REGIONAL DIFFERENCES IN SELF-EMPLOYMENT: EVIDENCE FROM CROATIA

Botrić, Valerija

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REGIONAL DIFFERENCES IN SELF-EMPLOYMENT: EVIDENCE FROM CROATIA

Valerija Botric*

Abstract

The transition in most countries was accompanied by the burst of unemployment. At the beginning of transition, the new opportunities to start own businesses were expected to release the entrepreneurship potential of the population and lead to fast convergence towards the successful market economies. At the same time, entrepreneurship was expected to alleviate the labour shedding from restructured inefficient industrial sector. The data seldom corroborates this successful transition scenario. This paper provides analysis of the regional differences in self-employment in Croatia during the mature transition 1998-2008 period. Although self-employment cannot be equalized with entrepreneurship, Labour Force Survey as relatively rich data source enables investigation of certain factors that might be partially related to the overall entrepreneurship propensity of the working population in Croatia. Furthermore, analysis of potential regional differences in Croatian labour force entrepreneurship propensity has not been

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*The Institute of Economics, Zagreb, Trg J.F. Kennedy 7, 10000 Zagreb, Croatia, Phone: +385-1-2362-280 Fax: +385-1-2335-165, E-mail address: vbotric@eizg.hr

previously quantitatively assessed in the literature. The regional perspective in the paper is used to investigate whether there is a link between the evolution of self-employment and overall unemployment rate in the region (does self-employment help to alleviate unemployment problems?), the share of public sector employment (do chances of finding a secure government job impede entrepreneurship?), economic structure of the region (which economic sectors are more likely to encourage self-employment?) through time. In addition, the characteristics of the self-employed - in terms of gender, age, occupation, education, wage, household characteristics – are compared to those in employment. With this segment of the analysis we try to reveal whether there is higher entrepreneurship propensity within certain population subgroups in Croatia.

1   INTRODUCTION

Small and medium size enterprises are frequently in policy papers seen as key future drivers of economic growth (OECD, 2000), in particular in transition economies, where this sector was highly neglected during the socialism (Chelariu et al, 2008). One of the key tasks of this supposedly vibrant sector is to create new jobs and alleviate unemployment pressures. Although one cannot equalize entrepreneurship with self-employment, the two are related, and the notion of self-employed entrepreneur that through innovation helps to create conditions for long-term growth, remains in the background of many policy papers (UNECE, 2008).

The existing literature on self-employment in Croatia was mostly focused on the national level. Thus, Crnković-Pozaić (1997) analyzes the early periods of transition and claims that the employees from the previous state sector took the opportunities to start their own businesses with great enthusiasm. The self-employed were in that context exploring the possibilities of new institutional set up. Since most of the countries in the early periods of transition went through some form of privatization which was accompanied by increase in unemployment, the positive attitude towards self-employment was assumed to be the leader of job creation within the newly adopted market system. The

reflection upon that period shows that although many new businesses opened at the beginning of the transition, many subsequently failed.

The notion that self-employment could alleviate the unemployment problems was also incorporated in the Croatian national employment policies, starting from year 1998, and staying, although modified, within the employment promotion policies throughout the period (Croatian Employment Service, 2010). However, even early evidence has shown that the measures did not encourage a large share of unemployed into self-employment (Babić, 2003). The most probable reason behind this relative unsuccessfulness of the measure is that starting your own business requires the financial means as well as specific skills, which the unemployment population for the most part lacks[1].

A detailed analysis of the overall structure of the self-employed is provided by Matković (2009), who presents the evolution of the self-employment share in Croatia during the 1996-2006 period, based on Labour Force Survey (LFS) data conducted by the Central Bureau of Statistics (CBS). He emphasizes that half of the self-employment population comprises of agricultural workers, mostly older population living in rural areas, with small income and low education. He also identifies other types of self-employed, thereby indicating that self-employment is highly heterogeneous in Croatia.

The aim of this paper is not to exhaustively explore the self-employment phenomenon in Croatia, nor to explore certain specificities of the phenomenon in detail. The main goal of the paper is to analyze regional differences in self-employment and to discuss the possible determinants of such differences. Since regional aspect was not previously discussed in the Croatian literature, this is the main contribution of the paper.

