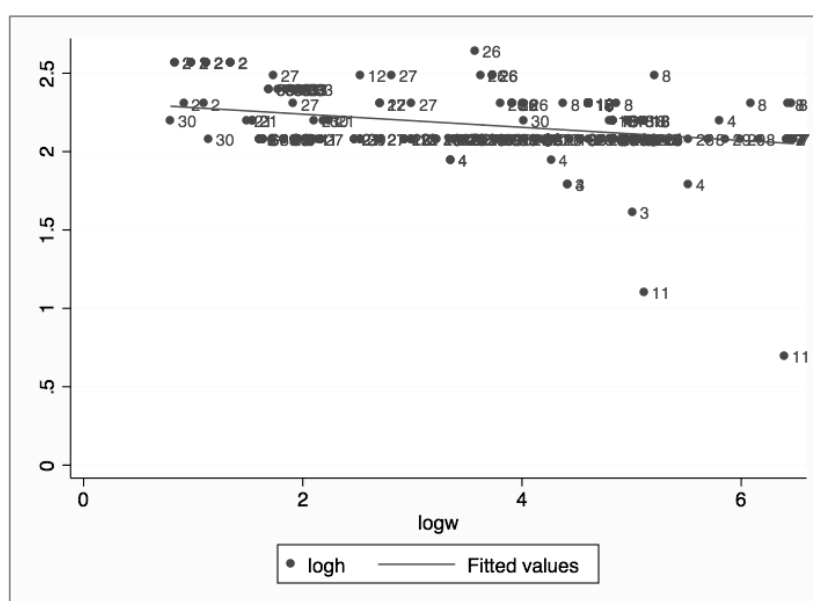
5.2.2 Estimation Strategy

In the empirical analyses below, we estimate wage elasticities of labor supply using the daily number of hours as the dependent variable and the average wage the entrepreneur earns during that day as the independent variable (both in log form).

To investigate how wages varied across days, we calculate the median (across entrepreneurs) of the average hourly wage for each day. When we ran regression of the median wage on day t on the median wage on day $t - 1$, the regression coefficient was insignificant ($p > 0.383$). Since wages are virtually uncorrelated across days, and taking that wages are stable within days, they could be used for estimating the labor supply response to a transitory change in wage.

Table 5.5 also provides the simple correlation between (log) hours and (log) wages, which equals to -0.316. Figure 5.4 shows scatterplot of log hours and log wages with negative correlation.

Figure 5.4: Hours-wage relationships for surveyed SMEs

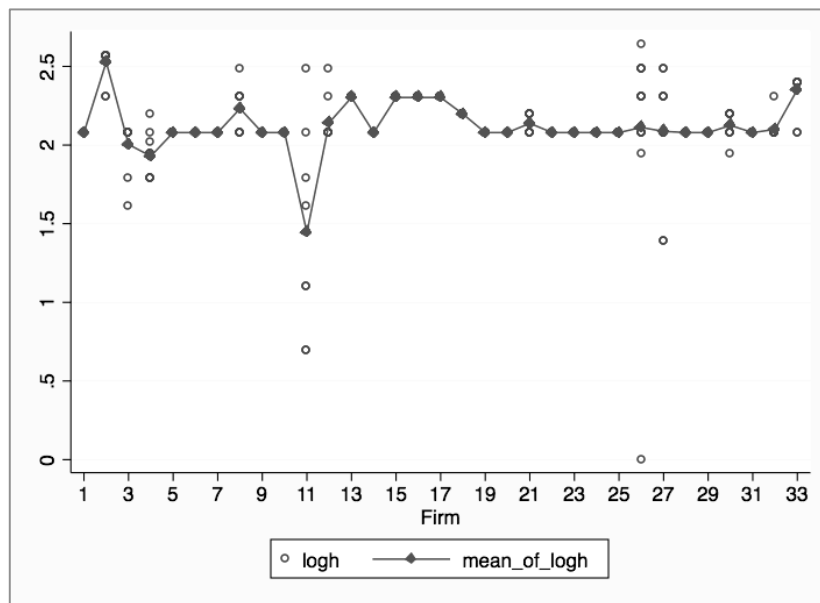


Source: Author's data.

Concerning the panel nature of obtained data, we should control unobserved heterogeneity across entities (firms) and over time (days). Figure 5.5 shows that unobserved variables do not change across firms, which corroborate the unobserved firm-specific effects.

