

# **IMPACT ANALYSIS OF THE BUSINESS START-UP SUBSIDY**

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## INTRODUCTION

The aim of this analysis is to examine whether the business start-up subsidy paid by the Estonian Unemployment Insurance Fund has had any impact on the labour market outcomes of the participants in the measure, whether the payment of the subsidy is a cost-effective measure to assist the unemployed and to determine the viability of the businesses created with the help of the start-up subsidy.

The analysis of the impact of the business start-up subsidy and the survival rate of the enterprises created concerns the individuals who had submitted an application for subsidy from 1 May 2009 to the end of 2011, and received the subsidy no later than by the end of 2011. That period was chosen because the Estonian Unemployment Insurance Fund was entrusted with the provision of labour market measures from 1 May 2009. Therefore, the analysis only concerns those applicants for the subsidy whose business plans were evaluated by the Unemployment Insurance Fund. On the other hand, the chosen period enables us to monitor the economic activities of an enterprise for a period of at least one year from the establishment of the enterprise.

The survival rate of enterprises is evaluated based on the data from the Commercial Register. The survival rate is evaluated based on registration in the Commercial Register and the annual reports of the enterprises, which confirm actual economic activities.

This analysis uses a quasi-experimental approach to assess the impact of the business start-up subsidy. More specifically, propensity score matching is used, which is a widely used method to evaluate the impact of active labour market measures. A control group is composed of individuals registered during the same period as unemployed who had prior entrepreneurship experience or a degree in business management or had participated in business training and were statistically as similar as possible to those who had received the subsidy. This means that the control group complies with the same criteria that are required to receive the business start-up subsidy. The effect of the business start-up subsidy on the employment status and income levels of the participants is assessed during the period of up to four years from the time the subsidy was paid. A cost-benefit analysis is conducted based on the impact evaluation.

Chapter 1 describes the procedure of applying for the business start-up subsidy and the principles of payment by the Unemployment Insurance Fund. Chapter 2 provides an overview of the profile of applicants and recipients of the subsidy. Chapter 3 analyses the survival rate of businesses established with the help of the subsidy. Chapter 4 describes in detail the evaluation methodology and presents the findings of impact evaluation and a cost-benefit analysis of the measure.

## 1. PRINCIPLES OF THE PAYMENT OF THE BUSINESS START-UP SUBSIDY<sup>1</sup>

The business start-up subsidy is a measure that supports the creation of jobs, is aimed at motivating and supporting people to start a new business. The business start-up subsidy is a lump-sum payment intended to cover the costs of starting a new business. The maximum amount of business start-up subsidy is established annually in the state budget. Currently, the maximum amount is EUR 4,474. The maximum amount remained at the same level throughout the period covered by the analysis.

Individuals who are at least 18 years old and are registered as unemployed or job-seekers who have received a notice of dismissal can apply for the subsidy. To qualify for the start-up subsidy, an individual must have some knowledge about running a business. An applicant must either have participated in business training (at least 56 hours), have vocational or higher education in the field of economy or have at least one year's experience in running a business. If necessary, an unemployed person can participate in business training offered by the Unemployment Insurance Fund in order to obtain knowledge about running a business and receive counselling on preparing a business plan.

Applicants for the business start-up subsidy must submit an application, the required documents and a business plan for the new enterprise. The Unemployment Insurance Fund will verify the data of the applicant and his/her eligibility for the subsidy. The business start-up subsidy shall not be granted for the following activities and individuals (Labour Market Services and Benefits Act):

- for setting up the economic activity of an existing undertaking and for expanding its activities;
- for acquiring shares in an existing company;
- to a person with regard to whom a prohibition on business applies;
- to a person who owes taxes to the state or a local government;
- to a person whose business plan involves high risk;
- to a person who has at least a 51% holding in an existing company.

If an applicant fulfils the criteria for receiving the subsidy, the applicant's business plan will be forwarded to the selection board for evaluation. The board will assess the viability of the business plan and its compliance to the criteria and make a decision whether the subsidy will be granted. If the decision is positive, the subsidy will be transferred to the bank account of the applicant and the applicant will be deregistered from the unemployment register.

The recipient of the business start-up subsidy can only register his/her company after receiving the subsidy and must start economic activity no later than within six months from the date of the receipt of the subsidy. The business start-up subsidy must be used for the intended purpose, as is defined in the business plan. In the first year of activity, the company must submit two reports on the use of the subsidy. The first report will be submitted within the first six months of the date of the receipt of the subsidy and the second report after 11

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<sup>1</sup> This Chapter is based on the following version of the Labour Market Services and Benefits Act: Labour Market Services and Benefits Act. Adopted 28/09/2005 RT I 2005, 54, 430; RT I, 06/07/2013,6.

months. If it is discovered in the course of follow-up inspection that the recipient of the business start-up subsidy has not performed his/her obligations, the recipient of the business start-up subsidy may be ordered to return the subsidy. The recipient of the business start-up subsidy shall return the aid in full under the following circumstances (Labour Market Services and Benefits Act):

- the economic activity prescribed by the business plan has not commenced within six months after the date on which the funds were transferred to the person's bank account, unless the person has good reason for not starting the economic activity;
- the economic activity prescribed by the business plan stops before one year has passed from the date on which the funds were transferred to the person's bank account, unless the economic activity stops for a good reason;
- the person who received business start-up subsidy transfers, within one year after the date on which the funds were transferred to the person's bank account, the person alienates his shares in the share capital of the company which was set up with the aid;
- The business start-up subsidy is not used for its intended purpose.

In addition to the business start-up subsidy, recipients can participate, within two years of receiving the subsidy, in entrepreneurship support services. Such services include mentoring for start-ups (mentor club), which offer the recipients of the business start-up subsidy an opportunity to exchange knowledge and experiences, meet experienced entrepreneurs and make new business contacts to ensure the development, competitiveness and viability of their enterprises. The recipients of the subsidy can also apply for support to cover the costs of training or individual counselling received outside the Unemployment Insurance Fund in the field of activity of their company.

The number of recipients of the start-up subsidy increased in 2009 in connection with the increase in the number of unemployed persons due to the economic crisis. While the number of the unemployed has decreased rapidly since 2010, the number of the business start-up subsidy recipients has remained at the same level (Figure 1).

The analysis concerns the applicants who had submitted a business plan after 1 May 2009, i.e. the time when the Estonian Unemployment Insurance Fund was entrusted with the provision of labour market measures. The overview concerns people who applied for the subsidy up to the end of 2012. The survival rate of enterprises and the impact of the business start-up subsidy is evaluated based on the applicants who received the subsidy up to the end of 2011 to enable us to monitor the economic activities of their companies and the labour market outcomes of the participants in the measure for a period of at least one year from the establishment of the enterprise. This means that some of the analysed enterprises were established during the economic crisis and it was more difficult for them to survive.

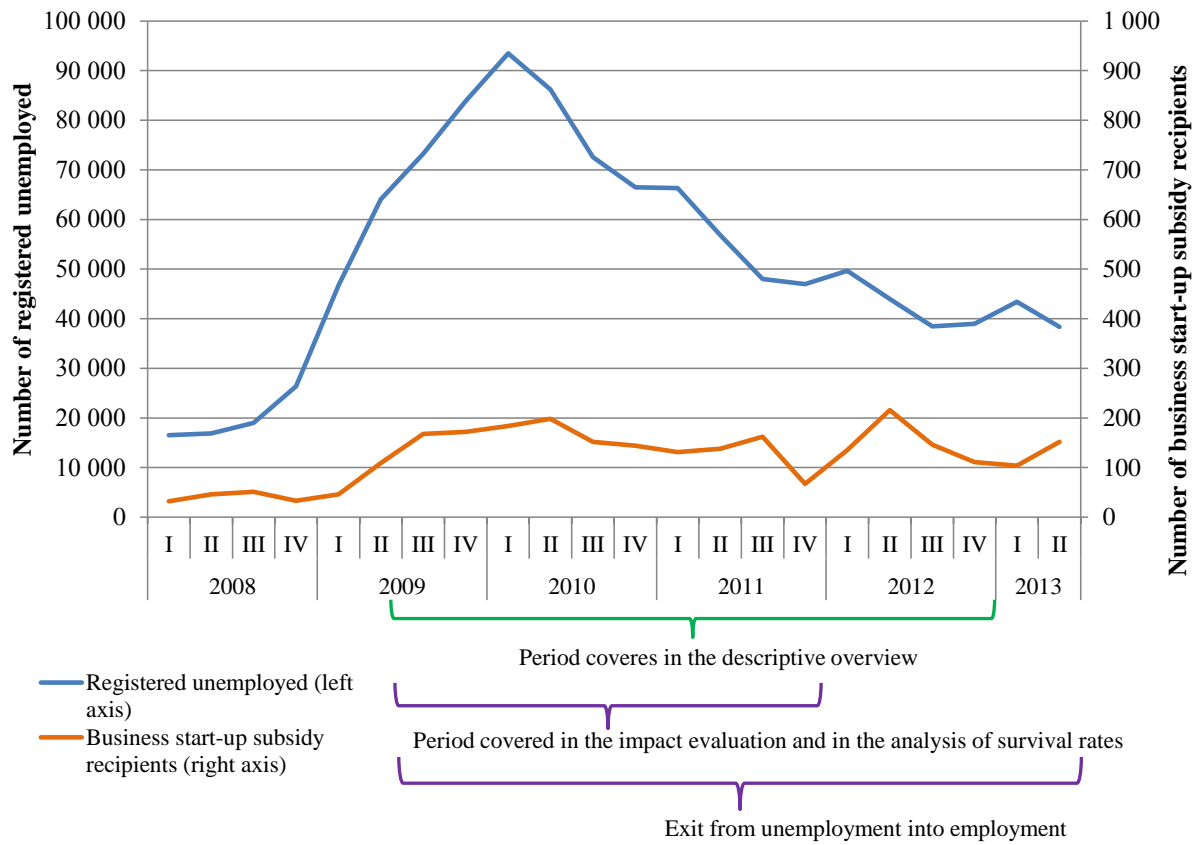
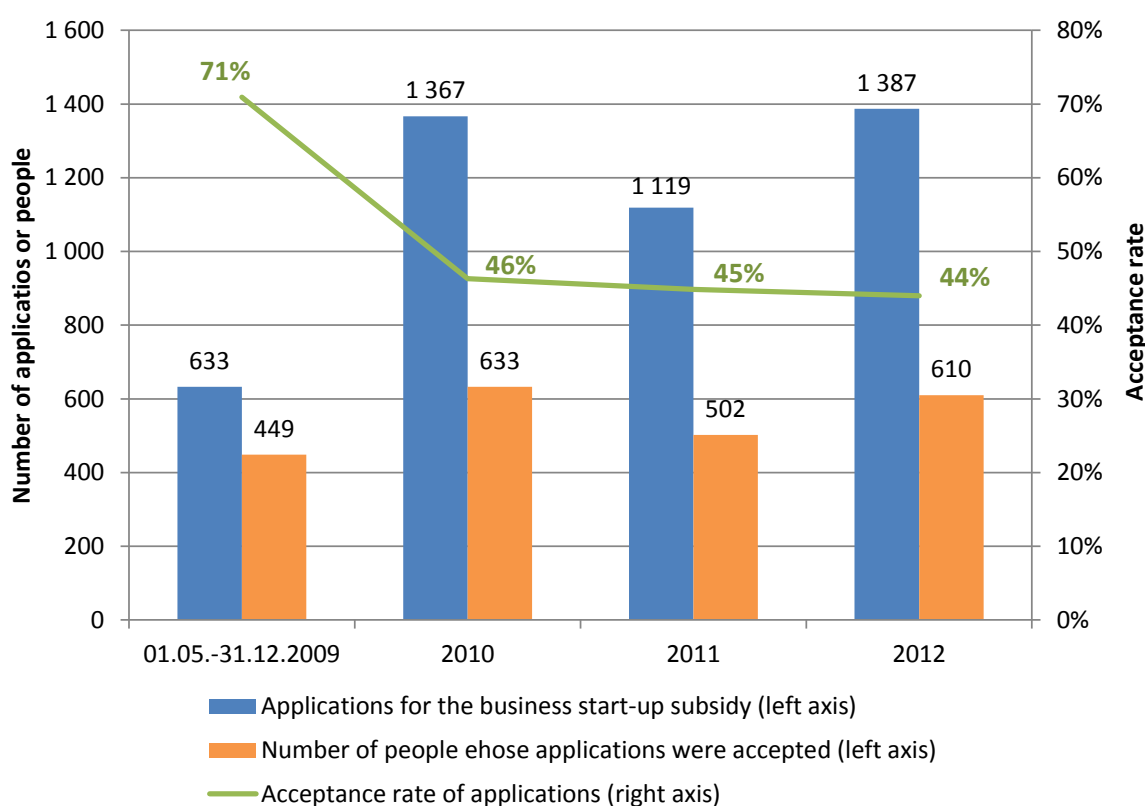


Figure 1. The period covered by the analysis

## 2. PROFILE OF APPLICANTS AND RECIPIENTS OF THE SUBSIDY.

More than one thousand individuals apply for the business start-up subsidy per year (Figure 2). The share of applicants for the subsidy of all persons registered as unemployed is around 1%, while the share of applicants is increasing year on year. This indicates that interest in and need for such service has increased. The rate of acceptance of applications is around 45%, which indicates that slightly less than half of applicants received the subsidy. The rate of acceptance has decreased over the years. This may be caused on the one hand by the lower quality of the proposed business plans and on the other hand by stricter rules for evaluating business plans. In general, the business start-up subsidy is a small-scale labour market service that is targeted to a small segment of registered unemployed.



**Figure 2.** Applications for the business start-up subsidy and acceptance rate of applications

Next, we will compare the applicants for the business start-up subsidy with the remainder of the registered unemployed in the breakdown of different socio-demographic variables. The analysis concerns applications for the business start-up subsidy that were filed as required in the period between 1 May 2009 and 31 December 2012. The control group includes the individuals who were registered as unemployed in the same period. Applicants for the subsidy are divided into three groups: individuals whose applications were accepted in the first round, individuals whose applications were accepted but not in the first round and applicants for the subsidy whose applications were rejected. A comparison of the three groups is given in Table 1.



