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Does the Self-employment Policy Reduce Unemployment and Increase Employment? Empirical Evidence from the Czech Regions

ABSTRACT: *Empirical evidence related to the effectivity and outcomes of the self-employment programmes in the Central and Eastern Europe is still very rare, despite the important role of entrepreneurship in the economic development of post-communist economies. The main purpose of this study was to empirically investigate the impact of self-employment subsidy for unemployed in the Czech NUTS 3 regions for the period of years 2012–2015 to provide policy makers supportive material useful for policy adjustments. The study applies quantitative research framework, which is based on the construction of econometric models. Estimated regression models with region fixed effects supported the negative association between the amount of supported self-employed and unemployment rates in the Czech regions. This finding is theoretically framed by the theory of necessity entrepreneurship. Positive spillover of the programme ('a double dividend'), was econometrically tested on the regional employment rates. Obtained estimates found that there is a positive contemporaneous relationship (weakly significant) between the number of supported self-employed and the employment rates but not in the lag. Analysis of the costs revealed that the costs of self-employment programme are not that high, if one takes into account the alternative costs of unemployment benefits paid to the unemployed and social insurance paid back to the state by the newly established self-employed. Therefore, this tool of active labour market policy has a potential of wider usage. Nevertheless, the applied empirical strategy was based on the regional level and has its limitations. Provided results need to be interpreted cautiously, without any causal inference, because the true outcomes of the programme could be analysed only on the level of supported individuals. Future research should therefore challenge the effectiveness of the start-up subsidy programmes in the Czech Republic on the level of individuals, with focus on the survival rates of subsidized businesses and incomes of their formerly unemployed owners.*

KEYWORDS: Self-employment policy evaluation, self-employment programme, start-up subsidy, entrepreneurship policy, unemployment rate, the Czech NUTS 3 regions, regression analysis

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INTRODUCTION

Public policies have been identified as a set of tools affecting particular individuals with the aim to achieve a particular goal. In the public policy analysis, one aims to investigate the content of public policies, their processes, outcomes and the main purpose is to deliver practical recommendations that could serve as a material for policy makers and support for future policy adjustments (e.g., Veselý et al., 2016 or Hejzlarová, 2014). This article is focused on the analysis of public policies related to the labour market. The main goal of the labour market policies is to prevent economically active inhabitants from unemployment (or to transform unemployed back to employed) and to prevent them from falling into long-term unemployment, which is often linked with social exclusion. Labour market policies are usually divided into two groups: passive labour market policies (PLMP) aiming to provide the unemployed with information about job vacancies and to distribute unemployment support, and active labour market policies (ALMP), which aim to establish labour market balance through a system of programmes supporting the highest possible level of employment. Tools of ALMP often include retraining, investment incentives, establishment of socially beneficial jobs and self-employment programmes

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(e.g., Adámek and Dobřilovský, 2012; Krebs, 2010 or Flek and Večerník, 2005). Transfer from unemployment into self-employment (entrepreneurship) was identified by the policy makers as a convenient way to not only reduce unemployment, but to also create new jobs by formerly unemployed individuals for others and to further decrease unemployment rates (e.g., Caliendo and Künn, 2014 or Dvouletý and Lukeš, 2016).

Evaluation of self-employment programmes is a challenging topic investigated by the entrepreneurial scholars and labour economists all over the world. Recently published studies (e.g., Acs et al., 2016; Caliendo et al., 2016; Wolff et al., 2016; Fritsch et al., 2015, Klapper et al., 2015; Zouhar and Lukeš, 2015 or Zouhar et al., 2015), which analyse the impact of self-employment programmes as a part of active labour market policies on individual, regional or country level, indicate that the impacts of entrepreneurship policies are not fully conclusive and require further research attention. Dvouletý and Lukeš (2016), in their literature review, focused on self-employment out of unemployment, summarized empirical approach, level of analysis, variables and empirical findings of the studies published in the past ten years and concluded that if the main aim of self-employment policies is to reduce unemployment, then the policies fulfil this goal. However, they further point out that it is necessary to conduct empirical studies assessing the outcomes of different programmes and compare them with each other, since the results may differ not only geographically but also over time periods.