Moreover, we can expect unobserved heterogeneity across days. Figure 5.6

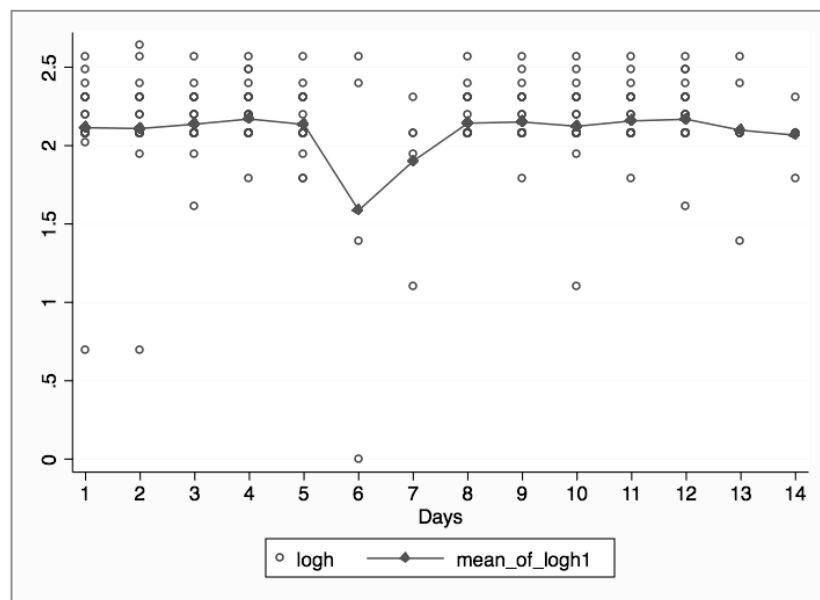
Figure 5.5: Heterogeneity across firms for surveyed SMEs



Source: Author's data.

shows that unobserved variables that do not change over time, which means the presence of time-constant effects.

Figure 5.6: Heterogeneity over time for surveyed SMEs



Source: Author's data..

Thus, the relevant regression model is the firm-specific effects Fixed Effects (FE) model controlling for time-constant effects. In order to check this conclusion we perform the following tests:

Joint hypothesis test to decide if time effects are needed when running the FE model. It is a joint test to see if the dummies for all days are have no effect on the depend variable.

Hausman test to decide between FE and random effects Random Effects (RE). If we have reason to believe that firm-specific effects are independent of all explanatory variables in all days then effects are random, and the preferred model is RE.

The results of the regressions of (log) hours on (log) wages are provided in Table 5.5. We also include a dummy variable for a weekend day in the regression to control for shifts in labor supply that occurs if working on a weekend day has a higher opportunity cost (because to choose leisure during that day is more pleasurable). Controlling for heteroskedasticity, we use estimators with White heteroskedasticity-consistent standard errors also. In addition, panel data estimators should be checked for serial correlation, but this is not a problem for micro panel with short time period.

5.3 Results of the empirical model

Table 5.5 provides the estimated results for both specifications: for the fixed effect model with time-constant effects in column (1) and for the random effects model in column (2). To investigate if we need time-constant effect running FE, we perform joint hypothesis test for the executed model. We reject the null that coefficients for all days are jointly equal to zero ($p = 0.0005$). Therefore, control for time-constant effect is justified.

In both columns the estimated wage elasticities are negative and are significantly different from zero. In particular, the resulted elasticity is -0.023 for FE and is -0.027 for RE. The estimated coefficients for weekend day dummy variables are also negative and significantly different from zero for both specifications. Coefficient ρ , knowing as the intra-class correlation, indicates the fraction of variance due to firm/entrepreneur-specific error. Comparing FE and RE, the estimated coefficient ρ is significantly larger for the FE model.

Table 5.5: Estimation results for the fixed effect model with time-constant effects and the random effects model

	Fixed effects (1)		Random effects (2)	
Log hourly wage	-0.023		-0.027	
	<i>Std Err</i>	$P > t $	<i>Std Err</i>	$P > t $
	0.010	0.017**	0.010	0.005**
<i>Robust</i>	0.014	0.099*	0.015	0.081*
Weekend day dummy	-0.287		-0.128	
	<i>Std Err</i>	$P > t $	<i>Std Err</i>	$P > t $
	0.058	0.000**	0.031	0.000**
<i>Robust</i>	0.026	0.000**	0.020	0.000**
Adjusted R^2	0.837		-	
ρ	0.922		0.640	

Note: Dependent variable is the log of hours worked. Standard errors are in parentheses and are corrected for heteroskedasticity in Robust rows.

* Significant at 10%; ** Significant at 5% or better.

Source: Author's calculations.