**Table 1.** Comparison of applicants for the business start-up subsidy and the remainder of the registered unemployed in the period between 1 May 2009 and 31 December 2012<sup>2</sup>

	Application accepted in the first round	Application accepted but not in the first round	Application rejected	The remainder of the registered unemployed
Total number of observations	1 672	514	2 035	376 569
Gender: male	48.7%	51.0%	50.5%	54.7%
Average age	36.9	36.3	35.9	35.8
Education				
Primary education or less	0.1%	-	0.1%	2.7%
Lower secondary education	5.3%	5.6%	6.8%	20.7%
Upper secondary education	21.5%	24.9%	24.4%	26.9%
Vocational secondary education	19.0%	19.3%	20.0%	26.3%
Professional secondary education	11.6%	14.0%	13.7%	10.1%
Professional higher education	8.1%	9.5%	8.0%	3.2%
Bachelor's degree	21.7%	17.9%	16.9%	6.3%
Master's or doctor's degree	12.6%	8.6%	9.9%	3.2%
Unspecified	0.2%	0.2%	0.0%	0.6%
Previous occupation				
Armed forces	0.2%	0.6%	0.3%	0.1%
Managers	22.6%	20.4%	21.7%	4.9%
Professionals	12.9%	9.7%	11.2%	4.2%
Technicians and associate professionals	15.7%	16.1%	15.1%	6.6%
Clerical support workers	7.1%	6.0%	7.2%	6.0%
Service and sales workers	9.6%	13.8%	12.4%	14.4%
Skilled agricultural, forestry and fishery workers	1.4%	1.4%	1.7%	1.4%
Craft and related trades workers	12.3%	12.1%	11.9%	21.3%
Plant and machine operators, and assemblers	3.6%	5.8%	5.4%	12.5%
Elementary occupations	3.2%	5.1%	4.6%	14.3%
No work experience or unspecified	11.4%	8.9%	8.5%	14.4%
Main language of communication: Estonian	91.1%	85.2%	83.6%	55.1%
Place of residence				
Rural	45.6%	41.2%	42.7%	31.0%
Urban	54.4%	58.8%	57.3%	69.0%
Unspecified	0.1%	-	-	0.0%
Region of registration as unemployed				
Harju County	35.9%	35.8%	42.7%	41.1%
Ida-Viru County	3.4%	3.9%	4.3%	16.2%
Southern Estonia	10.2%	10.3%	7.4%	7.1%
Other regions	50.5%	50.0%	45.6%	35.6%
Belongs to a risk group				
Nonproficient Estonian speakers	3.9%	8.0%	9.1%	31.4%
Released from prison	0.1%	0.4%	0.5%	1.7%
With a disability	3.5%	2.9%	4.7%	4.9%
Persons of 16 up to 24 years of age	8.4%	9.1%	11.3%	21.5%
Long-term unemployed persons	42.5%	65.8%	69.8%	50.2%
Persons of 55 years up to the pensionable age	6.5%	6.2%	7.9%	12.7%
Caregiver	0.1%	-	0.3%	0.2%
Other specific impediments	0.2%	1.9%	1.5%	1.3%
Member of management board	16.6%	27.2%	21.2%	5.7%
Student	1.7%	3.1%	3.8%	2.0%
Duration of last employment (months)	41.1	33.1	35.8	27.6
Cause of termination of employment				
Unknown	22.1%	24.3%	24.4%	34.3%
Employment terminated on the initiative of the employer	65.1%	62.6%	60.3%	48.5%
Voluntary termination of employment	12.7%	13.0%	15.2%	17.1%
Previous periods of registered unemployment (number)	0.5	0.7	0.7	1.2
Duration of previous periods of registered unemployment (days)	85.2	147.5	134.6	236.2
Share of recipients of unemployment benefit				
Unemployment insurance benefit for 180 days	18.1%	15.4%	16.2%	14.3%
Unemployment insurance benefit for 270 days	37.7%	30.9%	30.0%	18.9%
Unemployment insurance benefit for 360 days	2.2%	2.9%	2.9%	1.8%
Unemployment allowance	23.9%	23.9%	26.4%	24.3%
Does not receive unemployment benefit	18.2%	26.8%	24.4%	40.6%
Participated in business training	40.0%	31.1%	32.4%	1.0%
A degree in business management or experience in running a business	48.5%	43.6%	40.6%	6.1%

<sup>2</sup> These figures differ somewhat from those indicated above because in 31 cases the date of filing an application for the subsidy did not coincide with any period of being registered as unemployed.

There is an almost equal number of male and female applicants for the subsidy. However, the share of men among the remainder of unemployed persons is greater by a couple of percentage points. The average age of each group is similar - 36 years.

A comparison of the education level of the applicants for the business start-up subsidy with that of the remainder of the registered unemployed shows that the education level of the applicants is significantly higher. On the one hand, this can be explained by the fact that vocational or higher education in the field of economy is one criterion for applying for the subsidy. On the other hand, we cannot disregard the possible impact of higher education on entrepreneurial skills and courage to go into business. When comparing the three groups of applicants for the subsidy, we can see that the first group, i.e. those whose application was satisfied in the first round, includes the biggest number of people with higher education, while the third group, i.e. those whose application was rejected, includes the smallest number of people with higher education. People with general secondary education and those who hold a Bachelor's degree prevail among the applicants whose application was satisfied in the first round. Other applicants as well as the rest of the registered unemployed include more people with general secondary and vocational secondary education.

By professions, the share of white-collar employees is significantly bigger among applicants for the subsidy. More specifically, the group of applicants includes more senior officials and managers (about one fifth), followed by professionals and technicians. When comparing the three groups of applicants, we can see that the distribution of the prior profession of the applicants is similar in all groups. The remainder of the registered unemployed includes more skilled workers and craftsmen, sales and service personnel and unskilled workers.

The applicants include more people whose primary language of communication is Estonian (more than 80% in all groups), while only 55% of the remainder of the registered unemployed have Estonian as their primary language of communication. There are also significantly fewer people who cannot speak Estonian among the applicants for the subsidy. These data are not surprising, because applications for the business start-up subsidy can only be filed in Estonian and those who are not proficient in the state language are not very likely to use the measure.

As compared with the remainder of unemployed persons, there are also more people from rural regions than from cities among the applicants. The reason may be that finding a suitable job is more difficult in rural areas and one possible solution is to start a business. The applicants for the subsidy are divided into four groups based on the region in which they were registered as unemployed: Harju County, South-Estonia, Ida-Viru County and other. As compared with the remainder of unemployed persons, there are fewer people from Ida-Viru County and more from other regions. As compared with the remainder of unemployed persons, slightly more applicants come from South-Estonia and fewer from Harju County.

As compared with the remainder of unemployed persons, the applicants include less young and elderly people. The share of long-term unemployed is smaller among the applicants than among the remainder of the registered unemployed (43% and 50%, respectively). However, the groups of applicants whose application was accepted in subsequent rounds include significantly more long-term unemployed (over 65%) than the control group of remainder of the registered unemployed.

As regards the length of prior employment, the average length of the employment of applicants is significantly longer in that of the registered unemployed, while those whose applications were satisfied in the first round had been employed for the longest period.

The share of individuals who qualified for the unemployment benefit is bigger among the applicants than among the remainder of the unemployed. While the share of the recipients of the unemployment benefit is similar in all four groups, the share of the recipients of the unemployment insurance benefit is remarkably bigger among the applicants for the business start-up subsidy than among the registered unemployed and the biggest among those whose applications were satisfied in the first round.

Because a prerequisite for being granted the subsidy is prior entrepreneurship experience or a degree in business management or participation in business training, it is important to compare the relevant variables regarding the applicants and the remainder of the registered unemployed. As is seen from the table, the group of applicants includes significantly more persons who have participated in business training than the control group (more than 31% and 1%, respectively). As expected, the group of applicants also includes a bigger share of those who have a degree in business management or experience in running a business (more than 40% and 6%, respectively).

Statistical data indicate that the characteristics of the recipients of the business start-up subsidy differ from those of the individuals who were registered as unemployed in the same period. This indicates that the business start-up subsidy is not applied for arbitrarily and people with certain characteristics are more likely to apply for the subsidy than others. Therefore, in order to evaluate the impact of the measure (Chapter 4), the control group is limited to those registered unemployed who have prior entrepreneurship experience and/or a degree in business management and/or have participated in business training. We use propensity score matching to ensure that the treatment group and control group are also comparable regarding all other variables.

### **3. ENTERPRISE SURVIVAL RATE**

The survival rate of enterprises provides information on the share of enterprises that survive a certain period after creation. The survival rate is determined based on the enterprises created with the help of the business start-up subsidy that was applied for between 1 May 2009 and 31 December 2011 and was paid to applicants by the end of 2011 at the latest. The evaluation of the survival rate includes those enterprises that were established by using the subsidy for its intended purpose, i.e. those recipients who have not been requested to return the subsidy. Such an approach reflects the viability of the enterprises, the supporting of which means a final cost for the Unemployment Insurance Fund and the public sector and which have been run in line with the business plan approved by the Unemployment Insurance Fund and the rules of the use of the subsidy. There were 1,292 such enterprises, established by 1,364 recipients. It should be borne in mind that this group does not include the enterprises that were wound up during the first year, those that were not established (approved business plans that were not implemented) and the cases where the subsidy was not used for its intended purpose, i.e. it was used to expand the existing activities or to start activities not specified in the business plan and not approved by the Unemployment Insurance Fund, etc.).

To determine the survival rate of enterprises, it has been verified for each enterprise and self-employed person whether they were still registered in the commercial register at the end of the calendar year. The start of the activity of an enterprise or a self-employed person is the date of the first entry made in the commercial register. The end of the activity is the date of the entry concerning the winding up, bankruptcy or deletion from the register of the enterprise. The survival of enterprises is evaluated with the precision of a year. For example, if an enterprise was established in 2009 and stood in the business register as of the end of 2009, it has been considered as a going enterprise (i.e. it had survived). Therefore, the first year of operation equals the year of the creation of an enterprise.

The fact that an enterprise is registered in the commercial register does not necessarily mean that the enterprise had any actual economic activity. In order to identify the enterprises that were actually operating, we look at whether they had submitted the annual accounts and declared any income and/or expenditures in the income statement. If the annual accounts indicate that an enterprise earned income and/or had expenditures during the first year of operation<sup>3</sup>, the enterprise is considered to be a going concern. Self-employed persons are only considered to be a going concern based on the registration in the commercial register, because they are required to pay social tax for the periods they are registered in the commercial register. Therefore, it is not reasonable for a self-employed person to be registered after they have terminated their activities. Although self-employed persons can suspend their operations or operate only on a seasonal basis, they are considered as going concerns because a temporary suspension of operations does not mean closure.

For easier reading of the analysis, the survival rate evaluated based on the valid entry in the commercial register is hereinafter referred to as “survival rate 1” and the survival rate adjusted to the existence of income or expenditures “survival rate 2”. The survival rate adjusted to the existence of income or expenditures is only considered for enterprises established by using the valid subsidy.

Because the evaluation of the survival rate based only on subsidies used for their intended purpose leaves out a part of subsidy recipients, the survival rate is also evaluated for all subsidy recipients. This means that the analysis also includes those recipients who were subsequently required to return the subsidy (the decision of granting the subsidy was revoked). The recipients from whom the subsidy was recovered include individuals who did not create an enterprise or used the money for an existing enterprise. In such cases, the enterprises are treated as “not established”, i.e. enterprises that did not start operations. However, such recipients also include individuals who registered a new enterprise after receiving the subsidy<sup>4</sup>. The recipients who established a new enterprise include both those who did not start economic activity and those who did start economic activity, yet did not use the subsidy for its intended purpose. As a new enterprise was established, the survival rate of such enterprises is evaluated similarly to those in the case of which the subsidy was used for its intended purpose: if an enterprise stood in the commercial register at the end of the year, it is considered to be a going concern. In conclusion, assessing the share of going concerns among all recipients of the subsidy is important because this enables us to take into account those enterprises that terminated their operations during the first year and also those

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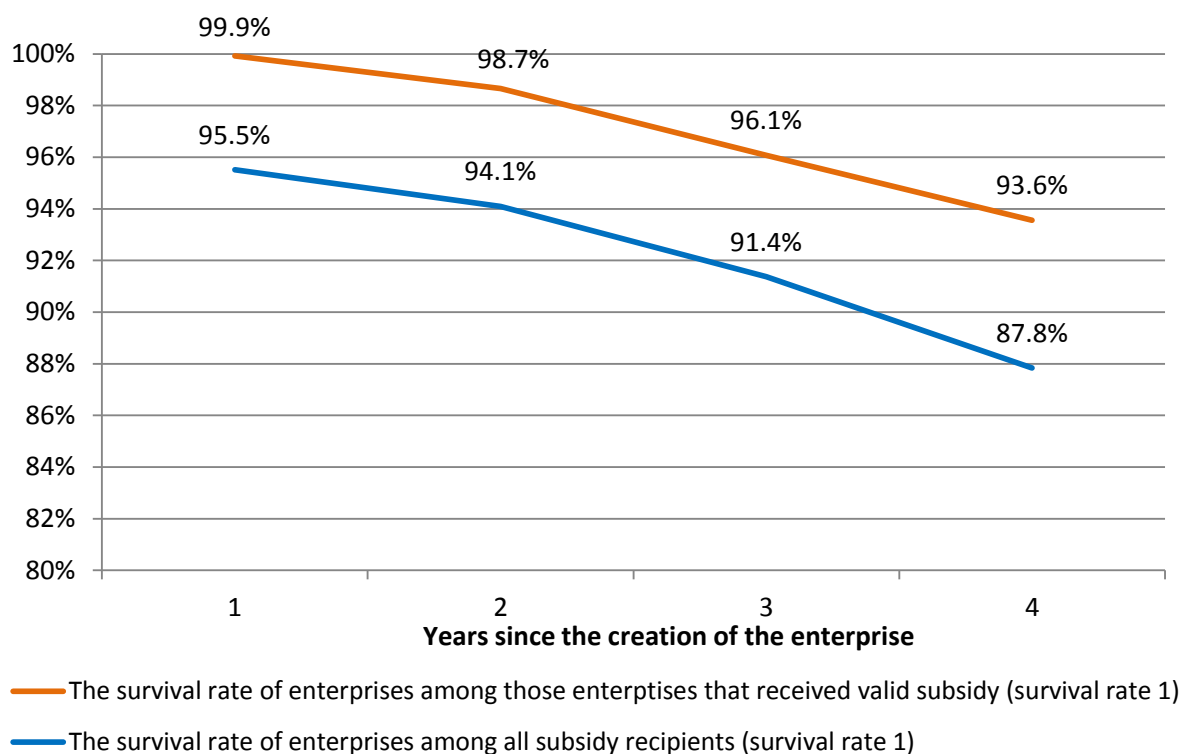
<sup>3</sup> At least one row of the income statement has an entry other than zero.

<sup>4</sup> New enterprises created by using the subsidy are those registered within 190 days from the receipt of the subsidy.

enterprises that were not established as well as those in the case of which the subsidy was not used for its intended purpose. The sample size (including valid subsidies and recovered subsidies) based on which the survival rate is assessed is 1,428 enterprises.

It has been taken into account that for enterprises established in different years we can monitor their operations during periods of different length. For example, the operations of enterprises established in 2009 can be monitored for four years (2009-2012) and the operations of enterprises established in 2010 for three years (2010-2012), etc. The share of going concerns is considered as the ratio to the total number of enterprises for which it is possible to monitor the period of operation in question, which means that the longer the period the smaller the number of enterprises.

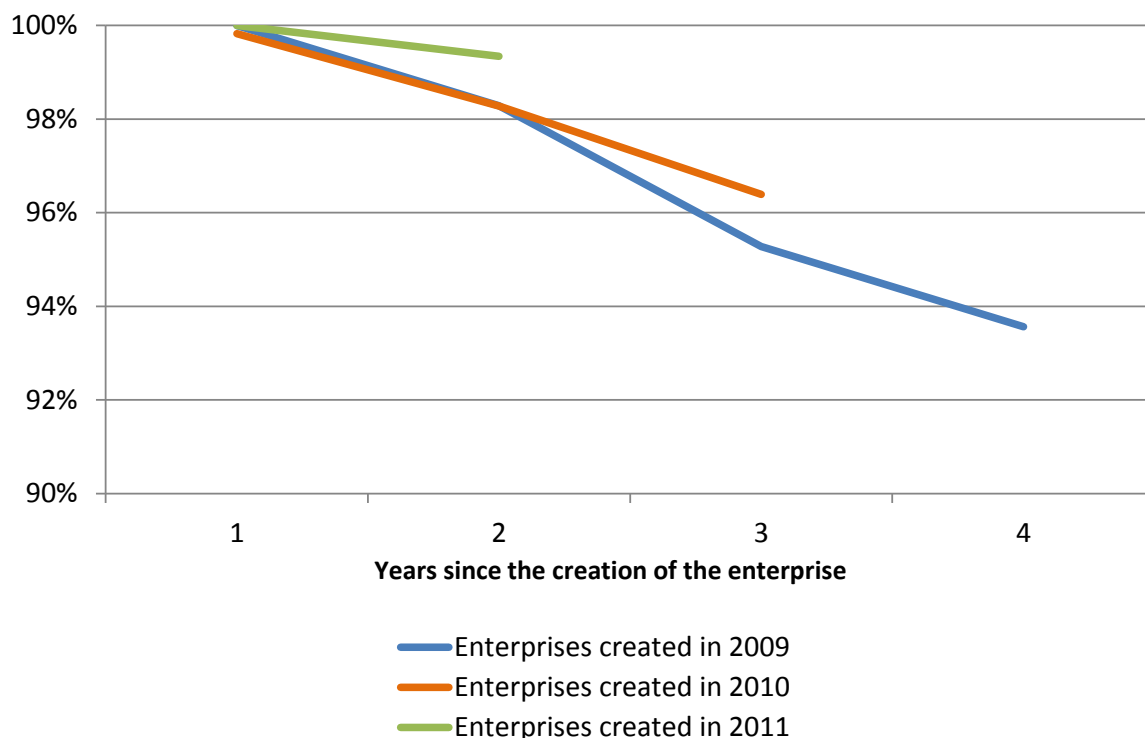
Figure 3 illustrates the survival rate of enterprises separately from all recipients and from those enterprises from which the subsidy was not recovered (see also Annex 1). The operations of enterprises are evaluated based on the registration in the commercial register, i.e. the result is survival rate 1. The figure shows that the share of going concerns is decreasing year on year. The survival rate of the enterprises in case of which the subsidy was not recovered is about 94% in year four, which means that 6% of the created enterprises were wound up by the fourth year after they were created. The survival rate is the lowest in terms of all recipients, because this group also includes those enterprises that were wound up within the first year and those which did not start implementing the business plan. The share of enterprises operating in the first year is about 96%, which means that 4% of all recipients either do not establish a new enterprise or terminate their operations during the first year. After four years, the share of going concerns is 88%.