Empirical evidence related to the effectivity and outcomes of self-employment programmes in the Central and Eastern Europe is still very rare, despite the important role of entrepreneurship in the economic development of post-communist economies (e.g., Polok et al., 2016 or Welter and Smallbone, 2011). Večerník (2011) further points out that the involvement of the Czech population in self-employment is among the highest in the European Union. Self-employment is also the most frequent form of entrepreneurship in the Czech Republic (e.g., Lukeš et al., 2014 or Chládková, 2010). One explanation of the high level of engagement in self-employment is that there is a significant share of self-employed work as contractors for only one employer under the so called 'Švarc system' conditions ('false', or 'shadow' self-employment), working in reality as full-time employees. This behaviour is against the law; however, it still occurs due to the high potential benefits for employers, who do not have to pay for social and health insurance of their self-employed contractors (e.g., Jirásková, 2013 or Dvouletý and Mareš, 2016a). Motivation for this paper is therefore to empirically contribute to the regional knowledge about the outcomes of self-employment programmes, by the example of the Czech governmental supportive programme providing start-up subsidies for unemployed. The need to study the effects of entrepreneurship policies in the Czech Republic has also been raised by the Czech entrepreneurial scholars recently (e.g., Hlaváček et al., 2015; Mandysová, 2012 or Dvouletý and Mareš, 2016a).

The main aim of the study is hence to assess the costs of the programme and to analyse the outcomes of the start-up subsidy for unemployed in the fourteen Czech NUTS 3 regions during the years 2012–2015. Applied empirical approach follows the quantitative research framework. The regional fixed effects regression models analysing the outcomes of the programme on a regional level are utilized to fulfil the research objective. The obtained results have clear implications for policy makers and help them to form active labour market/entrepreneurship policies based on empirical evidence, despite the fact that the conducted analysis of the programme from an aggregated perspective has its limitations (Calmfors, 1994). The structure of the article is as follows. Section (1) presents the specifics of self-employment in the Czech context and discusses the relationship between the self-employment and unemployment with respect to the previous empirical findings. The second part of the article (2) presents the self-employment programme, its costs, regional allocation of the funds and forms tested hypotheses. Section three (3) is dedicated to the introduction of the collected dataset and descriptive statistics. The estimated econometric multivariate regression models with regional fixed effects, discussed obtained coefficients and stated limitations are presented in the fourth part (4). Final section of the study is dedicated to the summary of the obtained findings, policy recommendations and avenues for future research.

SELF-EMPLOYMENT AND UNEMPLOYMENT

Characteristics of individuals who are considered as self-employed do not lead to a clear definition of self-employment, neither in international scientific debate, nor in the Czech Republic (Petrescu, 2016). Generally, the Czech self-employed individuals are those who independently run an enterprise, bear risks for their activities and receive profits (e.g., Pavlíček, 2014 or Průša et al., 2009). This simple definition does not give us an answer whether the individual runs a business as its primary or secondary activity, how much effort and time is allocated to the entrepreneurial activity, whether the individual is an entrepreneur having employees or an own-

account worker having stable contract with one employer. Self-employment may also include people who are only partially managing their business or having self-employment as a hobby activity (e.g., Pavlíček, 2014 or Večerník, 2011). However, for the purpose of this study, the most important attribute for self-employed is the ability to run an independent business activity and a responsibility for their own behaviour and risks.

The connection between self-employment, entrepreneurship policies/active labour market policies (ALMP) and unemployment rate is established through the theory of necessity entrepreneurship. Necessity entrepreneurship provides an alternative for those individuals who were unable to get a better opportunity on the labour market, and therefore, they do not have to end up in unemployment. Self-employment then serves as a way out of unemployment (e.g., Fritsch et al., 2015, Bosma and Harding, 2006 or Reynolds et al., 2005). Therefore, the relationship between the necessity entrepreneurship and unemployment rate is dynamic and it is linked to the business cycle. During the times of economic growth, self-employment rates may be lower, because the necessity entrepreneurs perceive better alternative opportunities on the labour market compared to their incomes received from self-employment. The opposite situation happens once the economy falls into a recession and unemployment rate increases; some individuals become self-employed to obtain income to pay costs for their living (e.g., Fritsch et al., 2015; Cueto et al., 2015; Román et al., 2013 or Parker, 2009).