At the next step, we perform Hausman test to conclude what is the specification is more relevant for our data. We reject the null hypothesis in favor that the fixed effects model with time-constant effects is consistent and the random effects model is not ($p = 0.000$). Therefore, using the fixed effects regression is more appropriate. Also, having the adjusted R^2 statistics close to one (0.837), we can argue that the fixed effects model with time-constant effects fits good the data.

Predicted coefficients for FE could be explained in words as: workers are willing to decrease hours worked by 2.3% and by 28% when wage increase by 100%, i.e. in two times, and during weekend days respectively. Finally, 92% of the variance can be explained due to differences across entrepreneurs.

Further, we examine how the elasticities vary with gender. We estimate the regression for male and female separately using the fixed effects model with time-constant effects as before. Table 5.6 shows the estimated coefficients for these two groups.

Table 5.6: Estimation results for two groups of male and female

	Male		Female	
Log hourly wage	-0.038		-0.018	
	<i>Std Err</i>	$P > t $	<i>Std Err</i>	$P > t $
	0.021	0.070*	0.010	0.068*
<i>Robust</i>	0.027	0.165	0.010	0.070*
Weekend day dummy	-0.012		-0.289	
	<i>Std Err</i>	$P > t $	<i>Std Err</i>	$P > t $
	0.103	0.910	0.046	0.000**
<i>Robust</i>	0.049	0.813	0.226	0.000**
Adjusted R^2	0.812		0.869	
ρ	0.934		0.844	
Number of observations	114		168	

Note: Dependent variable is the log of hours worked. Standard errors are in parentheses and are corrected for heteroskedasticity in Robust rows.

* Significant at 10%; ** Significant at 5% or better.

Source: Author's calculations.

Both models fit the data well — the adjusted R^2 equals 0.812 for male and 0.869 for female. The difference across male entrepreneurs explains about 93% of the variance; for female entrepreneurs this fraction equals 84%. The estimated coefficients for both groups are strongly negative. The predicted wage elasticity for male is smaller and insignificant when standard errors are corrected for heteroskedasticity. The weekend dummy for male is insignificant in both cases — when standard errors are robust and not. Therefore, hours worked for men do not depend whether they work during working or weekend day, while women are willing to decrease their working hours by about 29% if they work on weekend.

The insignificance of male wage elasticity in case robust standard errors is hard to explain distinctly. Wooldridge (2000) says that after correcting the standard errors for heteroskedasticity in small sample size the robust t statistics can differ from t distribution, and thus, the coefficients may lose their significance, or at least become less significant³. Therefore, we cannot argue that the daily wage has no affect on daily worked hours for male. We can only

³See Wooldridge (1999) for details

conclude that the daily wage has much less significant affect on daily worked hours for male than for female.

In conclusion of this section it should be pointed that according Heckman (1993) the low estimated values of wage elasticities we obtained could be a consequence of substantial measurement-error problems. In case “classical” measurement error in hours, these problems can be eliminated if we can find an instrument for wage that is uncorrelated with the measurement error in hours. But this way is required the search of additional data which is beyond the scope of this work. However, Heckman also argues, that “standard instrument-variable methods used to correct measurements errors⁴ [...] may be invalid because of the correlation between measurement error and the true variable”.

⁴See for example Camerer *et al.* (1997).

Chapter 6

Conclusion

This Master thesis aimed at testing the intertemporal substitution hypothesis for Belarusian small and medium enterprises. The intertemporal substitution hypothesis ISH states that workers relocate their effort intertemporally in response to anticipated wage changes, working more when wages are high and consuming more leisure when its price — foregone wage is low.

Using the fact that for best test performance of labor supply, the wages should be transitory, i.e. constant within days and uncorrelated across days, we decided to use the data of self-employed entrepreneurs. Particularly, we collect the data on daily income and worked hours via survey of entrepreneurs in Belarus. Accounting panel nature of the obtained data and by providing relevant tests, we choose fixed-effect model with controlling for time-constant effects to provide further estimation.

Our regression analysis yields negative wage elasticities what suggests that the ISH has no empirical evidence in the case of Belarusian SMEs. The similar result are could be found in analyses of cab drivers by Camerer *et al.* (1997)¹, farmers by Berg (1961), and self-employed proprietors by Wales (1973). Moreover, according to our survey major part of responded Belarusian entrepreneurs are willing to work a fixed number of hours no matter how well their business does. We also find that female have larger labor supply elasticity than males. In addition, it should be noted that male labor supply elasticity becomes even insignificant when we use robust standard errors. However, larger values of the predicted elasticity for women than for men is generally found in the research literature (see for example Hausman 1981; Hausman & Ruud

¹Actually, most of the elasticities in Camerer *et al.* (1997) are negative, so they find “little” evidence for the ISH.