**Figure 3.** The survival rate of enterprises established with the help of the subsidy (survival rate 1)

Sources: Estonian Unemployment Insurance Fund, Commercial Register

When looking at the survival rate by the year of establishment, we can see that the survival rate of enterprises created later is somewhat higher (Figure 4). On the one hand, this may reflect the impact of a better macro-economic environment. On the other hand, the higher quality of business plans may also play a role here.

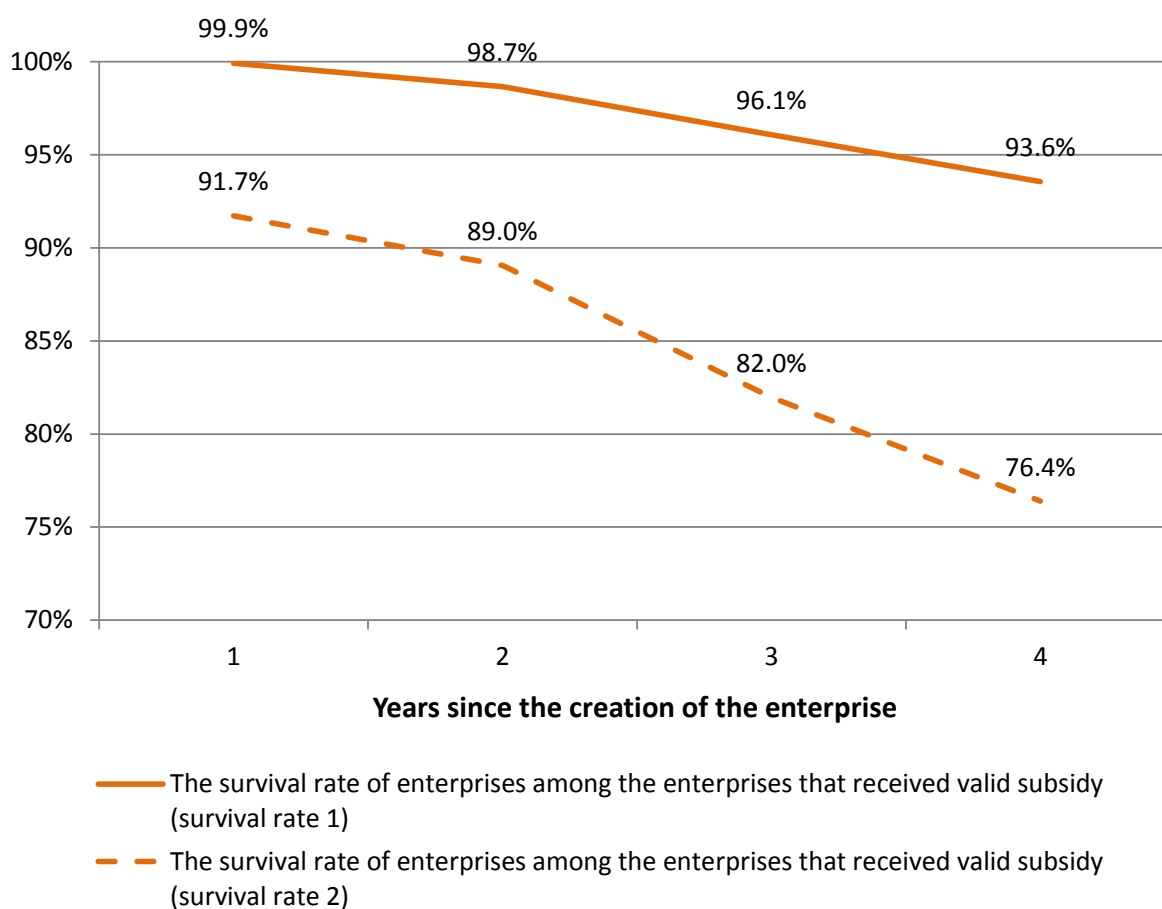


**Figure 4.** The survival rate of enterprises based on registration in the commercial register (survival rate 1) by the year of establishment

Sources: Estonian Unemployment Insurance Fund, Commercial Register

The fact that an enterprise is registered in the commercial register does not necessarily mean that the enterprise has any actual economic activity. Figure 5 illustrates survival rate 2, which is adjusted to the existence of income or expenditures. When looking at the share of going concerns based on economic activity, survival rates are significantly lower in all years.

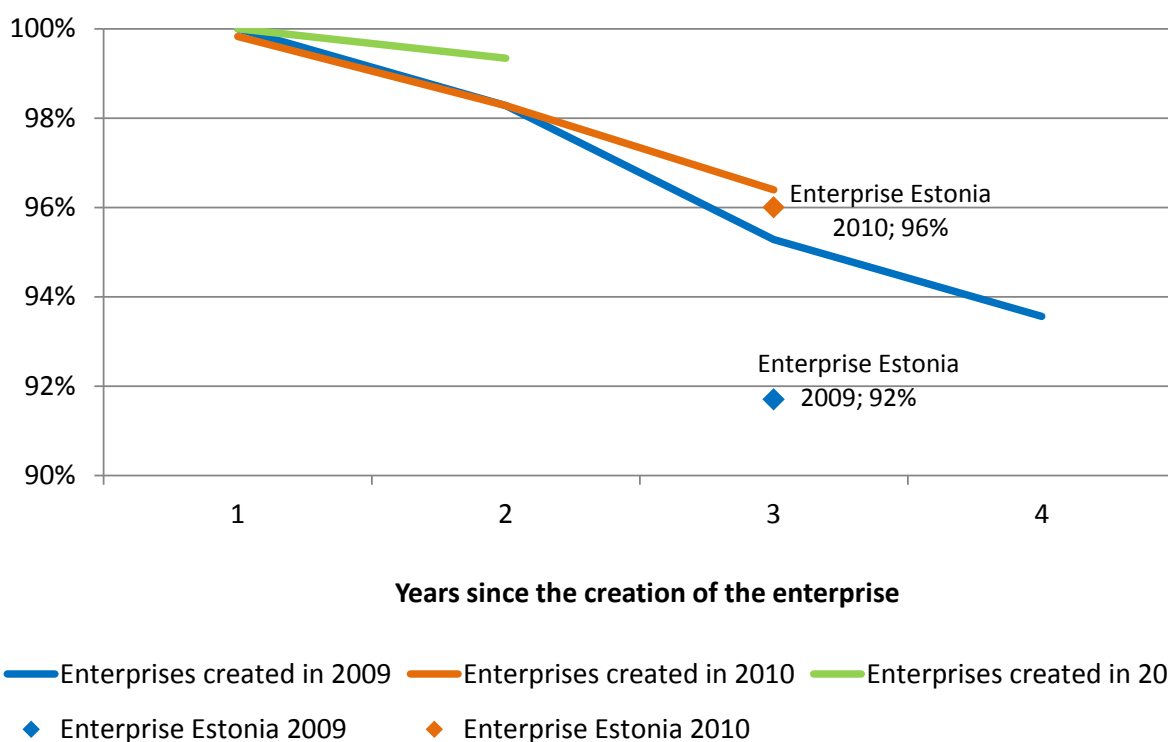
It is important to bear in mind that while annual accounts should be submitted within six months from the end of a financial year, in most cases by 1 July of the following year, there are companies that submit their annual accounts later. In particular, this concerns the annual accounts of 2012. The data on annual accounts were taken from the commercial register as of 26 November 2013, but it is likely that some companies submitted their annual accounts after that date. Therefore, the actual survival rate adjusted to income and expenditure may be somewhat higher.



**Figure 5.** The survival rate of enterprises based on registration (survival rate 1) and on economic activities (survival rate 2) among enterprises that received valid subsidy  
Sources: Estonian Unemployment Insurance Fund, Commercial Register

Figure 6 compares the survival rates of enterprises supported by the Unemployment Insurance Fund and those supported by Enterprise Estonia<sup>5</sup>. Enterprise Estonia pays business start-up subsidy to those entrepreneurs who have established a company not earlier than twelve months ago and evaluates the survival rate three years after granting the subsidy. In both cases, the data on the shares of going concerns are based on registration. The survival rate of enterprises that had received subsidy from Enterprise Estonia in 2009 was 91.7% and of those that had received start-up subsidy from the Unemployment Insurance Fund was 95.3%, which means that the survival rate of the latter is slightly higher. The survival rates of the enterprises that had received subsidy in 2010 are similar. As Enterprise Estonia pays subsidy to enterprises that have operated for up to one year, the survival rates after three years may reflect more the survival rates of the fourth year.

<sup>5</sup> The data on the survival rates of enterprises supported by Enterprise Estonia were made available by Enterprise Estonia based on an information request.



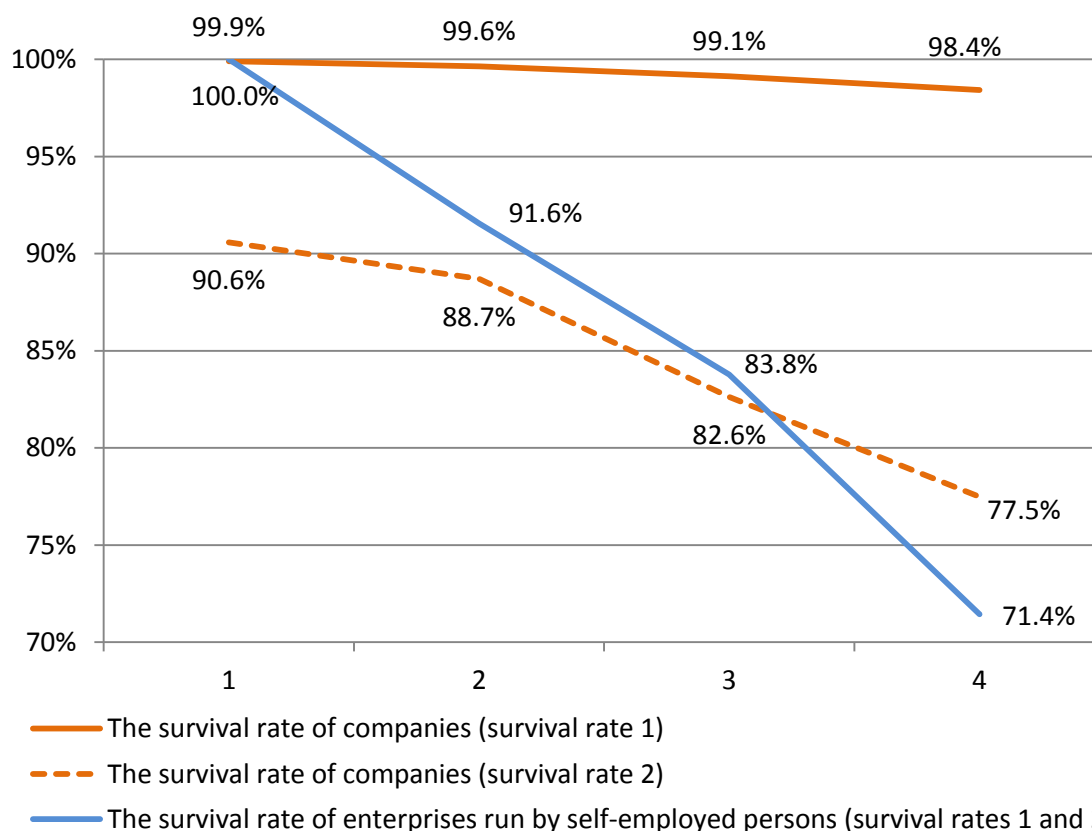
**Figure 6. The survival rates of enterprises supported by the Unemployment Insurance Fund and by Enterprise Estonia.**

Sources: Estonian Unemployment Insurance Fund, Commercial Register, Enterprise Estonia

It should be borne in mind that the target groups of the recipients of subsidy paid by Enterprise Estonia and the Unemployment Insurance Fund are different. Unlike the subsidy offered by Enterprise Estonia, the subsidy paid by the Unemployment Insurance Fund is exclusively targeted to the unemployed. This means that the motives and starting points for establishing a business may be different in each target group. There are likely more of those among the recipients of the subsidy paid by the Unemployment Insurance Fund who start a business because they have not found a suitable job and are forced to start a business to create jobs for themselves. At the same time, those who have received subsidy from Enterprise Estonia have more likely planned and wished to start a business. In conclusion, we can say that despite being a different target group, the enterprises established with the help of the subsidy from the Unemployment Insurance Fund are no less viable than those supported by Enterprise Estonia.

When looking at the survival rates separately by companies and self-employed persons, it appears that the latter have significantly lower survival rates based on registration in the commercial register (Figure 7). This may be caused by the fact that many self-employed persons subsequently change the legal form of their enterprise and start operating as a private limited company or another form of undertaking. The survival rate adjusted to income and expenditures is lower in the case of undertakings compared with self-employed persons.





**Figure 7.** The survival rate of companies and self-employed persons based on registration (survival rate 1) and on economic activities (survival rate 2) among all enterprises that received a valid subsidy

Sources: Estonian Unemployment Insurance Fund, Commercial Register

In conclusion, we can say that when evaluating, based on registration, the survival rate of enterprises established with the help of the subsidy, less than one in ten enterprises have terminated their activity within four years of receiving the subsidy. The survival rates of enterprises established later during the period under consideration are higher. The survival rates evaluated based on economic activity are lower. When comparing the survival rates of enterprises supported by the Unemployment Insurance Fund and those supported by Enterprise Estonia, we can see that the survival rates are quite similar despite the fact that the target groups of the two measures are different.

## 4. THE EFFECT OF THE BUSINESS START-UP SUBSIDY ON THE EMPLOYMENT STATUS AND INCOME LEVELS OF THE PARTICIPANTS

### 4.1 Evaluation methods used to assess the impact of the business start-up subsidy

When evaluating the impact of a programme at the micro level, the choice of methodology is very important because it may affect the preciseness of the results (LaLonde 1986). The impact of a programme is usually measured by using the experimental or quasi-experimental method (Rossi et al. 2004). Both the experimental and quasi-experimental methods have their advantages and disadvantages, explained below.

When evaluating the impact of a programme at micro level, the focus is on the question of whether participating in a programme affects the situation of an individual regarding an outcome variable in which the evaluator is interested (Caliendo, Hujer 2005). In the case of labour market measures, such an outcome variable may be, for example, the duration of unemployment, entering employment, income, etc. The outcome of a programme is a change in the status or social situation of the target group brought about by the programme, i.e. a change that would not have occurred without the programme (Rossi et al. 2004). Therefore, when evaluating the outcome of a programme, we compare the outcome level attained with participation in the programme and that which the same individuals would have attained had they not participated. Because it is impossible to simultaneously observe outcomes for the same people under conditions when they both receive and do not receive a programme, the latter situation must be created hypothetically, using a control group<sup>6</sup>, i.e. individuals who have not participated in the programme. Creating a counterfactual situation is the main problem for evaluating social programmes. This is called the fundamental evaluation problem (Caliendo 2006). The fundamental evaluation problem leads to a selection bias, i.e. participants in the programme often have characteristics different from those of non-participants (Heckman et al. 2001). For example, the business start-up subsidy might be more often applied for by individuals who are more motivated and ready to take risks.

The best research method for evaluating the effects of a programme is considered to be an experiment, because a randomized experiment is the best way to keep selection bias to a minimum (Rossi et al. 2004). Experimental techniques are based on the principle that if people are randomly assigned to treatment<sup>7</sup> and control groups, the observable and unobservable characteristics of the two groups should not differ on average, and so any difference in outcomes can be attributed to programme participation (Betcherman *et al.* 2004). While the experimental research design is considered to be the best way to avoid selection bias, it has its disadvantages, which may affect the outcomes of evaluation. The advantages and disadvantages of experimental evaluation have been discussed, for example, by Heckman and Smith (1995), Heckman *et al.* (2000) and Björklund and Regnér (1996).