The idea behind the self-employment programmes is to engage the unemployed individuals to join entrepreneurial activity and to support their efforts, because participation in any economic activity helps the unemployed to maintain their working habits, skills and to increase their work experience. Self-employment then prevents the formerly unemployed from falling into long-term unemployment, which may result in social exclusion and poverty. Public support commonly includes non-repayable capital grants, counselling and entrepreneurial trainings. The most important outcome from the angle of public authorities is the reduction of unemployment. Effectivity of the programmes may nevertheless differ over time and across regional conditions, and therefore, each of the programmes needs to be assessed with respect to the local conditions. Evaluations are commonly conducted on the level of state, region or individual, whereas the assessment on an individual level allow to take into account the individual characteristics and analyse the outcomes of the programme not only on employment status, but also on the size of the income. Unfortunately, to collect data on an individual level requires strong cooperation between the researchers and public authorities, which is not always successful (e.g., Dvouletý and Lukeš, 2016; Wolff et al., 2016; Audretsch et al., 2015; Soukup, 2011 or Caliendo and Kritikos, 2010).

When it comes to the relationship between self-employment and unemployment in the Czech Republic, several empirical investigations have been made so far. Bivariate correlations between the number of self-employed and unemployment rate have been used to study the relationship by Menčlová (2014) and Pavlíček (2014). Menčlová (2014) was unable to find any statistically significant relationship, contrary to Pavlíček (2014), who found a positive relationship between the unemployment rate and the number of self-employed. Dvouletý and Mareš (2016c) used regression analysis and found that increased unemployment rate was associated with higher self-employment activity in the Czech regions. In their second study, Dvouletý and Mareš (2016b) provided an empirical evidence showing that the increase in the amount of active enterprises was associated with lower unemployment rates. However, they have not distinguished among different forms of entrepreneurship. Dvouletý (2017) proved that during the period of years 2000–2015, the higher rates of self-employment were associated in the Czech regions with the lower unemployment rates. Effectivity of active labour market programs in the Czech Republic have been tested by Hora and Sirovátka (2012) who managed to collect individual data of participants taking part in ALMP programmes. On the data for years 2007 and 2009, they conclude that participation in self-employment programme was associated with a decreased probability of return into unemployment. Unfortunately, an up-to date study that is focused specifically on the outcomes of self-employment programmes in the Czech Republic is to the best knowledge of author still missing, despite the fact that many scholars call for it (e.g., Hlaváček et al., 2015; Mandysová, 2012 or Dvouletý and Mareš, 2016a). Therefore, I introduce the self-employment programme for unemployed to the reader, as it is currently established in the Czech Republic, collected dataset and empirical approach towards the evaluation of the programme during the years 2012–2015 in the next sections of this article.

START-UP SUBSIDY PROGRAMME[1] FOR UNEMPLOYED IN THE CZECH REPUBLIC

Self-employment subsidy for unemployed has been used in the Czech Republic as a part of active labour market policy since 2004. Unemployed individuals may ask for a subsidy to establish the socially beneficial business and receive a financial support equal to a maximum of six average monthly wages, if the unemployment rate in the region is equal or higher to the national unemployment rate. If the regional unemployment is lower than the national unemployment rate, then the maximum amount of subsidy is equal to the four average monthly wages. If the new entrepreneur creates more than ten new job opportunities, then the amount of subsidy is increased by the financial amount equal to two average monthly wages. The choice to participate in the programme depends on the character, skills and mainly on the motivation of the unemployed individual. In principle, the unemployed applicants need to create a business plan, cost structure, consult and defend their own idea in front of the labour office committee. Approved amount of the subsidy finally depends on the cost structure and business idea, and it is allocated to the newly self-employed after signing the contract (after the new business is officially registered). The newly created enterprise needs to sustain for at least 365 days. Those applicants are preferred for the programme, who formerly accomplished retraining course 'foundations of entrepreneurship'. The advantage is that the retraining course often includes the orientation part that may discourage some unemployed from a 'bad' decision to start self-employment (based on unrealistic expectations), to make debts by entrepreneurship and consequently further worsen their situation instead of an expected improvement. Applicants who successfully accomplished the course are hence more likely to form clear expectations about their future business activity. Approval of the subsidy is made by the regional labour office, since this subsidy is allocated regionally. One also needs to point out that sometimes the regional labour offices attach for applicants' additional specific requirements. Once the deal is signed and the enterprise is established, newly self-employed starts paying social insurance and health insurance and quits the unemployment (Ministry of Labour and Social Affairs, 2016; Czech Employment Law, 435/2004).