1984; Bourguignon & Magnac 1990; Euwals & van Soest 1999; Bonin *et al.* 2002; Devereux 2003; Eissa & Hoynes 2004; Blau & Kahn 2005).

Dynamic theories of labor supply predict a positive labor supply response to transitory wages, therefore, evidence of negative wage elasticities raises a question about the validity of the life-cycle approach to labor supply analysis. However, from the rejected ISH we also have a reason to think that entrepreneurs in Belarus are planning their time horizons in a uniquely short-sighted way. Assuming that possible explanation of such behavior could be found in the fact that developing SMEs sector is one of the issues troubling CEEEs countries in their transformation from centrally planned to the market-based economy, we decide to provide analysis of SMEs sector in Belarus. That brings us to another aim of this thesis — to compose comprehensive review of Belarusian SMEs and their developments in recent years.

The official statistics analyzed in this work and the data from surveys paint a picture of a slow-growing and inefficient SMEs sector in Belarus. The sector's contribution to the Belarusian economy is still a long way to grow to reach the EU average. For example, SMEs in Belarus accounted only 20% of GDP in 2010 comparing with 70% in the EU. The rest of the macroeconomic indicators for Belarusian SMEs sector are also relative small and insignificant. This fact can be taken into account by the business environment within the country and reflected by government legislation on private enterprises in Belarus. A broad view of the role of government in relation to private SMEs indicates extremely insufficient direct measures of government to encourage and support SMEs development. Indeed, in some cases the actions of government become a barrier to SMEs development, rather than an enabling force. The evidence from our survey discussed in our work shows that the vast majority of surveyed entrepreneurs does not see any changes in the business environment or even thinks it became worse in recent years. More than the quarter of the answers that entrepreneurs gave about their enterprises' economic condition is "bad or below average". In the list of the most significant barriers for doing business they include regulation of currency market, access to finance resources, unstable policy, ineffective governance, etc. In such cases, business owners have to focus on solving daily regulatory and licensing problems rather than strategy planning for longer business development. Thus, it is not surprising that this is reflected in a low contribution of SMEs to the Belarusian economy and in a lack of growth in the overall number of firms in recent years.

In conclusion, it has to be noted that the weakness of implementation and

enforcement of existing laws and regulation in Belarus is likely to limit successful functioning of private SMEs within the country. The lack of protection of the rights of entrepreneurs makes business owners to feel vulnerable in the face of the legislative system of the country. In these circumstances, entrepreneurs are averse to making long-term investment in their business that might hypothetically be a source of economic opportunity for them and their children. Uncertainties that are related to the future force them to apply narrow time horizons for their labor supply. This suggests that entrepreneurs try to simplify their decisions by isolation them from planning for a long run. Such behavior could be the reason of negative wage elasticities which leads us to the rejection of the intertemporal substitution hypothesis for Belarusian small and medium enterprises.

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Appendix A

Appendix A

This appendix presents statistical data from The World Bank’s “Doing Business” (2010) report , which is discussed in Section 4.2.

Table A.1: Top 100 rankings on the ease of doing business

DB2012 rank	DB2011 rank	Economies	DB2012 reforms	DB2012 rank	DB2011 rank	Economies	DB2012 reforms
1	1	Singapore	0	51	46	Hungary	0
2	2	Hong Kong, SAR, China	2	52	48	St. Lucia	0
3	3	New Zealand	1	53	54	Mexico	3
4	4	United States	0	54	52	Botswana	0
5	5	Denmark	1	55	61	Armenia	5
6	7	Norway	0	56	56	Montenegro	3
7	6	United Kingdom	1	57	51	Antigua and Barbuda	0
8	15	Korea, Rep.	3	58	62	Tonga	3
9	13	Iceland	2	59	57	Bulgaria	2
10	8	Ireland	0	60	55	Samoa	0
11	14	Finland	1	61	63	Panama	1
12	10	Saudi Arabia	1	62	59	Poland	2
13	12	Canada	1	63	60	Ghana	0
14	9	Sweden	0	64	70	Czech Republic	2
15	11	Australia	1	65	64	Dominica	0
16	17	Georgia	4	66	69	Azerbaijan	0
17	16	Thailand	1	67	71	Kuwait	0
18	23	Malaysia	3	68	76	Trinidad and Tobago	0
19	19	Germany	0	69	91	Belarus	3
20	20	Japan	0	70	67	Kyrgyz Republic	0
21	31	Latvia	4	71	73	Turkey	2
22	34	Macedonia	4	72	65	Romania	2
23	21	Mauritius	0	73	68	Grenada	0
24	18	Estonia	0	74	81	Solomon Islands	4
25	24	China	2	75	66	St. Vincent and the Grenadines	0
26	22	Switzerland	2	76	75	Vanuatu	3