It is often not possible to carry out an experiment to evaluate the impact of a programme. First, an experiment means that the treatment and control groups must be formed before the implementation of the programme. In real life, the need for evaluating the impact of a programme often arises after the completion or in the course of the programme. Implementing

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<sup>6</sup> Also called a comparison group.

<sup>7</sup> Also called an experimental group.

an experiment may also involve ethical issues, because certain groups of people are denied an opportunity to participate in the programme. It is also pointed out that conducting an experiment is an expensive and lengthy process (Björklund, Regnér 1996).

If it is not possible to use experimental data, the evaluators have to use a control group compiled by non-experimental selection. The quasi-experimental approach measures the outcome variables of participants in the programme and the outcomes of non-participants (Caliendo, Hujer 2005). To achieve an unbiased estimate of the programme effects, the control group must be modelled so that all variables that may affect the outcome variable of interest are taken into account (Betcherman *et al.* 2004). This may be complicated because it presumes the availability of a lot of different data. Moreover, individuals may have variables that cannot be observed, yet affect the outcome variable of interest. Non-observable variables that can lead to a selection bias are, for example, personal characteristics, such as motivation, sense of duty or, in the case of the business start-up subsidy, desire to run a business.

Caliendo and Hujer (2005) point out that the choice of method depends on two dimensions. First, the choice of method depends on the data available to evaluators (methods that require longitudinal or cross-sectional data). The second dimension concerns the handling of selection bias. Based on the latter, research methods can be divided into two categories. The first category includes approaches assuming that selection to the programme is based on observable variables. This includes, for example, matching and regression analysis. The second category includes methods assuming that selection is based on both observable and non-observable variables. This includes, for example, the method of instrumental variables, the selection model and the difference-in-difference estimation.

This study uses the quasi-experimental design and statistical matching to evaluate the impact of the business start-up subsidy. When statistical matching is used, the treatment group is first defined and then the estimator constructs a control group, which consists of non-participants in the programme/measure whose characteristics are as similar as possible to those of the participants in the programme/measure (Rossi *et al.* 2004). The matching method is based on the principle that we have to find the non-participants whose characteristics match all important pre-treatment characteristics of the participants (Caliendo, Kopeinig 2005). In the case of quasi-experimental design, the factors that affect participation in a programme have to be taken into account (Smith 2004). If there are many variables on the basis of which we can estimate the participation probability and such variables have multiple values, the number of matching combinations is very large (Caliendo, Kopeinig 2005). To solve that problem, Rosenbaum and Rubin (1983) have proposed a method called propensity score matching (PSM). They define propensity score as the probability of an individual being selected into the treatment group conditional on a vector of observable characteristics.

The effect of programmes is evaluated by using different parameters. The most common of them are the average treatment effect (ATE) and the average treatment effect on the treated (ATT) (Caliendo, Kopeinig 2005; Heckman *et al.* 2001). The first parameter (ATE) reflects the overall effect of the programme meaning that the effect of the programme is the difference between the average outcomes of participants and non-participants. The second parameter (ATT) looks at the effect of the programme more precisely, focussing on the target group of the programme and comparing the outcomes in terms of participation and non-participation.

These parameters are expressed as the following equations:

$$ATE = E(Y_{1i} - Y_{0i})$$

$$ATT = E(Y_{1i} - Y_{0i})|W_i = 1$$

where

$Y_{1i}$  outcome in case of participation,

$Y_{0i}$  outcome in case of non-participation,

$W_i$  assignment to a programme, which equals 1 if an individual is assigned to the programme and 0 otherwise.

While the PSM method is widely used to evaluate the effect of policies, it has its limitations, which must be borne in mind when using the method. The main weakness of PSM is the limited availability of data and the difficulty of finding the right variables for matching (Blundell and Costa Dias, 2009). Matching requires more data than traditional methods and if suitable variables are not found, the outcome may be biased. Dehejia (2005) also points out that it is important to check the sensitivity of the estimated treatment effect to small changes in the specification of the propensity score<sup>8</sup>. If these aspects are taken into account, the PSM method may be an excellent tool for evaluating the effect of a measure.

In this evaluation of the business start-up subsidy, the PSM method is implemented by using the Stata modules by Leuven and Sianesi (2003). Propensity scores for matching are estimated by probit models. Matching with two nearest neighbours with replacement is chosen as the matching algorithm (not allowing replacement may cause bias in evaluation because the nearest neighbour might remain more distant). Two nearest neighbours are used in matching since the dataset includes several control group observations with a very similar or the same score. This facilitates more effective use of the potential of the dataset (variance is smaller) without increasing the bias in impact assessments. Calculations were conducted with different numbers of nearest neighbours and as the evaluations obtained by using two nearest neighbours fluctuated less than those obtained by using one nearest neighbour but without upward or downward bias like when a bigger number of nearest neighbours were used, the evaluations presented in this analysis were obtained by using two nearest neighbours. Average treatment effects on the treated (ATT) are estimated over the common support area.

## 4.2 The treatment and control groups used in evaluation

Similar to the analysis of the enterprise survival rate, the **treatment group** includes the individuals who had submitted a proper application for subsidy from May 2009 to the end of 2011 and received the subsidy no later than by the end of 2011. The individuals who were ordered to repay the subsidy are excluded from the treatment group<sup>9</sup>. Therefore, the analysis only concerns those recipients of the subsidy who used the subsidy correctly and for its intended purpose. In order to evaluate the effect of the business start-up subsidy only and to

<sup>8</sup> There are also more formal tests for evaluating whether the assumption concerning the selection based on the observable variables holds, i.e. the sensitivity of estimations arising from the unobserved heterogeneity (e.g. the Rosenbaum's limits; see DiPrete and Gangl 2004 and Becker and Caliendo 2007).

<sup>9</sup> The decisions concerning the recovery of the subsidy were verified as of 15 October 2013.

eliminate the effects of other labour market measures, individuals who participated in other labour market measures besides the business start-up subsidy in the period between 1 January 2008 and 31 May 2013 (excl. career counselling, job search workshop, business training and follow-up services targeted to the recipients of the business start-up subsidy) are excluded from the analysis. Individuals for whom background data relevant for matching were missing in the Unemployment Insurance Fund database are also excluded (3 persons). A total of 1,075 observations form the treatment group.

The **control group** is constructed based on the criteria of receiving the business start-up subsidy. The subsidy is available to unemployed persons or those job-seekers who had received a dismissal notice and met at least one of the following criteria:

- 1) had participated in business training;
- 2) had vocational or higher education in the field of business management;
- 3) had experience of running a business (at least one year's experience as a self-employed person or a member of the management board of an enterprise).

Due to the criteria for applying for the subsidy, the group of recipients of the subsidy is clearly distinguishable from other registered unemployed persons. Therefore, the **control group** is constructed of individuals who were registered as unemployed during the same period as the treatment group and met at least one of the following criteria:

- 1) had participated in business training offered by the Unemployment Insurance Fund in the period between January 2008 and December 2011<sup>10</sup>;
- 2) had vocational or higher education in the field of business management;
- 3) the last job before becoming unemployed was managing an enterprise;
- 4) the last activity before becoming unemployed was being a self-employed person;

Similar to the treatment group, the control group does not include individuals who had participated in a labour market measure in the period between 1 January 2008 and 31 May 2013 (excl. career counselling, job search workshop, business training). In addition, the control group does not contain individuals who were removed from the register of the unemployed for one of the following reasons: early retirement, old-age retirement, compulsory military service, going abroad to seek a job or death. Similar to the treatment group, individuals for whom the background data relevant for matching were missing from the Unemployment Insurance Fund database are excluded from the control group. A total of 10,427 observations form the control group.

In order to evaluate the effect of the measure, the members of the treatment group who had received the subsidy are matched to the members of the control group who were registered as unemployed in the same month. The samples of a total of 31 months (June 2009 - December 2011<sup>11</sup>) are evaluated separately. For the purposes of the evaluations, exact matching is carried out by the month of payment and propensity matching is used for all other variables. (The list and description of variables used for matching are provided in Annex 2). For example, the control group of those who received the subsidy in June 2009 consists of people

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<sup>10</sup> Each person had to participate in business training before the month they were assigned to the control group.

<sup>11</sup> The applicants who submitted an application for the subsidy starting from May 2009 received the first payment in June 2009.

who were registered as unemployed in June 2009, etc. The probit model is estimated by each month of the payment of the subsidy for matching other variables.

### 4.3 Limitations to the construction of a control group

When evaluating the effect of a measure, it is important that the treatment and control groups are as similar as possible in terms of all variables that may affect participation in the measure and the observed labour market outcomes (employment, income, etc.). In other words, the group of business start-up subsidy recipients and the control group must include people whose characteristics are similar. In this analysis, the control group includes individuals who had prior experience in running a business or a diploma/degree in business management (including participants in business training). This helps to limit the control group with individuals who have the necessary qualifications and are more likely than the average to start a business. Moreover, the matching of the treatment and control groups is done by using a wide range of variables (see the list of variables used for matching in Annex 2), including a number of socio-demographic characteristics and those describing qualifications and earlier labour market behaviour. These variables also comprise, at least partially, non-observable variables that may affect both the participation in the measure and subsequent behaviour in the labour market.

However, constructing a control group only based on observable variables is not sufficient to avoid an estimation bias completely. We can assume that there are other factors which influence people's decision to apply for the subsidy, such as motivation to run a business, readiness to take risks, a good business idea, support from friends and family who already are running a business, etc. Unfortunately, such factors cannot be observed based on the data set available to the Unemployment Insurance Fund. Although the control group is limited to those individuals who have prior experience with running a business or have a diploma/degree in business management, not all of them are necessarily as willing or ready to start a business (again) as the applicants for the subsidy.

Therefore, the results of the impact evaluation should be treated with caution. The differences between the recipients of the subsidy and the control group may also be affected by non-observable variables.

### 4.4 Data used for evaluation

The data used for evaluating the impact of the business start-up subsidy on employment and incomes are taken from the data sets of the Commercial Register and the Tax and Customs Board. The data of the **Commercial Register** are used to verify whether the person was self-employed<sup>12</sup> or a member of the management or supervisory body of an enterprise. The following persons are considered to be members of the management or supervisory body of an enterprise: a member of the management board, a procurator of an undertaking, a

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<sup>12</sup> As regards self-employed persons, the suspension of their activities and acting temporarily as a sole proprietor are not taken into account because according to the Labour Market Services and Benefits Act, a person who is registered as a sole proprietor cannot be registered as unemployed.

shareholder authorised to represent a commercial association or a limited partnership, the head of a branch of a foreign company and the manager of a permanent business establishment of a non-resident. A person is considered to be employed if he or she fulfils at least one of the following roles, irrespective of whether the person is remunerated for his/her activity. Belonging to the management or supervisory body of an enterprise is determined based on the amendment to the Labour Market Services and Benefits Act (which entered into force on 1 May 2014), according to which these persons cannot be registered as unemployed even if they are not remunerated for their work. It should be borne in mind that according to the Labour Market Services and Benefits Act that was in force during the study period these persons were entitled to be registered as unemployed. A member of the management or supervisory body of a legal entity who did not receive remuneration for such work and a member of the management or supervisory body of a foundation, non-profit association or non-profit cooperative who received remuneration for such work in an amount that formed less than half of the minimum wage were able to register as unemployed. This means that certain members of the treatment and control groups may already be considered to be employed during the period they are unemployed. As this concerns the members of both the treatment and control groups, it does not significantly affect the evaluation of the effect of the measure.

The status as a sole proprietor or a member of the management or supervisory body of a legal person is determined on a monthly basis<sup>13</sup>. In conclusion, a person is considered to be employed if he or she is registered as a sole proprietor or a member of the management or supervisory body of a legal person for at least one day in the relevant month.

The data from the dataset of the **Tax and Customs Board** is used to verify whether a person was in paid employment or received remuneration for working as a member of the management or supervisory body of a legal person. To determine if a person is in paid employment, the data concerning wages taxed by the unemployment insurance tax are used. A person is considered to be in paid employment if he or she has received wages taxed by the unemployment insurance tax in the month concerned. As no unemployment insurance tax is paid on the remuneration of members of the management or supervisory board, it is also checked whether people had received such remuneration. This includes the remuneration paid to the members of the management and supervisory boards of enterprises and other legal persons (non-profit associations, central or local government offices, etc.) because after the amendment to the Labour Market Services and Benefits Act entered into force, no member of the management or supervisory body of a legal person who received remuneration for such work was able to register as unemployed. In addition, to determine whether a person is a member of the management or supervisory body of a legal person, the average income of that person is calculated based on the data of the Tax and Customs Board.

The data of the Commercial Register and the Tax and Customs Board are used to determine the employment status and income of people until May 2013. This means that we can observe time series of different duration in the case of both the treatment and control groups. For example, in the case of those individuals who received the subsidy in June 2009 we can look at their employment and income up to 47 months (July 2009 - May 2013) and in the case of those who received the subsidy in December 2011 up to 17 months. The first month of the

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<sup>13</sup> The person was registered as a sole proprietor or a member of the management or supervisory body of a legal person for at least one day in the relevant month.

period is the month following the payment of the subsidy. It is important to bear in mind that the number of observations decreases in the final months of the horizon of analysis; therefore, the evaluation results vary more and in some cases become statistically insignificant. Statistically insignificant evaluation results are indicated on the graphs with asterisks.

#### **4.5 Outcomes observed during evaluation**

The analysis observes the impact of the measure on various labour market outcomes. The labour market outcomes of participants in the measure are evaluated based on their employment status and income, whereas different types of employment statuses and incomes are distinguished. The impact of the measure on the participants' entrance into employment is assessed by the following types of employment:

***Running a business*** - a person is registered in the Commercial Register as a sole proprietor, a member of the management board of an enterprise, a procurator of an undertaking, a shareholder authorised to represent a commercial association or a limited partnership, the head of a branch of a foreign company and the manager of a permanent business establishment of a non-resident (data from the Commercial Register and the Tax and Customs Board).

***Paid employment*** – a person receives wages taxed by unemployment insurance tax (data from the Tax and Customs Board).

***Regularly remunerated employment*** – a person receives wages taxed by unemployment insurance tax and/or remuneration for working as a member of the management or supervisory body of a legal person (includes both enterprises and other organisations). Therefore, this category includes both paid employment and remunerative work as a member of the management or supervisory body of a legal person.

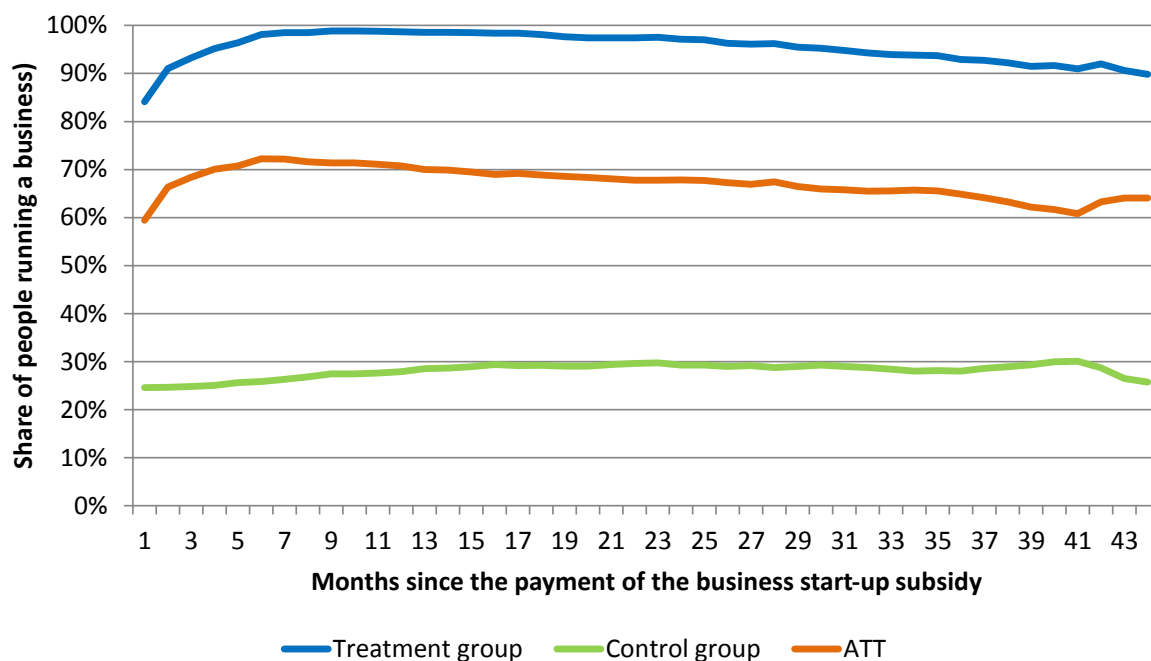
***Total employment*** – includes both running a business and paid employment. This category combines all types of employment specified above. A person is considered to be employed if he or she is registered in the Commercial Register as a sole proprietor, a member of the management board of an enterprise, a procurator of an undertaking, a shareholder authorised to represent a commercial association or a limited partnership, the head of a branch of a foreign company and the manager of a permanent business establishment of a non-resident (data from the Commercial Register and the Tax and Customs Board).