The structure of the paper is as follows. The next section presents the preliminary analysis of the data and discusses the quality of the data sources used for the analysis. Section 3 presents the results of the empirical analysis of the differences in county self-employment shares. Section 4 presents the results of

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[1] The relative importance of financial constraints for starting a business is emphasized in the literature. See, for instance, Evans and Jovanovic (1989), Bates (1995), and for Croatia relatively new results of on line survey Moj posao (2010).

the estimates of the probability that the person is self-employed versus other forms of employment. The last section proposes some conclusions.

2   REGIONAL DIFFERENCES: DATA SOURCES AND PRELIMINARY ANALYSIS

The basic source for the analysis in this paper is Labour Force Survey which Croatian Central Bureau of Statistics conducts since 1996. The CBS publishes the aggregate results of the LFS, which contains main labour market indicators according to the ILO comparable methodology. The LFS is based on the random sample of private households. The analysis in this paper relies on individual LFS data without an identifier. The details of the LFS methodology will not be explained here[2], beyond the point relevant for the interpretation of the results. Although there are slight changes in the questionnaire from year to year, which if relevant will be referred to later on, the main methodological changes in LFS are related to the sample design. In the period from 1996 to 2006, the sample was separately defined for each period, that is, the sample did not have a panel component. Since 2007, such component has been introduced in the sample design and households are interviewed four times. Dynamics of the interviewing since then is the following: households are interviewed in two consecutive quarters, left out in the following two quarters and interviewed again in two consecutive quarters.

The change in sampling method influences the sample size available for the analysis in this paper. Specifically, during the years 1998-2006 the data on all individuals interviewed during the year could have been aggregated to obtain annual data. The fact that the sampling procedure changed in year 2007 suggests that we cannot simply aggregate all the responses, since this would duplicate significant number of observations. To avoid this problem, the data for years 2007 and 2008 was reconstructed in a way that only the answers of the

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[2]An interested reader can follow the short methodology explanations published with each CBS First Release issue.

individual sampled for the first time that year are included, and if she or he is re-interviewed, these answers are disregarded[3].

The LFS questionnaire contains many details on the labour market status of the individuals. Since LFS in Croatia is synchronized with ILO methodology, the main labour market indicators are comparable to those in other countries, which is advantage of using it as a data source for the analysis. The main obstacle comes from the fact that the questions are pre-defined, and for the purpose of determining whether the person is self-employed, we had to rely on the answers to the standardized types of questions. For the purpose of this paper, the self-employed are defined as those employed persons that have also answered that they either:

1. Work/entrepreneur in own enterprise

2. Work/entrepreneur in own craft

3. Farmer on own farm

4. Work/entrepreneur in free-lance activity

Since the LFS sample was not designed to be representative on the level of aggregation below national level, to illustrate the regional differences we present the averaged annual data for the period 1998-2008. This procedure should help to increase the representativeness of the data on the regional level, even though it should not be mistaken for true representativeness on the county level.

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[3]The panel identification number was used for this purpose. There are 13 panels. During the weeks 1-13 panels 1, 2, 3 and 4 are interviewed, during weeks 14-26 panels 2, 4, 5 and 6 are interviews. The method applied means that the answers from panel 2 and 4 during weeks 14-26 are disregarded in the analysis.

FIGURE 1 Average share of self-employed in total employment, 1998-2008
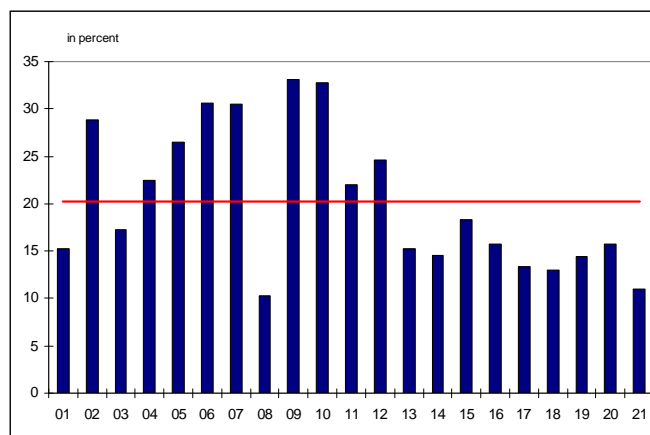
Source: author's estimation based on CBS LFS data.