Unfortunately, the reporting system of the Ministry of Labour and Social Affairs does not provide detailed statistics about the programme and it is generally very difficult to collect any data. Based on the internal data obtained from the Ministry and the data collected from the statistical Yearbooks, I have created Table 1, depicting the number of supported individuals and funds allocated towards the self-employment programme for the period of years 2012-2015. This time restriction is caused by the data availability, since longer time series on the regional level are not currently accessible. Based on the number of supported self-employed, I have calculated the average costs per subsidized enterprise (fourth column) and compared it with the opportunity costs for unemployed, quantified as the amount of paid unemployed support for a period of six months (last column). One can observe that the direct costs of the programme were higher except for year 2012, compared to the unemployment support, however not dramatically. It is also important to note that once the individuals join self-employment, they automatically need to start paying for the health and social insurance. Social insurance is a part of the state revenues. Therefore, the direct costs of the programme are being paid back through the social insurance and taxes (if any are reported). If the self-employed continuously pays the minimum amounts of social insurance and the subsidized business survives for at least two years, then the direct costs of the programme are paid back in about two years. [2] Even from the perspective of unemployed, it looks more advantageous to engage self-employment as compared to staying in unemployment. However, the results of the cost benefit analysis may change over the time.

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1 In Czech "Příspěvek na zřízení společensky účelného pracovního místa (SÚPM) zřízeného uchazečem o zaměstnání za účelem výkonu samostatně výdělečné činnosti" (Czech Employment Law, 435/2004).

2 For example, in 2015, the minimum social insurance for 12 months = 23 664; 45 815 – 23 664 = 22 151 CZK (Czech Social Security Administration, 2015).
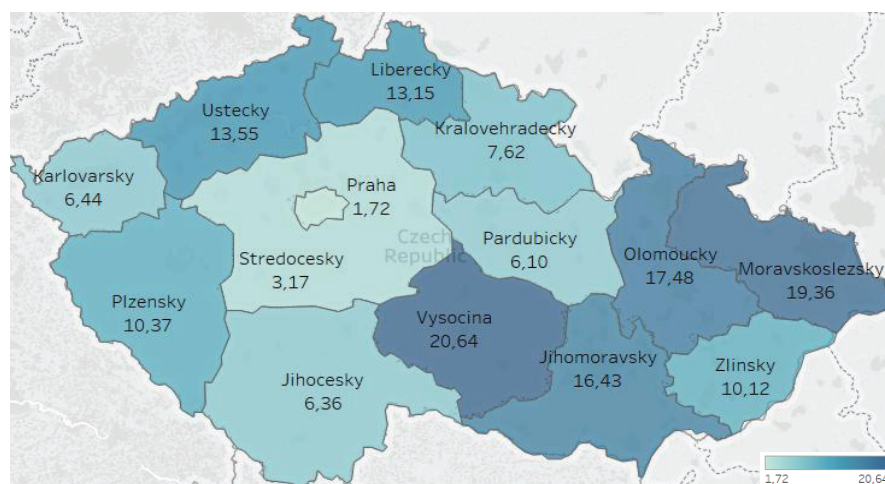
Tab. 1: Cost-benefit Analysis of the Self-employment Programme for the whole Czech Republic (denominated in CZK, 27 CZK ≈ 1 EUR, Legend from the left; *Resources allocated*: total amount of financial resources allocated to the self-employment programme, *Self-employed Supported*: total number of individuals supported by the self-employment programme, *Costs per one Self-employed*: costs are calculated as a ratio of allocated funds and number of supported individuals. *Average Unemployment Support:* For the support in unemployment (unemployment benefits) is used annual average support, *Average Unemployment Support for 6 months*: average unemployment support multiplied by six).