#### **4.6 Findings of impact evaluation**

Next, we will analyse the impact of the business start-up subsidy on different types of employment and incomes. First, we will look at how the measure affects the probability of running a business. Figure 8 shows the share of individuals who were running a business during the months following the month of the payment of the subsidy (for in treatment and the control group). Individuals who met one of the following criteria are considered to be running a business: the person was a) acting as a member of the management or supervisory board of an enterprise irrespective of whether he or she was remunerated for such work (according to



the Commercial Register); b) registered in the Commercial Register as a sole proprietor; c) received remuneration for his or her work as a member of the management or supervisory board of an enterprise (does not include the remuneration paid by non-profit associations and other legal persons) (see the definition of “running a business” p. 24).



**Figure 8.** Share of people running a business in the treatment group and control group; difference between the treatment group and control group.

Sources: Estonian Unemployment Insurance Fund, Commercial Register, Tax and Customs Board  
ATT is the average treatment effect on the treated

It appears that a large part of the recipients of the subsidy have been involved in running a business during the four years after receiving the subsidy (Figure 8, Annex 3). Six months after receiving the subsidy, 98% of the recipients of the subsidy had started a business. During the first two years, the share of those engaged in business remains at 100%, starts to decrease from year three and drops to 90% by year four. In the control group, however, the share of those engaged in business is considerably smaller - at about 30% during the whole four-year period. When comparing the employment rates of the treatment and control groups it appears that the effect of the business start-up subsidy on employment in running a business is between 60 and 70 percentage points.

When looking at the effect of the business start-up subsidy on being engaged in business, it is important to bear in mind several factors. Whether a person is running a business is determined based on the provision of the amended Labour Market Services and Benefits Act (which entered into force on 1 May 2014), according to which certain members of the management of supervisory board of an enterprise<sup>14</sup> cannot be registered as unemployed. According to that provision, all individuals who, according to the Commercial Register, were

<sup>14</sup> A member of the management board, a procurator of an undertaking, a shareholder authorised to represent a commercial association or a limited partnership, the head of a branch of a foreign company and the manager of a permanent business establishment of a non-resident.

acting in one of the roles that limit the right to be registered as unemployed (irrespective of whether they received remuneration or not) are considered to be employed. However, we did not look at how active was the economic activity of the enterprise the member of the management or supervisory body of which the person was. Not all enterprises that are registered in the Commercial Register are economically active and some may have very little activity. Therefore, it must be taken into account that the role of a member of the management or supervisory body of an enterprise can sometimes be rather passive, i.e. it might be rather far from a full-time job and it does not necessarily provide regular income.

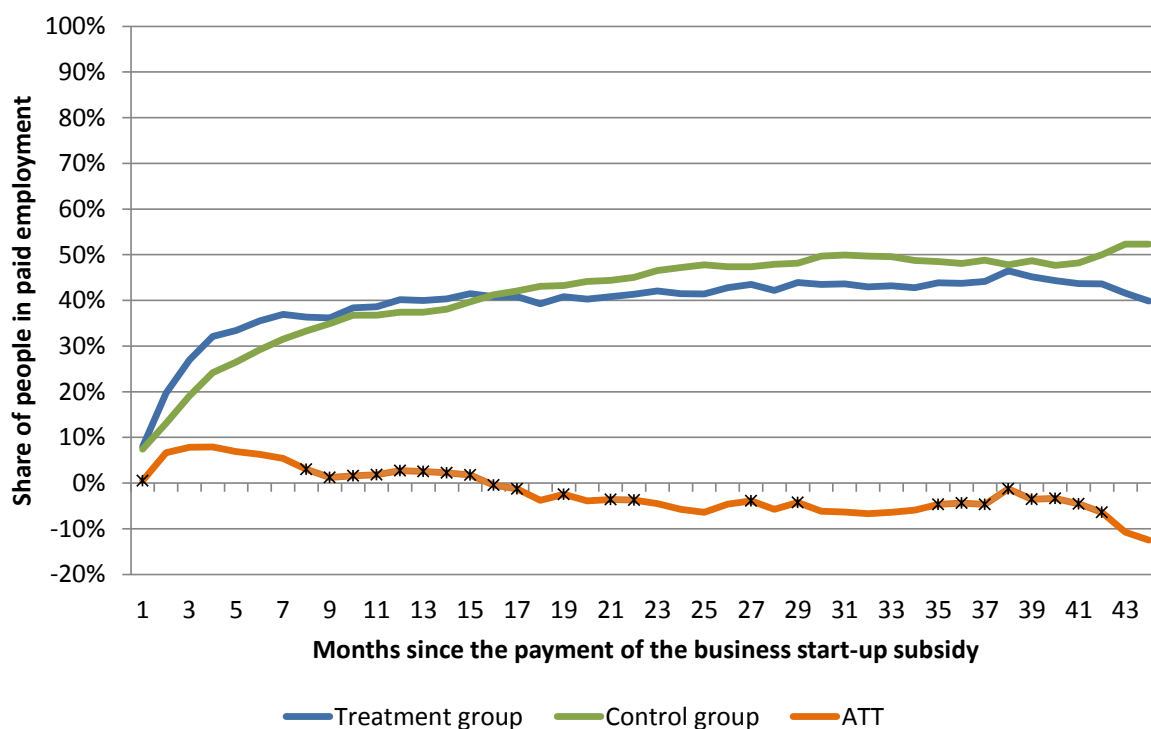
On the other hand, it should be taken into account that until the entering into force of the amendment to the Act on 1 May 2014, a member of the management or supervisory body of an enterprise who did not receive remuneration for such work or a member of the management or supervisory body of a non-profit association who received remuneration for such work in the amount forming less than half of the minimum wage were also able to register as unemployed. Therefore, according to the definition of running a business, the registered unemployed included in the sample can include people who were engaged in business while being registered as unemployed. As both the treatment and control groups include such people, this does not affect the results of impact evaluation.

Besides, it must be taken into account that the employment rate in the treatment group and its changes over time may be affected by the requirements for using the subsidy. One of the conditions of receiving the subsidy is that the enterprise that is to be established must start economic activity no later than six months after the subsidy is transferred to the bank account of the recipient and may not be terminated before one year has passed from the receipt of the subsidy. If economic activity has not started within six months or it has ended earlier than one year after the receipt of the subsidy, the Unemployment Insurance Fund has the right to demand full repayment of the subsidy. The sample of the impact evaluation is designed based on the valid subsidies, i.e. it does not include those recipients of the subsidy who have been ordered to repay the subsidy because it was not used for its intended purpose. Therefore, the share of the employed persons among the recipients of the subsidy, and consequently the impact of the measure, may be somewhat bigger during the first year than it would be if all recipients were taken into account.

Moreover, it should be taken into account that while the control group includes people who have the necessary experience and/or qualification to run a business and who, therefore, are probably more interested in running a business than the remainder of unemployed persons, it is impossible to verify whether the members of the treatment group and control group are equally motivated to be engaged in business. Therefore, the impact of the measure on employment may be slightly overestimated.

Next, we will look at the effect of the measure on paid employment (Figure 9, Annex 4). This means that the employment status of people is assessed based on whether they have been paid wages taxed by unemployment insurance tax or not. People could receive payments from their own business and from another employer. The figure indicates that the share of those in paid employment increases over the months following the payment of the subsidy in both the treatment group and control group. 36% of the recipients of the subsidy enter paid employment after six months, 40% after one year and 44% after three years. When comparing the employment rates in the treatment and control groups, it appears that during the first year the measure has a weak positive effect (which is also statistically significant) on paid

employment. The effect weakens over time, becomes negative after one and a half years and stabilises thereafter at about 5 percentage points. For several months, the evaluation results are statistically insignificant. Similar to the effect of the subsidy on being engaged in business, it appears that the majority of the recipients of the subsidy are running a business. The long-term effect of the subsidy on paid employment is negative because many new entrepreneurs do not pay themselves any salary. They are also less likely to be employed elsewhere, whether because they want to be self-employed or because they started a business after they could not find a suitable job.



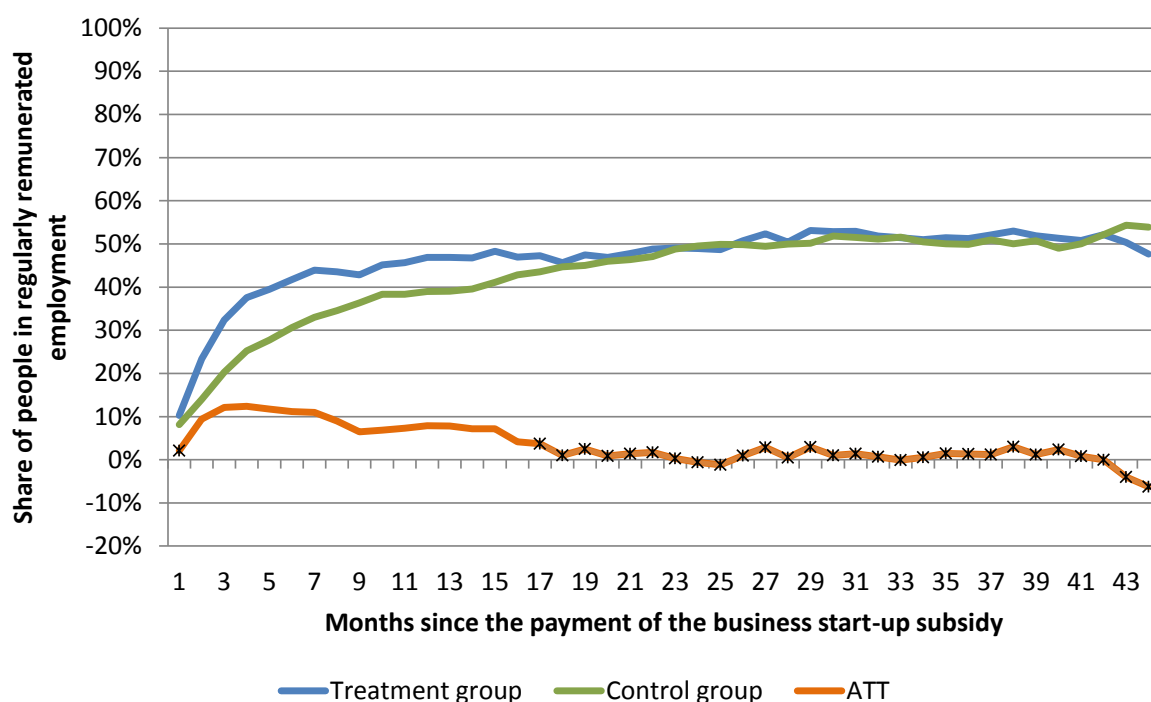
**Figure 9.** Share of people in paid employment in the treatment group and control group; difference between the treatment group and control group.

Note: Statistically insignificant results (at significance level 0.05) are marked with an asterisk. ATT is the average treatment effect on the treated

Members of the management board of an enterprise may receive remuneration for their work as a member of the management of the supervisory body of an enterprise. Such payments are not taxed by unemployment insurance tax and the recipients are excluded from the analyses of paid employment. Next, we will look at the effect of the measure on regularly remunerated employment, which means that a person is considered to be employed if he or she has received payments that are taxable by unemployment insurance tax or they have received remuneration for their work as a member of the management or supervisory board of an enterprise.

Figure 10 (and Annex 5) illustrates the share of people in regularly remunerated employment among the recipients of the subsidy and the control group by months. 42% of the recipients of the subsidy enter regularly remunerated employment after six months, 47% after one year and 51% after three years. Compared with the paid employment rates described above, the share of people who have entered regularly remunerated employment during the period is about 6 to 9 percentage points higher. In the first two years, the share of people in regularly remunerated

employment is bigger than in the control group; therefore, the measure has a positive and statistically significant effect. The positive effect weakens over time and the difference between the treatment and control groups disappears.



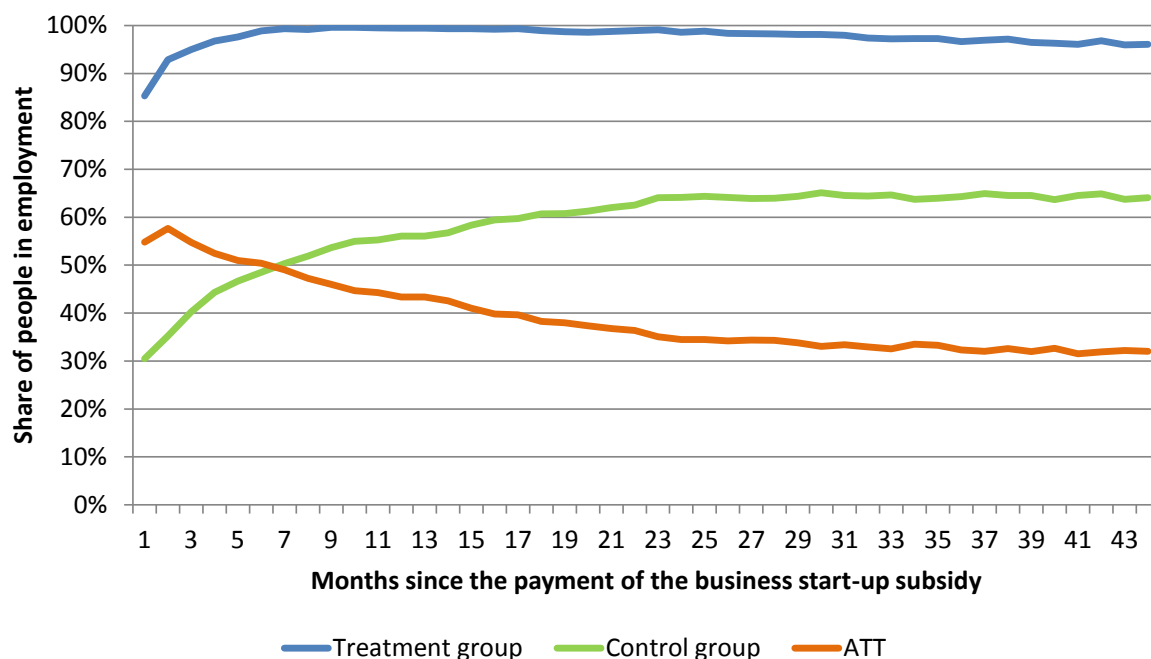
**Figure 10.** Share of people in regularly remunerated employment in the treatment group and control group; difference between the treatment group and control group.

Note: Statistically insignificant results (at significance level 0.05) are marked with asterisk.

ATT is the average treatment effect on the treated

Figure 11 (and Annex 6) illustrate the effect of the subsidy on total employment, i.e. paid employment, being a member of the management or supervisory body and running a business. In other words, this indicator combines all types of employment specified above. It appears that the total employment rate in the treatment group is near 100% in all months observed. This indicates that if both running a business and being in paid employment are treated as employment, nearly all recipients of the subsidy are employed in the four years following the payment of the subsidy. In the control group, the share of people in employment is significantly lower: between 30% and 40% during the first couple of months and increasing over time. After about two years, the share of employed persons increases to two thirds and remains at that level until the end of the analysis horizon. In conclusion, the business start-up subsidy has a positive effect on total employment, which decreases over time. In the first six months, the effect of the subsidy on total employment is about 50 percentage points and then starts to decrease, stabilising after two years at 30 to 35 percentage points.