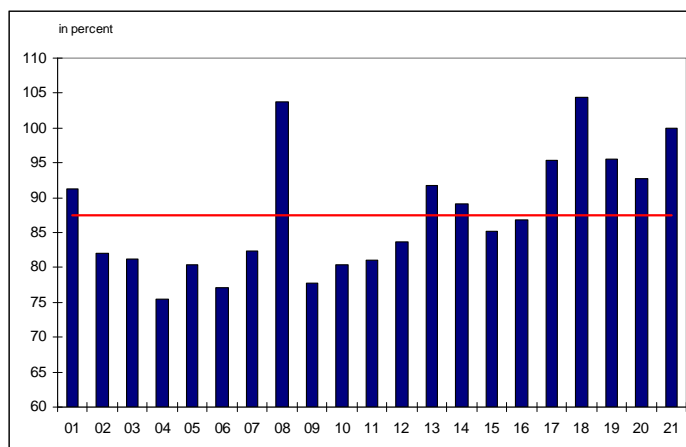The red line represents average for Croatia.

Counties are: 1- Zagrebaèka, 2 - Krapinsko-zagorska, 3 - Sisaèko-moslavaèka, 4 – Karlovačka, 5 – Varaždinska, 6 - Koprivničko-križevačka, 7 - Bjelovarsko-bilogorska, 8 - Primorsko-goranska, 9 - Ličko-senjska, 10 - Virovitičko-podravska, 11 - Požeško-slavonska, 12 - Brodsko-posavska, 13 – Zadarska, 14 - Osječko-baranjska, 15 - Šibensko-kninska, 16 - Vukovarsko-srijemska, 17 - Splitsko-dalmatinska, 18 – Istarska, 19 - Dubrovačko-neretvanska, 20 – Meimurska, 21 – Zagreb.

The data reveals the uneven distribution of self-employment across Croatian counties. The highest share of self-employment is in Ličko-senjska county, while the lowest seems to be in Primorsko-goranska county. The counties that seem to have above national average in self-employment throughout the period are, in addition to already mentioned Ličko-senjska, Karlovačka, Virovitičko-podravska, Koprivničko-križevačka, Bjelovarsko-bilogorska, Varaždinska, Brodsko-posavska, Požeško-slavonska. These results can be attributed to the fact that self-employment as measured in this paper also includes self-employment in agriculture. Precisely those counties that have higher than average share of

self-employed also have higher than average share of self-employed in agriculture as compared to total self employment[4]. As Matković (2009) indicated in his analysis of self-employment on national level, the agricultural self-employed frequently belong to older population subgroups with lower than average income. In this case, this type of self-employment is more related to securing the necessary means for living, than the entrepreneurial activity.

Additional argument that the self-employment on average and specifically in certain areas is far from being the key for future growth comes from the analysis of their level of education. It is frequently assumed, in particular in policy oriented papers, that self-employed mostly comprise of highly educated individuals, who through their innovative endeavours lead the development of specific sectors they work in. The situation in Croatia is rather different from this idyllic picture, as the data on educational attainment presented in the following figure present.

FIGURE 2 The relative educational attainment of the self-employed vs. employed, average over 1998-2008 period

Source: author's estimation based on CBS LFS data.
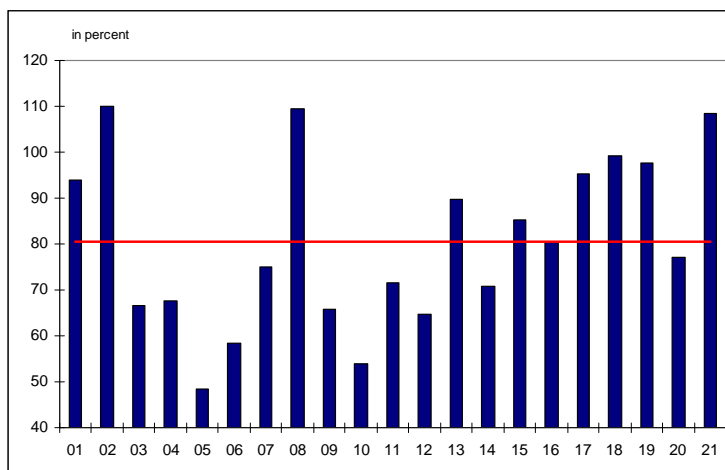
The red line represents average for Croatia.

[4] Data not presented here to save space, but available from the author upon request.