Year	Resources Allocated	Self-employed Supported	Costs per one Self-employed	Average Unemployment Support	Average Unemployment Support for 6 months
2012	74 558 000	2 821	26 430	5 892	35 352
2013	122 426 000	2 776	44 102	6 284	37 704
2014	128 076 990	3 054	41 937	5 958	35 748
2015	147 157 380	3 212	45 815	6 171	37 026

Source: Ministry of Labour and Social Affairs (2012, 2013, 2014, 2015, 2016), own calculations

From the regional perspective, subsidies were more distributed in the regions suffering from higher unemployment rates. In Figure 1, reader can observe the per capita allocation towards the Czech NUTS 3 regions. The highest per capita subsidies were on average during the period of years 2012-2015 allocated towards the regions Vysocina, Moravskoslezsky and Jihomoravsky compared to the lowest amounts, which were distributed to the regions Praha and Stredocesky, which reported the lowest unemployment rates during the analysed period.

Fig. 1: Average Subsidy per Capita in the Czech Regions for Years 2012-2015 (in CZK)

Source: Tableau, own calculations (Ministry of Labour and Social Affairs, 2016)

The presented numbers show that the start-up subsidy is not often used as a tool of active labour market policy in the Czech Republic. To illustrate that, in 2015, there were 478.9 thousand unemployed, but out of these, only 3 212 (0.7%) were supported to become self-employed (Ministry of Labour and Social Affairs, 2015). The newly created jobs may then result in even lower unemployment rate in the region. This positive spillover is called 'a double dividend' in labour economics (e.g., Caliendo and Künn, 2014 or Dvouletý and Lukeš, 2016). To evaluate the programme, I conducted regression analysis from the regional/aggregated perspective. I empirically tested, whether the number of supported individuals was associated with the lower rates of unemployment.

I also further tested whether the number of supported individuals was associated with the regional rates of employment as an additional spillover of the programme. Formally, the tested hypotheses are stated below:

H₁: There was a negative relationship between the amount of supported self-employed and unemployment rates during the period of years 2012-2015 in the Czech NUTS 3 regions.

H₂: There was a positive relationship between the amount of supported self-employed and employment rates during the period of years 2012-2015 in the Czech NUTS 3 regions.

DATA

Empirical analysis is based on the panel of fourteen NUTS 3 regions for the period of years 2012–2015. Range of dataset is limited by the availability of the main explanatory variable – number of supported self-employed (*SUPPORTED_SELF-EMPLOYED*). This variable was obtained from the Yearbooks of the Ministry of Labour and Social Affairs (2012, 2013, 2014, 2015). The outcome variables, percentage rates of unemployment (*UNEMPLOYMENT_RATE*) and employment (*EMPLOYMENT_RATE*) were obtained from the regional series of the Czech Statistical Office (2016c). Calmfors (1994) notes that for macroeconomic evaluation of the programme, it is important to add several control variables, to ensure the reliability of provided estimates. Given the existence of regional disparities among the Czech regions (Baštová et al., 2011), I employ the real GDP per capita as a main control variable, obtained from the Czech Statistical Office (2016c). To ensure comparability across the regions and over time, the financial amounts were adjusted from inflation to the real values via GDP deflator (taken from Eurostat, 2016a). The variable was further transformed into the form of natural logarithm, as it is in econometrics common to express the financial variables in the logarithms (Verbeek, 2012).

Additional control variables were also obtained from the Czech Statistical Office (2016a, 2016b, 2016c) and represent the percentage share of population 15–64 years with tertiary education (*SHARE_TERTIARY_EDUCATED_POP*) and population density (*POPULATION_DENSITY*). Descriptive statistics are presented in the Table 2 below.
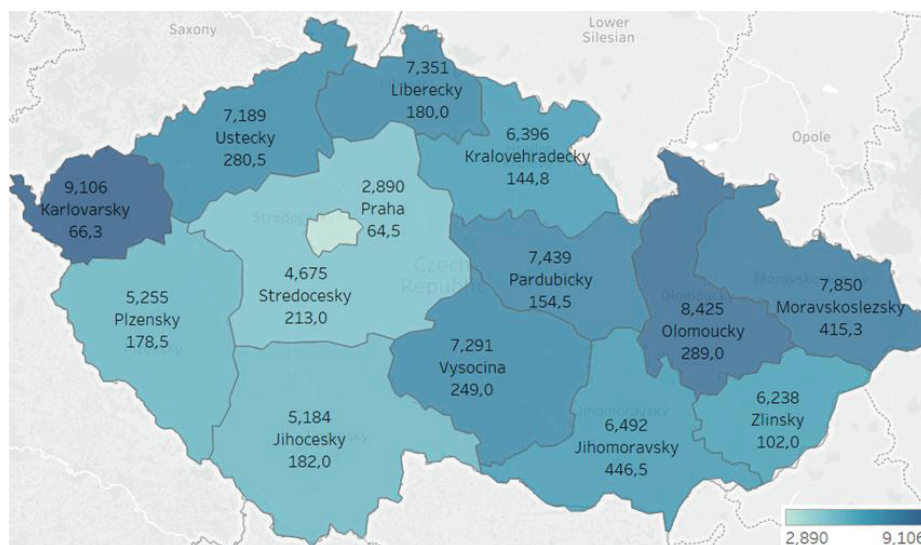
Tab. 2: Summary Statistics of the Collected Data