Next, we will analyse the effect of the business start-up subsidy on incomes. Figure 12 shows the average income of the treatment and control groups by different types of income. The average income is calculated for the whole group. This means that the income of people who do not have any income in the relevant month equals to zero. Different types of income are gradually summarised on the figure. The continuous line marks the average income of the group from wages, while the dashed line marks the average income of the group from wages and remuneration of a member of the management or supervisory body and the dotted line marks the average income of the group from wages, remuneration of a member of the management or supervisory body and dividends.

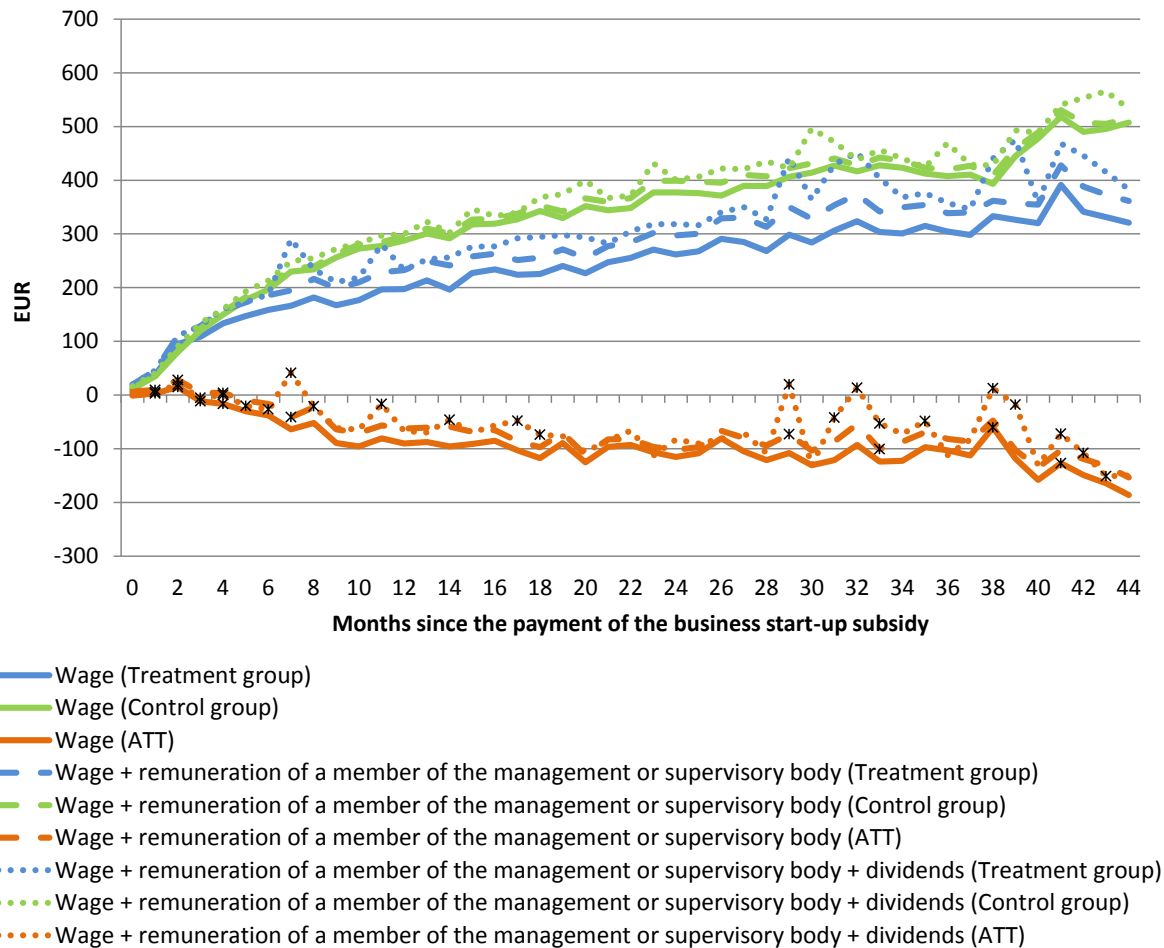


**Figure 11.** Total employment: share of people in employment in the treatment group and control group; difference between the treatment group and control group. ATT is the average treatment effect on the treated

It appears that the effect of the business start-up subsidy on employment is positive in the first couple of months but becomes negative and also statistically insignificant over time. During the whole period of observation, the average income from wages in the treatment group is lower than in the control group. This means that while at the beginning of the period the share of employed persons is bigger in the treatment group, their income is lower than in the control group. In conclusion, the effect of the business start-up subsidy on income from wages is negative and weakening at the beginning of the period but stabilises after a couple of years. When adding the remuneration paid to the members of the management bodies of enterprises, the average income is also lower in the treatment group but the difference with the control group is decreasing over time. However, the income of entrepreneurs includes, besides regular payments (such as wages and remuneration paid to members of management bodies), the profit of owners and profit earned by sole proprietors. If we add dividends, the impact on income becomes statistically insignificant.

In conclusion, we can argue that when looking at the incomes of the treatment and control groups by types, the average income of the recipients of the subsidy increases with each

added type of income, while the income of the control group does not change significantly. This means that the difference between the average incomes of the two groups decreases with each added type of income and eventually becomes statistically insignificant.



**Figure 12. Total incomes: average income from different sources in the treatment group and control group; difference between the treatment group and control group.**

Note: Statistically insignificant results (at significance level 0.05) are marked with an asterisk.

ATT is the average treatment effect on the treated

In conclusion, the evaluation of the impact of the business start-up subsidy shows that the subsidy has a strong effect on being engaged in business. About 70% more of the recipients of the subsidy than the control group are running a business. The impact of the measure on paid employment is positive and statistically significant in the first couple of months after the payment of the subsidy but the impact becomes negative and statistically insignificant over time. This is probably caused by the fact that those starting a business do not receive any income at the beginning and there are fewer of those who have another job in parallel to running a business. The impact on total regularly remunerated employment is positive and statistically significant during the first year and a half but after that becomes statistically insignificant. If we look at all types of employment together, the measure has a strong positive effect, which decreases over time. In the first months, the share of employed people is about 50 percentage points higher in the treatment group than in the control group. After two years, the difference decreases to about 30 percentage points and then stabilises. The

analysis shows that the impact of the measure on income from wages is negative, i.e. the average income is higher in the control group than in the treatment group. However, when we take into account different types of income, including the owner's profit, the differences between the two groups decrease.

When interpreting the findings it should be borne in mind that constructing a suitable control group is complicated. While the control group includes individuals who are more willing and ready to start a business than the remainder of unemployed persons (they have prior experience or a degree in business management or they have participated in business training), it is impossible to confirm that presumption. Although a rather wide range of variables were used to match the treatment and control groups, using only the data available in the dataset of the Unemployment Insurance Fund is not sufficient to completely avoid an evaluation bias. Therefore, the difference between the treatment and control groups may also be caused by other factors besides the business start-up subsidy.

#### **4.7 Cost-benefit analysis**

Next, we will conduct a cost-benefit analysis of the business start-up subsidy based on the findings presented in the previous subsection in order to establish whether the payment of the subsidy is a cost-effective measure. The cost-benefit analysis looks at the difference between the costs and benefits related to the business start-up subsidy and compares the result with the situation when the unemployed person did not receive the subsidy.

The costs related to the payment of the business start-up subsidy include the cost of providing the service, i.e. the amount paid as the subsidy. The revenues are also direct financial revenues. The revenues include increased regular income from wages and remuneration paid to members of the management and supervisory bodies as well as the taxes paid on those payments. New jobs created due to the business start-up subsidy or more precisely the wages of people working on those jobs and the taxes paid on those wages are also accounted as revenues. Revenues also include the value added created by new enterprises based on the profit they make. The cost and benefits of the measure are assessed from the perspective of society as a whole.

Therefore, the cost-benefit analysis takes into account only direct financial costs and benefits. There are also indirect costs and benefits related to the payment of the business start-up subsidy but they are not covered by this analysis. Not included in the costs of the measure are the costs related to the provision of follow-up services, business training and administration (salaries of the staff of the Unemployment Insurance Fund, overhead costs). Unemployment insurance benefits and unemployment benefits not paid or overpaid as a result of the payment of the subsidy as well as the social tax payable on those benefits are not included in the costs and benefits of the measure. Neither do costs and benefits include social insurance tax, which in special cases is paid on behalf of individuals who are registered as unemployed. On the side of benefits, an indirect financial impact is the decreased administration costs as a result of job-seekers entering employment. Transition to employment also helps to reduce the number of persons receiving various social benefits and the administrative costs of the social benefits system. All these indirect costs and benefits affect not only the recipients of the business start-up subsidy but also those individuals who find jobs in the new enterprises. There are also

other intangible benefits, such as a decreased crime rate, increased social cohesion, etc. Indirect and intangible costs and benefits are not included in this cost-benefit analysis.

The average amount paid to the members of the treatment group in the period from June 2009 to December 2011 was 4,197 euros (Table 2). When calculating the benefits, we first look at the average income from wages in the treatment and control groups during the course of one year. If an individual was not paid any wage in the month concerned, his or her income equals zero. The taxes payable by employers include social tax (33% of the gross wage) and the employer's share of the unemployment insurance premium (1.4% of the gross wage) were added to the income from wages<sup>15</sup>. As the average income from wages is lower in the treatment group than in the control group, the effect of the measure on income from wages is negative.

**Table 2.** Costs and benefits related to the business start-up subsidy

Average amount of payment (in the treatment group)	4,197		
	Year 1	Year 2	Year 3
<b>WAGES</b>			
Average income (including taxes) per year in the treatment group	2,375	3,795	4,770
Average income (including taxes) per year in the control group	3,114	5,414	6,535
Effect on wages per year	-739	-1,619	-1,765
<b>REMUNERATION OF A MEMBER OF THE MANAGEMENT OR SUPERVISORY BODY</b>			
Average income (including taxes) from the remuneration of a member of the management or supervisory body per year in the treatment group	420	510	683
Average income (including taxes) from the remuneration of a member of the management or supervisory body per year in the control group	84	213	255
Effect on the remuneration of a member of the management or supervisory body per year	336	297	428
<b>ADDED JOBS</b>			
Effect of the business start-up subsidy on being engaged in business	70%	69%	66%
Average income from wages (including taxes) per year of the employees of created enterprises	1,317	2,542	3,081
Effect on employees' wages per year	917	1,747	2,041
<b>PROFIT</b>			
Share of going concerns	92%	89%	82%
Effect of the business start-up subsidy on being engaged in business	70%	69%	66%
Average annual profit	1,908	2,667	6,241
Added annual profit	1,219	1,632	3,389
Added annual revenue	1,733	2,057	4,093
Added discounted revenue (r=2%)	1,733	1,977	3,857
Cumulative revenue	1,733	3,711	7,568
Benefits/costs	0.41	0.88	1.80

Note: all figures shown in the table are rounded.

<sup>15</sup> Wages included in the cost-benefit analysis were paid in the period from June 2009 to May 2013. From 1 August 2009 to 31 December 2012, the unemployment insurance premium was 4.2% (2.8% paid by employees and 1.4% paid by employers).



Besides wages, we looked at the average income from acting as a member of the management or supervisory body of a legal person (including social insurance tax). Unlike in the case of wages, the average income from acting as a member of the management or supervisory body of a legal person is higher among the recipients of the subsidy and therefore, the measure is beneficial for society, which in turn reduces the negative effect arising from wages. Both the wages and remuneration of a member of the management or supervisory body of a legal person reflect only the income earned by the recipients of the subsidy and their control group, not that of their employees.

Because the recipients of the subsidy create new jobs, we will next take into account the wages of people employed by them and the taxes paid on their wages. The average income from wages is found on the basis of the data of the Tax and Customs Board. If there are no employees in a new enterprise or no wages are paid, the income of such employees equals zero (analogously to the method of calculating the average income of the recipients of the subsidy). The remuneration paid to the owners of enterprises is excluded because their income is taken into account separately. In order to determine the effect of the measure on employees' incomes, the wages of the treatment group are adjusted to the effect of the measure on the probability of running a business. For example, during the first year after the payment of the subsidy the impact of the measure on the probability of running a business is about 70% and therefore the impact of the measure on employees' income from wages in the first year accounts for 70% of the average income of the employees of the enterprises created by the treatment group. (Note: all figures shown in Table 2 are rounded.)

Enterprises create value added through their economic activity and not just by employing people and paying them for work. Next, we will calculate the extra value added created by enterprises with the help of the subsidy. To put it simply, value added is the increase in value that a business creates by undertaking the production process as compared with the cost of raw material and production costs (except for labour costs and depreciation of fixed assets).<sup>16</sup> Value added is calculated based on the operating profit earned by an enterprise. When calculating value added, labour costs are not added to the operating profit because those costs were taken into account separately in the cost-benefit analysis. However, in the cost-benefit analysis only wages paid both to employees and the owner taxable by unemployment insurance tax and the remuneration paid to members of management and supervisory bodies as well as the taxes paid on such remuneration were taken into account as labour costs. If an enterprise has other labour costs (e.g. remuneration paid on terminating employment, sickness benefits, etc.), these costs are not taken into account and value added may be underestimated by those costs. The depreciation of fixed assets is also not taken into account because it is not possible to distinguish between depreciation and the impairment of fixed assets. Therefore, value added may also be underestimated by depreciation. Depreciation is also not added to operating profit because fixed assets are often acquired for the business start-up subsidy.

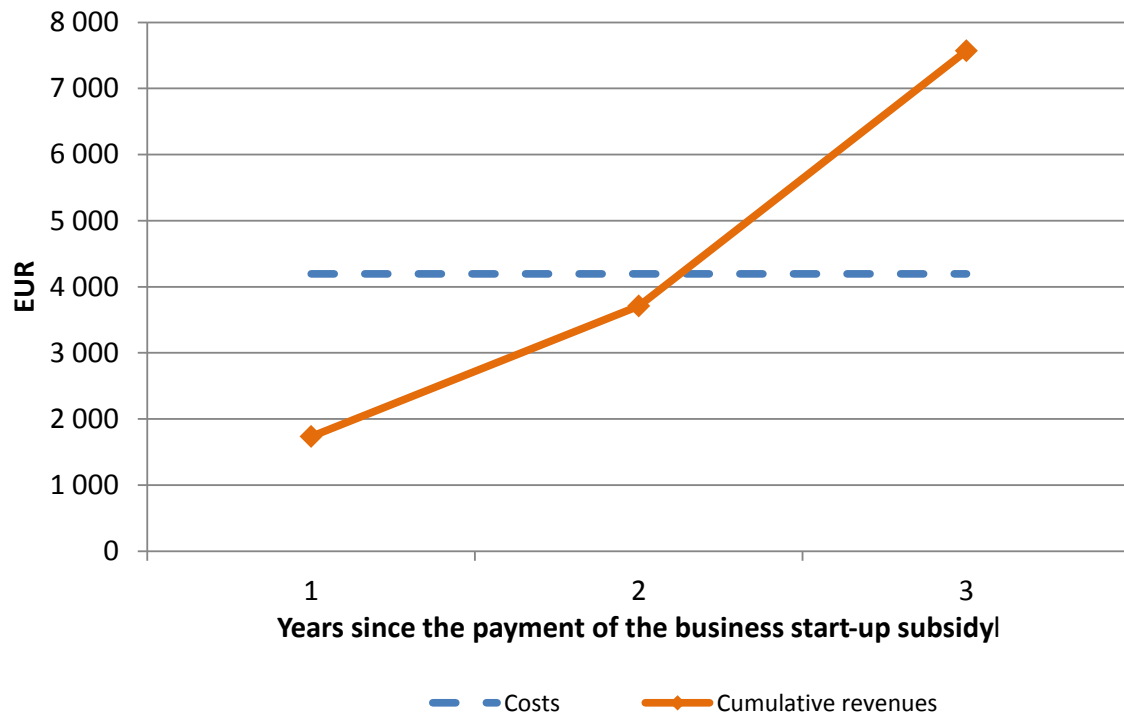
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<sup>16</sup> Statistics Estonia uses the following formula to calculate value added: value added = turnover + change in stocks of work-in-progress and finished goods (stocks at the end minus stocks at the beginning of the reference year) + capitalized self-constructed assets + other revenue (without profit from the sale and revaluation of tangible assets, grants related to assets) – other expenses (without loss from the sale of tangible assets) – costs of merchandise, materials, supplies, intermediate goods, electricity, fuel, power, laid-out work – duties and taxes linked to production – taxes on products (Statistics Estonia - Definitions and methodology).  
Enterprise Estonia uses the following formula to calculate value added: operating profit/loss + labour costs + depreciation of fixed assets (EAS – Kasvuettevõtja ...).