Table A.1: (continued)

DB2012 rank	DB2011 rank	Economies	DB2012 reforms	DB2012 rank	DB2011 rank	Economies	DB2012 reforms
27	25	Lithuania	2	77	72	Fiji	0
28	27	Belgium	2	78	74	Namibia	1
29	26	France	1	79	78	Maldives	0
30	30	Portugal	2	80	79	Croatia	1
31	29	Netherland	0	81	99	Moldova	4
32	28	Austria	1	82	77	Albania	1
33	35	United Arab Emirates	2	83	86	Brunei Darussalam	1
34	32	Israel	2	84	80	Zambia	0
35	36	South Africa	3	85	82	Bahamas, The	0
36	38	Qatar	2	86	89	Mongolia	1
37	37	Slovenia	3	87	83	Italy	1
38	33	Bahrain	0	88	85	Jamaica	0
39	41	Chile	3	89	98	Sri Lanka	2
40	49	Cyprus	1	90	107	Uruguay	2
41	39	Peru	3	91	87	China	0
42	47	Colombia	3	92	88	Serbia	2
43	42	Puerto Rico (U.S.)	2	93	92	Belize	1
44	45	Spain	1	94	115	Morocco	3
45	50	Rwanda	3	95	84	St. Kitts and Nevis	1
46	40	Tunisia	0	96	95	Jordan	2
47	58	Kazakhstan	1	07	93	Guatemala	0
48	43	Slovak Republic	1	98	90	Vietnam	1
49	53	Oman	3	99	94	Yemen, Rep.	1
50	44	Luxembourg	0	100	101	Greece	2

Note: The rankings for all economies are benchmarked to June 2011 and reported in the 10 topics included in 2012 aggregate ranking, i.e. in starting a business, dealing with construction permits, getting credit, paying taxes, enforcing contracts, resolving insolvency, trading across borders, protecting investors and registering property.

Source: Doing Business (2012)

Appendix B

Appendix B

B.1 Research Survey

This appendix presents the sample of questions from the survey, which was distributed within randomly selected SMEs.

1. When your enterprise/firm has been established?
2. What is the legal and organizational basis of your firm?
 - a) Individual entrepreneur
 - b) Limited company (Ltd.)
 - c) Civil company
 - d) Stock company
 - e) Other form
3. How many employees are employed in your enterprise?
 - a) None, I run family business
 - b) 1-5 employees
 - c) 5-10 employees
 - d) 10-20 employees
 - e) 20-50 employees
 - f) >50 employees
4. How would you describe the market for your enterprise?
 - a) Several neighbouring villages
 - b) Whole district
 - c) Neighbouring districts
 - d) Whole province
 - e) Whole country-domestic market
 - f) International markets
5. Whether the market for your firm's output has changed in the last 3 years?
 - a) Remained the same
 - c) Expanded thanks to: _____
 - e) Decreased thanks to: _____

6. Which sentence best describes your motive for establishing and running the firm?
- a) To make as much as possible b) To make enough to satisfy my family's basic needs
- c) I just follow the trend, everyone does business nowadays d) To show the others that I can do business
- e) Other
7. What is your firm's main strategy as it makes its daily business on the market?
- a) Work by schedule (even if there are no clients) b) Work only if we have clients else we don't work
- c) Other
8. Can you choose the number of hours you work each day?
YES/NO
9. Do you keep records on the hours you and your employers work each day?
YES/NO
10. Which sentence best describes how many hours you usually work every day?
- a) We work until we make a certain amount of money b) In a "good day" try to work more and quit working early in a "bad day"
- c) We work a fixed hours d) Other no matter how we do

11. How many hours did you work for:
the past week?

Mon	Tue	Wed	Thu	Fri	Sat	Sun

the week before the last?

Mon	Tue	Wed	Thu	Fri	Sat	Sun

12. What was the total daily income/wage:
the past week?

Mon	Tue	Wed	Thu	Fri	Sat	Sun

the week before the last?

Mon	Tue	Wed	Thu	Fri	Sat	Sun

Information about the respondent:

1. Position: *owner/manager/employee*
2. Number of years in the firm: _____*years*
3. Highest education obtained: *Primary/Secondary/Technical/University/PhD*
4. Gender: *M/F*
5. Age: _____*years*