Variable	Mean	Maximum	Minimum	Std. Dev.	Observations
UNEMPLOYMENT_RATE	6.56	10.75	2.49	2.07	56
EMPLOYMENT_RATE	55.73	66.3	50.7	3.29	56
SUPPORTED_SELF-EMPLOYED	211.84	591	33	122.21	56
REAL_GDP_PER_CAPITA	359983.28	827274.18	262535.46	127700.57	56
ECONOMICALLY_ACTIVE_POP	67.31	69.20	65.27	0.87	56
TERTIARY_EDUCATION_SHARE	13.10	27.79	8.20	4.62	56
POPULATION_DENSITY	295.08	2554.53	63.30	626.19	56

Source: STATA 14, own calculations

Figure 2 depicts the average unemployment rates and the average amount of supported self-employed in the Czech regions during the period of years 2012–2015. The highest unemployment rates were during the analysed period in the regions Karlovarsky, Olomoucky and Moravskoslezsky, contrary to the regions Praha, Stredocesky and Jihocesky, which reported the lowest unemployment rates. As in line with the Figure 1, the highest amounts of supported individuals were observed on average in the regions Jihomoravsky, Moravskoslezsky and Olomoucky. The lowest amounts of subsidized individuals were during the analysed period in the regions Praha, Karlovarsky, and Zlinsky.

Fig. 2: Average Unemployment Rates and the Average Amount of Supported Self-employed in the Czech Regions during the period of years 2012-2015 (unemployment rates on top in %, amount of supported self-employed at the bottom)

Source: Tableau, own calculations (Czech Statistical Office, 2016a, 2016c)

RESULTS AND DISCUSSION

Econometric approach is implemented to quantify the associations among the variables and to empirically test the stated hypotheses on the data of the fourteen Czech NUTS 3 regions for the period of years 2012–2015. As a first step of the empirical analysis, all variables were tested for stationarity to make sure that non-stationary variables do not bias the estimated coefficients. No unit root has been detected among the variables, and therefore, the multivariate regression models were estimated based on the stationary variables (Baltagi, 2016). In a panel data analysis, one needs to control for an unobserved heterogeneity across the Czech regions and over the analysed period of years 2012–2015. Therefore, the standard ordinary least squares (OLS) method does not provide reliable estimates. As a common remedy, fixed or random effects estimation techniques are implemented. To decide between the fixed or random effects, the likelihood ratio test and Hausman statistics are commonly used (Verbeek, 2012). The panel diagnostics was in favour of the fixed effects approach. Presented models in Table 3 were therefore estimated with the region fixed effects approach combined with the White robust standard errors and covariance to make sure that the results are not affected by the consequences of autocorrelation and heteroscedasticity. Variance Inflation Factors test was used to inspect the collinearity among the explanatory variables, and no multicollinearity was detected (Verbeek, 2012). All three presented regression models in Table 3 were found to be statistically significant and reported good explanatory power of the variance of the explained (dependent) variables. Obtained results are compared to the previously reported findings by empirical scholars and with the stated hypotheses.