Enterprises are required to show income from the subsidy as income in their income statement. Any expenditures paid from the subsidy are shown as costs, whereas the recipients have the obligation to use the total amount of subsidy within the first year. Otherwise, they may be ordered to return the subsidy. If the subsidy is used to acquire fixed assets, depreciation of fixed assets is shown in annual accounts in the breakdown of years. In such a case, operating profit may be overestimated because the amount of subsidy is only partially reflected in the annual accounts (however, based on the definition of value added, it is not overestimated throughout the years). Provided that the recipients of the subsidy show the subsidy and the costs correctly in their annual accounts, operating income reflects the added profit that is not affected by the amount of subsidy.

In order to calculate added value created by enterprises on account of the business start-up subsidy, we first look at the operating profit of enterprises established by the recipients of the subsidy by years, starting from the establishment of a company. Average operating profit for each year is calculated for enterprises that have submitted their annual accounts and adjusted to the share of going concerns (the survival rate that takes economic activity into account). In order to determine the effect of the measure on operating profit, the latter is adjusted to the effect of the measure on the probability of running a business. Therefore, evaluation of the impact of the measure on operating profit is based on the premise that the recipients would have established an enterprise that would be similarly viable and produce a similar profit even if they had not received the subsidy. However, as only 30% of them would have started a business without the subsidy, the average operating profit in the control group would account for only 30% of the operating profit in the treatment group.

As the next step, the effect on wages, remuneration paid to members of management bodies, wages of employees and added operating profit by years are all summed up. Incomes have been converted by the discount rate of 2% per year (at the time of receiving the subsidy). Taking into account the wages and remuneration paid to the recipients of the subsidy by their own enterprise and other employers, the added wages of employees of their enterprises and the taxes paid on those wages as well as the remaining components of the value added created by their enterprises, the enterprises become profitable, i.e. income exceeds costs, in the third year after the payment of the subsidy (Table 2 and Figure 13). After three years, the difference between income and costs is 1.8, which indicates that the return on each euro invested in paying the subsidy is 1.8 euros.



**Figure 13.** Costs and benefits related to the business start-up subsidy

## CONCLUSIONS AND SUMMARY

The aim of this analysis was to determine the viability of the enterprises created by unemployed persons with the help of the business start-up subsidy, whether the subsidy has improved the prospects of participants on the labour market as compared to how things would be had they not participated in the measure and whether the business start-up subsidy is a cost-effective measure.

When comparing the profile of the recipients of the subsidy and other people registered as unemployed in the same period, it appeared that applicants for the subsidy differ from the remainder of unemployed persons by a number of characteristics. There were slightly more women among the applicants for the subsidy. Taking into account the criteria for applying for the subsidy, it was not unexpected that the overall level of education was higher among the applicants and the share of people who had worked in managerial jobs was also considerably bigger than among the rest of the registered unemployed. The group of applicants also included more people from rural areas, which may indicate that finding a job is more difficult in these areas and people start a business to create jobs for themselves. The majority of the applicants had Estonian as their main language of communication - significantly more than the average among unemployed persons. A probable reason for this is that the application for the subsidy has to be prepared in Estonian.

An analysis of the enterprise survival rate indicated that taking into account the proportion of going concerns (including sole proprietors) based on the registration in the Commercial Register, the survival rate was 98.7% after two years from establishment, 96.1% after three years and 93.6% after four years from establishment. There were more who terminated their economic activity among sole proprietors than among enterprises because many sole proprietors change the legal form of their enterprise into a different one. When comparing the survival rates of enterprises created with the help of the business start-up subsidy and those supported by Enterprise Estonia, we can see that despite being a different target group, the enterprises established with the help of the subsidy from the Unemployment Insurance Fund are no less viable than those supported by Enterprise Estonia. Based on whether an enterprise was having economic activities in the relevant year<sup>17</sup>, the survival rates are somewhat lower: 89% were still operating at the end of the second year, 82% at the end of the third year and 76% at the end of the fourth year.

The evaluation of the impact of the business start-up subsidy showed that the subsidy has a strong effect on being engaged in business. About 70% more of the recipients of the subsidy than the control group are running a business. The impact of the measure on paid employment is positive in the first couple of months after the payment of the subsidy but the impact becomes negative and also statistically insignificant over time. The impact of the measure on the probability of receiving regular wages or remuneration for the work of a member of the management or supervisory body of an enterprise is positive during the first year and a half but then the impact disappears. If we look at all types of employment together, the measure has a strong positive effect, which decreases over time. In the first months, the share of employed people is about 50 percentage points higher in the treatment group than in the control group. After two years, the difference decreases to about 30-35 percentage points and

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<sup>17</sup> Based on whether any costs/income were shown in annual accounts.

then stabilises. In conclusion, the results of the evaluation of the impact of the measure on employment are similar to the results of studies conducted in other countries - the recipients of the subsidy are more likely to be in employment than the control group.

When evaluating the impact of the measure on incomes it appeared that the impact on income from wages and total regular remuneration is negative. This is probably caused by the fact that in the start-up stage, many entrepreneurs do not pay themselves a salary or pay very little. However, if we take into account different types of income, including owner's profit, the difference between the treatment group and control group diminishes. Earlier studies have often also not shown a positive effect of a measure on incomes or have shown an insignificant effect. A study conducted by Praxis (Jürgenson *et al.* 2010) also points out that ensuring sufficient income in the start-up stage is often a problem.

Besides evaluating the impact of the measure, we also wanted to find an answer to the question of whether the business start-up subsidy is a cost-effective measure, i.e. are the benefits from the measure greater than the costs in paying the subsidy. The cost-benefit analysis was based on the concept of value added. To put it simply, added value is the increase in value that a business creates by undertaking the production process as compared with the cost of raw material and production costs (except for labour costs and the depreciation of fixed assets). Besides the value added created by an enterprise, wages paid by recipients of the subsidy to their employees were also accounted as benefits. Both the value added and wages were taken into account in the context of impact evaluation. This means that the part that would have been created without the subsidy was deducted from the value added (because some members of the control group also started a business). The part of wages that individuals would have received without the subsidy was also deducted from value added. Taking into account the wages and remuneration paid to the recipients of the subsidy by their own enterprise and other employers, the added wages of employees of their enterprises and the taxes paid on those wages as well as the remaining components of the value added created by their enterprises, the enterprises become profitable, i.e. income exceeds costs, in the third year after the payment of the subsidy.

In this analysis, a quasi-experimental method was used to evaluate the impact of the business start-up subsidy. The main weakness of quasi-experimental methods is considered to be that no matter how complicated method or model is used for evaluation, it is not possible to remove the selection bias entirely and the programme outcomes may be influenced by factors that are unobservable or not controlled in the evaluation process. The control group constructed for evaluating the effect of the business start-up subsidy included individuals who had a prior experience in running a business or had a degree in business management or had participated in business training. This means that the control group included individuals who had the necessary qualifications and were more likely than the average to start a business. In addition, the control group was formed by using various important characteristics that may influence, on the one hand, the selection into the measure and on the other hand, the labour market outcomes of the participants. However, it is important to bear in mind that there are some characteristics that cannot be verified on the basis of the data sources used in the analysis but which may play an important role in labour market outcomes or selection into the measure. For example, there are other factors that influence people's decision to apply for the subsidy, such as motivation to run a business, readiness to take risks, a good business idea, support from friends and family who already are running a business, etc. Although the control group is limited to those individuals who have prior experience with running a business or

have a diploma/degree in business management, not all of them are necessarily as willing or ready to start a business (again) as the applicants for the subsidy. Therefore, the results of the impact evaluation should be treated with caution. The differences between the recipients of the subsidy and the control group may also be affected by unobservable variables.

## REFERENCES

1. Becker, S. O. and Caliendo, M. (2007) „Sensitivity Analysis for Average Treatment Effects“, *Stata Journal*, Vol. 7, No. 1, 71-83.
2. Betcherman, G., Olivas, K. and Dar, A. (2004) *Impacts of Active Labour Market Programs: New Evidence from Evaluations with Particular Attention to Developing and Transition Countries*. Social Protection Unit, The World Bank, Social Protection Discussion Paper Series, No. 0402.
3. Björklund, A. and Regnér, H. (1996) “Experimental Evaluation of European Labour Market Policy.“, In Schmid, G., O’Reilly, J., Schömann, K. (eds.) *International Handbook of Labour Market Policy and Evaluation*. Cheltenham: Edward Elgar Publishing, 489-519.
4. Blundell, R. and Costa Dias, M. (2009) „Alternative Approaches to Evaluation in Empirical Microeconometrics.“ *Journal of Human Resources*, Vol. 44, No. 3, 565-640.
5. Caliendo, M. (2006) *Microeconomic Evaluation of Labour Market Policies. Lecture Notes in Economics and Mathematical Systems*. Berlin, Heidelberg: Springer-Verlag.
6. Caliendo, M. and Hujer, R. (2005) *The Microeconomic Estimation of Treatment Effects – An Overview*. Institute for the Study of Labor, IZA Discussion Paper Series, No. 1653.
7. Caliendo, M. and Kopeinig, S. (2005) *Some Practical Guidance for the Implementation of Propensity Score Matching*. Institute for the Study of Labour, IZA Discussion Paper Series, No. 1588.
8. Dehejia, R. H. (2005) *Practical Propensity Score Matching: A Reply to Smith and Todd*, *Journal of Econometrics*, Vol. 125, 355-364.
9. DiPrete, T. and Gangl, M. (2004) “Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments.“ *Sociological Methodology*, Vol. 34, 271-310.
10. EAS – Kasvuettevõtja arenguplaani toetusmeede.  
<http://www.eas.ee/et/ettevotjale/ettevotte-arendamine/kasvuettevotja-arenguplaani-toetus/ueldist> .
11. Heckman, J. J., Hohmann, N., Smith, J. and Khoo, M. (2000) “Substitution and Dropout Bias in Social Experiments: A Study of an Influential Social Experiment.“ *Quarterly Journal of Economics*, Vol. 115, No. 2, 651-694.
12. Heckman, J. J. and Smith, J. A. (1995) “Assessing the Case for Social Experiments.“ *Journal of Economic Perspectives*, Vol. 9, No. 2, 85-110.
13. Heckman, J., Tobias, J. L. and Vytlačil, E. (2001) “Four Parameters of Interest in the Evaluation of Social Programs.“ *Southern Economic Journal*, Vol. 68, No. 2, 210-223.
14. Jürgenson, A., Kirss, L. ja Nurmela, K. (2010) *Ettevõtluse alustamise toetuse, tööpraktika ja tööharjutuse hindamine*, Tallinn: Poliitikauuringute Keskus Praxis.
15. LaLonde, R. J. (1986) “Evaluating the Econometric Evaluations of Training Programs with Experimental Data.“ *The American Economic Review*, Vol. 76, No. 4, 604-620.
16. Leuven, E. and Sianesi, B. (2003) *PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing*. Software. Kättesaadav: <http://ideas.repec.org/c/boc/bocode/s432001.html>

17. Rosenbaum, P.R. and Rubin, D.B. (1983) “The Central Role of the Propensity Score in Observational Studies for Causal Effects.” *Biometrika*, Vol. 70, No. 1, 41-55.
18. Rossi, P., Lipsey, M. W. and Freeman, H. E. (2004) *Evaluation: A Systematic Approach. 7th ed.* London: Sage.
19. Smith, J. A. (2004) “Evaluating Local Economic Development Policies: Theory and Practice.” In *Evaluating Local Economic and Employment Development. How to Assess What Works among Programs and Policies*, OECD, 287-332.
20. Statistics Estonia – Definitions and Methodology. Enterprises' Value Added and Productivity Measures by Economic Activity (EMTAK 2008) and Number of Persons Employed. [http://pub.stat.ee/px-web.2001/I Databas/Economy/09Financial statistics of enterprises/04Enterprises financial key/02Annual statistics/FS\\_008.htm](http://pub.stat.ee/px-web.2001/I Databas/Economy/09Financial statistics of enterprises/04Enterprises financial key/02Annual statistics/FS_008.htm)
21. Labour Market Services and Benefits Act. Adopted 28/09/2005 RT I 2005, 54, 430.



**Annex 1. The viability rate of businesses established with the help of the subsidy**

	<b>The number of enterprises established with the help of the subsidy, which are engaged in economic activities</b>	<b>Number of going concerns</b>	<b>Enterprise survival rate</b>
<b>Survival rate among all recipients of the subsidy (survival rate 1*)</b>			
Year 1	1,428	1,364	95.5%
Year 2	1,405	1,322	94.1%
Year 3	915	836	91.4%
Year 4	263	231	87.8%
<b>Survival rate among valid subsidies (survival rate 1*)</b>			
Year 1	1,292	1,291	99.9%
Year 2	1,269	1,252	98.7%
Year 3	815	783	96.1%
Year 4	233	218	93.6%
<b>Survival rate among valid subsidies (survival rate 2*)</b>			
Year 1	1,292	1,185	91.7%
Year 2	1,269	1,130	89.0%
Year 3	815	668	82.0%
Year 4	233	178	76.4%

\*Survival rate 1 - the operations of enterprises are evaluated based on registration in the commercial register

\*Survival rate 2 - the operations of enterprises are evaluated based on registration in the commercial register and income/expenditures shown in annual accounts

## Annex 2. Description of variables used for matching

Variable	Description	Comparison group
Male	Gender: male	Female
Age	Age as at the beginning of the period studied	
Primary education or less	Vocational education without basic education, primary education or less	General secondary education
Basic education	Basic education, basic education with vocational education	
Vocational secondary education	Vocational secondary education based on basic education, vocational secondary education based on secondary education	
Professional secondary education	Professional secondary education	
Professional higher	Professional higher education, professional higher education	
Bachelor's degree	Bachelor's degree	
Master's or doctor's degree	Master's or doctor's degree	
Managers	Senior officials and managers	No prior work experience
Professionals	Professionals	
Technicians	Associate professionals and technicians	
Clerks	Clerical support workers	
Service and sales workers	Service and sales workers	
Agricultural workers	Skilled agricultural, forestry and fishery workers	
Craft workers	Craft and related trades workers	
Plant and machine operators	Plant and machine operators	
Elementary occupations	Elementary occupations	
Language of communication: Estonian	Estonian has been stated as the main language of communication	Another language has been stated as the main language of communication
Tenure in previous job	Length of tenure in previous job (in years)	
Place of residence: urban	A town or city has been stated as the place of residence	Place of residence: rural municipality
Harju County	The person has been registered as unemployed at the regional office of the Unemployment Insurance Fund in Tallinn and Harju County	The person has been registered as unemployed in Lääne, Saare, Hiiu, Pärnu, Rapla, Tartu, Jõgeva, Lääne-Viru, Viljandi or Järva County
Southern Estonia	The person has been registered as unemployed at the regional office of the Unemployment Insurance Fund in Põlva, Valga or Võru County	
Ida-Viru County	The person has been registered as unemployed at the regional office of the Unemployment Insurance Fund in Ida-Viru County	
With a disability	During the period of registration the person belonged to the risk group of persons with disabilities	Persons not belonging to this risk group
A member of the management or supervisory body	The person has been a member of the management or supervisory body of a legal person during the period of registered unemployment	Persons not members of management or supervisory bodies
Prior periods of registered unemployment	The number of periods of registered unemployment since 2003 (before the studied period)	
Duration of prior periods of registered unemployment	The total duration of all prior periods of registered unemployment since 2003 (years) (before the studied period)	
Duration of registered unemployment	Duration in days of the studied period of registered unemployment, as of the moment of observation	
Potential period of unemployment benefits	The number of unused days for which unemployment benefits (unemployment insurance benefit, unemployment allowance) are due, as of the moment observed. In other words, during how many days the person is still entitled to receive benefits.	
Recipient of unemployment insurance benefit for 180	During the corresponding period of registered unemployment the person has been granted unemployment insurance benefit for 180 days	The person has been granted no unemployment insurance benefit or unemployment allowance
Recipient of unemployment insurance benefit for 270	During the corresponding period of registered unemployment the person has been granted unemployment insurance benefit for 270 days	
Recipient of unemployment allowance	During the corresponding period of registered unemployment the person has been granted unemployment allowance (the person had not been previously granted insurance benefit during the same period of registered unemployment)	
Daily rate of unemployment benefit	The daily rate of the unemployment insurance benefit or the daily rate of the unemployment allowance, depending on which benefit was granted to the	
Cause of termination of employment: on the initiative of the employer	Cause of termination of the latest employment. All the different causes of termination of employment initiated by the employer (redundancy, bankruptcy, failure to pass the probationary period etc.)	Cause of termination of employment has not been stated
Cause of termination of employment: voluntary	The latest employment was terminated by agreement between the parties or upon the initiative of the employee	