Counties are: 1- Zagrebačka, 2 - Krapinsko-zagorska, 3 - Sisačko-moslavačka, 4 – Karlovačka, 5 – Varaždinska, 6 - Koprivničko-križevačka, 7 - Bjelovarsko-bilogorska, 8 - Primorsko-goranska, 9 - Ličko-senjska, 10 - Virovitičko-podravska, 11 - Požeško-slavonska, 12 - Brodsko-posavska, 13 – Zadarska, 14 - Osječko-baranjska, 15 - Šibensko-kninska, 16 - Vukovarsko-srijemska, 17 - Splitsko-dalmatinska, 18 – Istarska, 19 - Dubrovačko-neretvanska, 20 – Međimurska, 21 – Zagreb.

The data presented on Figure 2 reveals that the average educational attainment (as measured by the average year of schooling in the county) of the self-employed are for the country as a whole below the average educational attainment of the employed. Furthermore, only in Primorsko-goranska and Istarska county, and the City of Zagreb, the average educational attainment of the self-employed is higher than that of employed persons on average. This is also related to the dominant economic activity of the self-employed persons, which is in these counties within the service sector. However, on average, the self-employed in Croatia cannot be considered as the most advanced segments of the economy that could carry the burden of future economic recovery. The more realistic view is that the self-employment is a consequence of necessity rather than exploring the risky endeavours that could lead to potentially higher than average profits. This could be further substantiated by the analysis of relative income. Although it has to be noticed that the self-employed in the agriculture tend not to declare wages and for SME's owners it is frequently quite difficult to differentiate between firm and owner's income, the LFS data enables the comparisons of the individual incomes only through the direct answers to direct questions on average net wage of an individual. In that case, the net wage almost certainly underestimates the income level of the self-employed on average. Having in mind these difficulties in comparisons, it can still be noticed that the average net wage of the self employed during the 2000-2008 period[5] was only around 80 percent of the average net wage in general. Regional distribution of relative wages is presented on the following figure.

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[5] The period of analysis for this indicator does not include previous years, that are years 1998 and 1999, as the LFS questionnaire does not enable collecting these data.

FIGURE 3 Self-employed net wage in comparison to employed net wage, average over 2000-2008 period

Source: author's estimation based on CBS LFS data.

The red line represents average for Croatia.

Counties are: 1- Zagrebačka, 2 - Krapinsko-zagorska, 3 - Sisačko-moslavačka, 4 – Karlovačka, 5 – Varaždinska, 6 - Koprivničko-križevačka, 7 - Bjelovarsko-bilogorska, 8 - Primorsko-goranska, 9 - Ličko-senjska, 10 - Virovitičko-podravska, 11 - Požeško-slavonska, 12 - Brodsko-posavska, 13 – Zadarska, 14 - Osječko-baranjska, 15 - Šibensko-kninska, 16 - Vukovarsko-srijemska, 17 - Splitsko-dalmatinska, 18 – Istarska, 19 - Dubrovačko-neretvanska, 20 – Međimurska, 21 – Zagreb.

The data indicates that relative wages of the self-employed are higher only in the Primorsko-goranska county, City of Zagreb and Krapinsko-zagorska County. In all of other counties, the self-employed have lower than average wage of the employed. The lowest is in Varaždinska County, followed by Virovitičko-podravska. In this case as well, the structure of economic activities plays important role. The counties with higher share of self-employed in services are at the same time the counties where the average wage of the self-employed is higher.

After brief presentation of the regional differences of self-employment in Croatia, we proceed with more analytical approach. We explore the determinants of here presented regional differences. The next segment of the analysis remains on the average county level.

3   SELF EMPLOYMENT DIFFERENCES FROM A REGIONAL PERSPECTIVE

Even though there are issues with the representativeness of the sample on the regional level, we explore the evolution of self-employment on regional level in Croatia based on the annual LFS data. To explore the factors behind the regional dynamics in self-employment, we form a simple model. The empirical analysis was based on the annual 2000-2008 LFS data with Croatian counties as cross section units. With this data setting, the panel data method was applied. The basic equation estimated in the paper is of the following kind:

$$y_{i,t} = \alpha + \beta X_{i,t} + e_{i,t}$$

(1)

where y denotes dependent variable, and X a set of regressors. Panel data method with fixed effects was applied, in order to capture the county-specific differences, which was also formally tested for validity[6]. Average county share of self-employed in total employment was dependent variable, and the following set of regressors was considered (all of which are calculated from the Labour Force Survey data directly from the sample, without projections to the total population):

1. Average educational attainment of the self-employed (expressed by the average year of schooling). The research on self-employment and entrepreneurship frequently includes the role of human capital in the analysis,

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[6] The fixed-effects are also common in the analysis of self-employment determinants across countries. See, for instance, Acs. et al (2009). These are assumed to capture cultural differences or institutional factors.

under the assumption that people with higher educational attainment tend to more frequently start new businesses than people with lower educational attainment (Evans and Leighton, 1990). Since the preliminary analysis has shown that such differences are present across Croatian counties as well, we included them in the specification.