The first two models (Model 1 and Model 2) were used to investigate the relationship between the amount of supported self-employed and unemployment rates during the period of years 2012–2015 in the Czech NUTS 3 regions. The potential effect of the programme/above mentioned association, was tested contemporaneously (in Model 1) and with up to one year lag (in Model 2). Both coefficients of the key variable representing the amount of supported self-employed, were found to be negative and statistically significant. The first hypothesis (H_1) is therefore empirically supported. This finding is in consistency with the previously reported empirical results of Hora and Sirovátka (2012) and they are also in the line with the observations of Belás et al. (2015) and Krajčová et al. (2013), who note that the important motivation to start business in the Czech Republic is to have a job. One may also see that the regions with higher shares of tertiary educated population and higher levels of GDP per capita, reported during the analysed period lower rates of unemployment, as already found by the previous authors (e.g., Krelová and Krpálek, 2014 or Dvouletý, 2017).

To test the potential spillovers of the programme on the regional employment rate (see e.g., Caliendo and Künn, 2014 or Dvouletý and Lukeš, 2016), I have estimated Models 3 and 4. Unfortunately, the main explanatory variable representing the amount of supported self-employed in both models has not provided fully conclusive results. The contemporaneous coefficient of the variable was found to be positive and statistically significant (in Model 3). However, the coefficient lagged by one year was not found to be statistically significant (in Model 4). Therefore, the second hypothesis (H_2) is supported partially and there is a positive contemporaneous relationship (weakly significant) between the amount of supported self-employed and employment rates during the period of years 2012-2015 in the Czech NUTS 3 regions but not in the one year lag. In order to inspect the long-term effects, the hypothesis requires further research attention. If there was any 'double dividend' of the programme, it was only in the short term. Signs of the estimated coefficients of the control variables were in line with the existing research and in line with economic reasoning.

Tab. 3: Estimated Regression Models on the collected Data for Years 2012-2015

Model	Model (1)	Model (2)	Model (3)	Model (4)
Explanatory/Dependent variable	*UNEMPLOYMENT_RATE*		*EMPLOYMENT_RATE*	
SUPPORTED_SELF-EMPLOYED	-0.00884[*]		0.00400[*]	
	(0.00413)		(0.00221)	
SUPPORTED_SELF-EMPLOYED (-1)		-0.00754[**]		-0.0000115
		(0.00300)		(0.00194)
LOG(REAL_GDP_PER_CAPITA)	-2.851	-7.732	2.849	4.345
	(5.641)	(7.483)	(4.341)	(5.322)
SHARE_TERTIARY_EDUCATED_POP	-0.738[**]	-0.543	0.740[***]	0.514
	(0.323)	(0.473)	(0.167)	(0.322)
POPULATION_DENSITY	0.0113	0.00539	-0.00665	-0.00154
	(0.00789)	(0.00686)	(0.00406)	(0.00449)
CONSTANT	51.13	112.2	10.80	-5.807
	(69.00)	(89.93)	(53.10)	(63.24)
Observations	56	42	56	42
R^2	0.332	0.304	0.490	0.323
Adjusted R^2	0.279	0.229	0.450	0.250
AIC	175.4	127.4	123.5	87.68
BIC	183.5	134.4	131.6	94.63

Note: Standard Errors are in parentheses; *** stat. significance on 1%, ** stat. significance on 5%, * stat. significance on 10%. Models were estimated with region fixed effects and with robust standard errors.
Source: STATA 14, own calculations

These empirical findings are not without limitations. The first limitation is the data availability. Robustness of the results will definitely increase, once more years' data will be available for the analysis. Regression models will then have more observations and the reliability of obtained results will increase. The second limitation is dedicated to the level of analysis, since no individual data were available, only the aggregated approach on the NUTS 3 level could have been used and therefore no causal interpretation can be made. The availability of variables on the level of individuals would not only shed more light on the outcomes of the programme, but also may help to further understand the specificities of the subsidized businesses, their rates of survival and incomes of their owners.