**Annex 3. Impact of business start-up subsidy on running a business**

Recipients of business start-up subsidy from June 2009 until December 2011						
Months since the payment of the business start-up subsidy	No of observ.	Share of employed in the treatment group	Share of employed in the control group	Impact (ATT)	Standard error	p-value
1st month	1056	84.1%	24.6%	59.5%	0.01	0.000
2nd month	1056	91.0%	24.7%	66.3%	0.01	0.000
3rd month	1056	93.3%	24.9%	68.4%	0.01	0.000
4th month	1056	95.2%	25.1%	70.1%	0.01	0.000
5th month	1056	96.4%	25.7%	70.7%	0.01	0.000
6th month	1056	98.1%	25.9%	72.3%	0.01	0.000
7th month	1056	98.5%	26.3%	72.2%	0.01	0.000
8th month	1056	98.5%	26.8%	71.6%	0.01	0.000
9th month	1056	98.9%	27.5%	71.4%	0.01	0.000
10th month	1056	98.9%	27.5%	71.4%	0.01	0.000
11th month	1056	98.8%	27.7%	71.1%	0.01	0.000
12th month	1056	98.7%	27.9%	70.7%	0.01	0.000
13th month	1056	98.6%	28.6%	70.0%	0.01	0.000
14th month	1056	98.6%	28.7%	69.9%	0.01	0.000
15th month	1056	98.5%	29.0%	69.5%	0.01	0.000
16th month	1056	98.4%	29.4%	69.0%	0.01	0.000
17th month	1056	98.4%	29.2%	69.2%	0.01	0.000
18th month	1044	98.1%	29.2%	68.9%	0.01	0.000
19th month	1032	97.7%	29.1%	68.6%	0.01	0.000
20th month	1013	97.4%	29.1%	68.4%	0.01	0.000
21st month	978	97.4%	29.4%	68.0%	0.01	0.000
22nd month	941	97.4%	29.6%	67.8%	0.01	0.000
23rd month	899	97.6%	29.8%	67.8%	0.01	0.000
24th month	871	97.1%	29.3%	67.9%	0.01	0.000
25th month	840	97.0%	29.3%	67.7%	0.01	0.000
26th month	802	96.3%	29.0%	67.3%	0.01	0.000
27th month	768	96.1%	29.2%	66.9%	0.01	0.000
28th month	742	96.2%	28.8%	67.5%	0.01	0.000
29th month	710	95.5%	29.0%	66.5%	0.01	0.000
30th month	655	95.3%	29.3%	66.0%	0.01	0.000
31st month	633	94.8%	29.0%	65.8%	0.02	0.000
32nd month	610	94.3%	28.8%	65.5%	0.02	0.000
33rd month	579	94.0%	28.4%	65.5%	0.02	0.000
34th month	549	93.8%	28.1%	65.8%	0.02	0.000
35th month	511	93.7%	28.2%	65.6%	0.02	0.000
36th month	478	92.9%	28.0%	64.9%	0.02	0.000
37th month	428	92.8%	28.6%	64.1%	0.02	0.000
38th month	385	92.2%	29.0%	63.2%	0.02	0.000
39th month	341	91.5%	29.3%	62.2%	0.02	0.000
40th month	300	91.7%	30.0%	61.7%	0.02	0.000
41st month	254	90.9%	30.1%	60.8%	0.03	0.000
42nd month	188	92.0%	28.7%	63.3%	0.03	0.000
43rd month	149	90.6%	26.5%	64.1%	0.03	0.000
44th month	128	89.8%	25.8%	64.1%	0.04	0.000
45th month	97	92.8%	25.8%	67.0%	0.04	0.000
46th month	74	91.9%	27.0%	64.9%	0.05	0.000
47th month	8	100.0%	12.5%	87.5%	0.08	0.000

ATT is the average treatment effect on the treated

**Annex 4. Impact of business start-up subsidy on paid employment**

Recipients of business start-up subsidy from June 2009 until December 2011						
Months since the payment of the business start-up subsidy	No of oberv.	Share of employed in the treatment group	Share of employed in the control group	Impact (ATT)	Standard error	p-value
1st month	1056	8.0%	7.4%	0.5%	0.01	0.610
2nd month	1056	19.7%	13.1%	6.6%	0.01	0.000
3rd month	1056	27.0%	19.1%	7.9%	0.02	0.000
4th month	1056	32.1%	24.2%	7.9%	0.02	0.000
5th month	1056	33.4%	26.5%	6.9%	0.02	0.000
6th month	1056	35.5%	29.2%	6.3%	0.02	0.000
7th month	1056	36.9%	31.5%	5.4%	0.02	0.003
8th month	1056	36.4%	33.3%	3.0%	0.02	0.091
9th month	1056	36.2%	34.9%	1.2%	0.02	0.497
10th month	1056	38.4%	36.8%	1.6%	0.02	0.395
11th month	1056	38.6%	36.8%	1.8%	0.02	0.317
12th month	1056	40.2%	37.4%	2.7%	0.02	0.139
13th month	1056	40.0%	37.4%	2.6%	0.02	0.168
14th month	1056	40.3%	38.1%	2.3%	0.02	0.219
15th month	1056	41.5%	39.7%	1.8%	0.02	0.332
16th month	1056	40.8%	41.2%	-0.4%	0.02	0.818
17th month	1056	40.8%	42.1%	-1.3%	0.02	0.490
18th month	1044	39.3%	43.1%	-3.8%	0.02	0.042
19th month	1032	40.8%	43.3%	-2.5%	0.02	0.190
20th month	1013	40.3%	44.2%	-3.9%	0.02	0.041
21st month	978	40.8%	44.4%	-3.6%	0.02	0.066
22nd month	941	41.3%	45.1%	-3.7%	0.02	0.062
23rd month	899	42.0%	46.6%	-4.5%	0.02	0.028
24th month	871	41.4%	47.2%	-5.7%	0.02	0.006
25th month	840	41.4%	47.8%	-6.4%	0.02	0.003
26th month	802	42.8%	47.4%	-4.6%	0.02	0.035
27th month	768	43.5%	47.4%	-3.9%	0.02	0.082
28th month	742	42.2%	47.9%	-5.7%	0.02	0.011
29th month	710	43.9%	48.2%	-4.2%	0.02	0.067
30th month	655	43.5%	49.7%	-6.2%	0.02	0.011
31st month	633	43.6%	49.9%	-6.3%	0.02	0.010
32nd month	610	43.0%	49.7%	-6.7%	0.02	0.007
33rd month	579	43.2%	49.6%	-6.4%	0.03	0.013
34th month	549	42.8%	48.7%	-5.9%	0.03	0.026
35th month	511	43.8%	48.5%	-4.7%	0.03	0.088
36th month	478	43.7%	48.1%	-4.4%	0.03	0.124
37th month	428	44.2%	48.8%	-4.7%	0.03	0.119
38th month	385	46.5%	47.8%	-1.3%	0.03	0.682
39th month	341	45.2%	48.7%	-3.5%	0.03	0.294
40th month	300	44.3%	47.7%	-3.3%	0.04	0.353
41st month	254	43.7%	48.2%	-4.5%	0.04	0.251
42nd month	188	43.6%	50.0%	-6.4%	0.05	0.162
43rd month	149	41.6%	52.3%	-10.7%	0.05	0.035
44th month	128	39.8%	52.3%	-12.5%	0.05	0.024
45th month	97	38.1%	48.5%	-10.3%	0.06	0.103
46th month	74	40.5%	54.7%	-14.2%	0.07	0.048
47th month	8	25.0%	43.8%	-18.8%	0.22	0.408

ATT is the average treatment effect on the treated

**Annex 5. Impact of business start-up subsidy on regularly remunerated employment**

Recipients of business start-up subsidy from June 2009 until December 2011						
Months since the payment of the business start-up subsidy	No of oberv.	Share of employed in the treatment group	Share of employed in the control group	Impact (ATT)	Standard error	p-value
1st month	1056	10.2%	8.1%	2.1%	0.01	0.060
2nd month	1056	23.4%	14.0%	9.4%	0.02	0.000
3rd month	1056	32.4%	20.3%	12.1%	0.02	0.000
4th month	1056	37.6%	25.2%	12.4%	0.02	0.000
5th month	1056	39.5%	27.7%	11.7%	0.02	0.000
6th month	1056	41.8%	30.6%	11.1%	0.02	0.000
7th month	1056	43.9%	33.0%	10.9%	0.02	0.000
8th month	1056	43.6%	34.6%	9.0%	0.02	0.000
9th month	1056	42.8%	36.3%	6.5%	0.02	0.000
10th month	1056	45.2%	38.3%	6.9%	0.02	0.000
11th month	1056	45.6%	38.4%	7.3%	0.02	0.000
12th month	1056	46.9%	39.0%	7.9%	0.02	0.000
13th month	1056	46.9%	39.1%	7.8%	0.02	0.000
14th month	1056	46.8%	39.6%	7.2%	0.02	0.000
15th month	1056	48.3%	41.1%	7.2%	0.02	0.000
16th month	1056	47.0%	42.8%	4.2%	0.02	0.027
17th month	1056	47.3%	43.6%	3.7%	0.02	0.050
18th month	1044	45.7%	44.7%	1.0%	0.02	0.596
19th month	1032	47.5%	45.0%	2.5%	0.02	0.197
20th month	1013	46.9%	46.0%	0.9%	0.02	0.646
21st month	978	47.8%	46.4%	1.4%	0.02	0.484
22nd month	941	48.8%	47.1%	1.7%	0.02	0.401
23rd month	899	49.1%	48.8%	0.3%	0.02	0.897
24th month	871	48.9%	49.5%	-0.6%	0.02	0.764
25th month	840	48.7%	49.9%	-1.2%	0.02	0.576
26th month	802	50.7%	49.8%	0.9%	0.02	0.667
27th month	768	52.3%	49.5%	2.9%	0.02	0.204
28th month	742	50.4%	49.9%	0.5%	0.02	0.834
29th month	710	53.1%	50.1%	3.0%	0.02	0.201
30th month	655	52.8%	51.8%	1.0%	0.02	0.682
31st month	633	52.9%	51.5%	1.4%	0.02	0.562
32nd month	610	51.8%	51.1%	0.7%	0.02	0.795
33rd month	579	51.5%	51.6%	-0.1%	0.03	0.976
34th month	549	51.0%	50.5%	0.5%	0.03	0.842
35th month	511	51.5%	50.0%	1.5%	0.03	0.596
36th month	478	51.3%	49.9%	1.4%	0.03	0.631
37th month	428	52.1%	50.9%	1.2%	0.03	0.697
38th month	385	53.0%	50.0%	3.0%	0.03	0.348
39th month	341	51.9%	50.7%	1.2%	0.03	0.726
40th month	300	51.3%	49.0%	2.3%	0.04	0.522
41st month	254	50.8%	50.0%	0.8%	0.04	0.842
42nd month	188	52.1%	52.1%	0.0%	0.05	1.000
43rd month	149	50.3%	54.4%	-4.0%	0.05	0.430
44th month	128	47.7%	53.9%	-6.3%	0.06	0.264
45th month	97	45.4%	51.0%	-5.7%	0.06	0.380
46th month	74	45.9%	56.8%	-10.8%	0.07	0.139
47th month	8	25.0%	43.8%	-18.8%	0.22	0.408

ATT is the average treatment effect on the treated

**Annex 6. Impact of business start-up subsidy on total employment**

Recipients of business start-up subsidy from June 2009 until December 2011						
Months since the payment of the business start-up	No of oberv.	Share of employed in the treatment	Share of employed in the control	Impact (ATT)	Standard error	p-value
1st month	1056	85.3%	30.5%	54.8%	0.01	0.000
2nd month	1056	92.9%	35.2%	57.7%	0.01	0.000
3rd month	1056	95.0%	40.2%	54.7%	0.01	0.000
4th month	1056	96.8%	44.3%	52.5%	0.01	0.000
5th month	1056	97.6%	46.7%	50.9%	0.01	0.000
6th month	1056	98.9%	48.5%	50.4%	0.01	0.000
7th month	1056	99.3%	50.3%	49.0%	0.01	0.000
8th month	1056	99.1%	51.9%	47.3%	0.01	0.000
9th month	1056	99.6%	53.6%	46.0%	0.01	0.000
10th month	1056	99.6%	55.0%	44.6%	0.01	0.000
11th month	1056	99.5%	55.3%	44.3%	0.01	0.000
12th month	1056	99.4%	56.1%	43.4%	0.01	0.000
13th month	1056	99.4%	56.1%	43.4%	0.01	0.000
14th month	1056	99.3%	56.8%	42.6%	0.01	0.000
15th month	1056	99.3%	58.3%	41.0%	0.01	0.000
16th month	1056	99.2%	59.4%	39.8%	0.01	0.000
17th month	1056	99.3%	59.7%	39.6%	0.01	0.000
18th month	1044	98.9%	60.7%	38.3%	0.01	0.000
19th month	1032	98.7%	60.8%	38.0%	0.01	0.000
20th month	1013	98.6%	61.3%	37.4%	0.01	0.000
21st month	978	98.8%	62.0%	36.8%	0.01	0.000
22nd month	941	98.9%	62.5%	36.4%	0.01	0.000
23rd month	899	99.1%	64.1%	35.0%	0.01	0.000
24th month	871	98.6%	64.1%	34.5%	0.01	0.000
25th month	840	98.8%	64.3%	34.5%	0.01	0.000
26th month	802	98.4%	64.2%	34.2%	0.01	0.000
27th month	768	98.3%	63.9%	34.4%	0.01	0.000
28th month	742	98.2%	63.9%	34.3%	0.01	0.000
29th month	710	98.2%	64.4%	33.8%	0.01	0.000
30th month	655	98.2%	65.1%	33.1%	0.01	0.000
31st month	633	97.9%	64.5%	33.4%	0.01	0.000
32nd month	610	97.4%	64.4%	33.0%	0.02	0.000
33rd month	579	97.2%	64.7%	32.6%	0.02	0.000
34th month	549	97.3%	63.8%	33.5%	0.02	0.000
35th month	511	97.3%	64.0%	33.3%	0.02	0.000
36th month	478	96.7%	64.3%	32.3%	0.02	0.000
37th month	428	97.0%	65.0%	32.0%	0.02	0.000
38th month	385	97.1%	64.5%	32.6%	0.02	0.000
39th month	341	96.5%	64.5%	32.0%	0.02	0.000
40th month	300	96.3%	63.7%	32.7%	0.02	0.000
41st month	254	96.1%	64.6%	31.5%	0.02	0.000
42nd month	188	96.8%	64.9%	31.9%	0.03	0.000
43rd month	149	96.0%	63.8%	32.2%	0.03	0.000
44th month	128	96.1%	64.1%	32.0%	0.04	0.000
45th month	97	97.9%	62.9%	35.1%	0.04	0.000
46th month	74	95.9%	67.6%	28.4%	0.05	0.000
47th month	8	100.0%	50.0%	50.0%	0.16	0.007

ATT is the average treatment effect on the treated