CONCLUSION

Self-employment as a way out of unemployment has been questioned recently also by the researchers from the Czech Republic (e.g., Hlaváček et al., 2015; Mandysová, 2012 or Dvouletý and Mareš, 2016a). The main purpose of this study was to empirically

investigate the impact of self-employment subsidy for unemployed in the Czech NUTS 3 regions for the period of years 2012–2015 to provide policy makers recent and relevant empirical evidence serving as a supportive material for policy adjustments. Regression models estimated with the regional fixed effects supported the association between the amount of supported self-employed and the regional unemployment rates as described by the theory of necessity entrepreneurship. The second set of econometric models was used to test the potential spillovers ('a double dividend') of the programme on the regional employment rate. Obtained estimates found that there is a positive contemporaneous relationship (weakly significant) between the number of supported self-employed and employment rates but not in the lag. However, the presented empirical analysis has been conducted from the aggregated perspective, and therefore the presented results do not allow any causal inference and they need to be interpreted with particular caution. Obtained findings could be affected by other time-varying confounding factors, which could not have been controlled for by the empirical design of the study.

Regionally, the self-employment subsidies are most frequently allocated to the unemployed in the regions with higher unemployment rates. The analysis of direct costs of the programme revealed that the costs of self-employment programme are not that high, if one takes into account alternative costs of the unemployment benefits paid to the unemployed and social insurance paid back to the state by the newly established self-employed. According to Global Entrepreneurship Monitor (2013) in the Czech Republic, 22% of those who were engaged in total entrepreneurial activity started their enterprise out of necessity because they had no other option to work. However, during the years 2013–2014, only 0.7% of unemployed got a chance to be supported by the self-employment programme to establish their own enterprise. In the neighbouring countries, this support is used as a tool of active labour market policy more frequently. During the same period, this ratio was 1% in Slovakia, 1.4% in Germany, 2.9% in Poland and the highest engagement is reported in Austria, where 8.8% of unemployed were supported to start their own business (Eurostat, 2016b; 2016c).[3] Based on these figures, I humbly suggest to apply the self-employment programme in the Czech Republic more frequently. I can imagine that the ratio of supported unemployed in the Czech Republic could have increased to 1.5%, since there is a significant ratio of people starting business out of necessity and experience from the more frequent usage of the programme in our neighbouring countries. However, the exact number should be discussed by the policy makers, labour office representatives and could be further modified.

Researchers also point out, that some groups of individuals perform better in self-employment programmes. Their results can be taken as an inspiration for the Czech labour office workers having the option to encourage unemployed into self-employment. According to these results, better perform enterprises founded by individuals with higher levels of education (secondary or tertiary). Higher survival rates are also reported by males compared to females and by individuals who are more willing to accept risks (e.g., Dvouletý and Lukeš, 2016; Caliendo and Kritikos, 2010 or Hora and Sirovátka, 2012).

Based on the previous research, the most important task for the labour office workers is to persuade the unemployed to establish a business, to encourage them and to remove their fear of failure (e.g., Žambochová, 2013; Lukeš and Zouhar, 2013 or Lukeš et al., 2013). Unemployed individuals are also afraid of administrative barriers and bureaucracy. Continuous reduction of administrative barriers is therefore needed in the future (Dvouletý and Mareš, 2016a). Unemployed are also afraid to pay for their first costs, including the social and health insurance that needs to be paid from the first month after they officially register their new business activity. One way to encourage the rates of newly established self-employed could be to postpone the payments for social and health insurance during the first month and to give time to the formerly unemployed to earn their first revenues (Krajčová et al., 2013).

Future research should challenge the effectiveness of the start-up subsidy programmes in the Czech Republic on the individual level. Such an empirical analysis could provide information about the survival rates of subsidized businesses, but also about the incomes of their formerly unemployed owners. Establishment of the strong cooperation between the research community and public authorities is therefore required. Such a cooperation could lead to a construction of the follow-up survey for formerly unemployed individuals, which could deliver requested data about the income, job satisfaction and their employment status. The collected data would allow implementation of counterfactual analysis (e.g., Potluka et al., 2016), which could answer the questions related to the impact of self-employment programme on different social groups and that could help to address the most benefiting groups from the programme.

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3 Statistics reported by Eurostat (2016b; 2016c) slightly differed from those reported by the National Ministries of Labour and Social Affairs of the above-mentioned countries; however, the author used these number to achieve comparability across the countries, taking into account this limitation. The ratio was calculated as the number of unemployed entrants into self-employment programme and annual average of unemployed for years 2013–2014 (Eurostat categories: *Participants by LMP intervention* and *Unemployment by sex and age – annual average).*

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