2. Average unemployment rate in the county. The inclusion of this variable is related to the unemployment push concept, which argues that rising unemployment, as a consequence of recession or restructuring of the economy will encourage laid off workers to start their own businesses. Acs, Audretsch and Evands (1994) have employed this variable in attempt to explain the variation in self-employment rates in OECD countries, although it was not significant. However, Audretsch, Carree and Thurik (2001) developed a model of causal relationships between entrepreneurship and unemployment, which they estimated again for OECD countries and found that entrepreneurship reduces unemployment, while unemployment stimulates self-employment. Since restructuring also plays important role on the labour market in Croatia, we decided to include it in the estimates.

3. Share of employment in public sector obtained as the share of employed that work in the public sector (firm, institution, organization). The inclusion of this variable is also motivated by the speed of restructuring argument. It is argued that the counties with higher share of public sector employment are the counties where the restructuring process is slower and/or the counties where the entrepreneurship climate is not developed.

4. Relative average net wage of the self-employed in comparison to the average net wage in the county. This variable is included to capture the effect of income disparity, which may stimulate the rate of self-employment (Ilmakunnas, P., V. Kanniainen and U. Lammi 1999). If the individuals perceive self-employment as prosperous activity, than they would be more inclined to start their own business. This variable is the main reason why the sample size of the estimation is limited to the 2000-2008 period, since the data was not available in the LFS prior to the year 2000.

The dependent variable was submitted to the battery of panel unit root tests, in order to detect whether there would a need to transform its values or whether there would be possible cointegrations with other variables. However, since all the tests rejected the hypothesis of unit root, which can be seen in Table 1, the analysis proceeded with the estimation of the model in levels.

TABLE 1 Results of panel unit root testing for the dependent variable

Panel unit root test			
Levin, Lin and Chu	Im, Pesaran and Shin	ADF-Fisher	PP-Fisher
3,68***	-1,74**	56,96*	92,92***

Source: author's estimates.

*Notes: reject the null of unit root at the level of significance *** 1%, ** 5%, * 10%.*

The results of the estimation are presented in the following table.

TABLE 2 Determinants of regional differences in self-employment in Croatia, estimates based on 2000-2008 LFS data

Regressors	Estimated coefficients
Constant	46,58***
	(7,24)
Education	-1,62**
	(-2,42)
Unemployment rate	-0,02
	(-0,28)
Public sector employment	-0,29***
	(-3,19)
Relative wage	-1,20
	(-0,39)
Number of observations	189
R-squared	0,83
LR – redundant fixed effects	
- Cross section/period F statistics	5,32***
- Cross section/period Chi-square	126,64***
Residuals normality Jarque-Bera	74,56***

Source: authors' calculations.

Notes: Coefficients marked *** are significant at a level of 1%, ** at a level of 5%, * at a level of 10%, while t-values are presented in brackets below the regression coefficients.

Cross section weights (PCSE) standard errors and covariance applied.

Due to the relative shortness of the available data sample, the overall characteristics of the model indicate that the results should be interpreted with caution. However, we can still draw certain conclusions even from this rather simple estimate:

1. As already intuitively seen from the data presented on Figure 2, the higher share of the self-employment in the region is associated with lower educational attainment of the self-employed in comparison to the average employed population.

2. Regional unemployment differences are not significant in explaining regional differences in self-employment. The estimated coefficient is, although negative, rather small. This implies that high regional unemployment rate will not be related to higher share of self-employment. In other words, during the analyzed period, the regions where the unemployment was high were not able to stimulate more intensive job creation through self-employment on average, even though there were certain financing programmes available for the unemployed to initiate self-employment projects through the Croatian Employment Service.

3. The interesting result is that the higher the share of employment by public sectors in the county, the lower the share of self-employment. Although causal effects cannot be determined within this simplified framework, it could be argued, based at least by the anecdotal evidence and ad hoc survey results, that this is the evidence of the crowding out effect. The public sector can be seen as one of the most desirable employers in Croatia, mostly related to the idea that public sector employment is more secure. This could also be the explanation for the smaller success of the programmes aimed at increasing job creation through the self-employment.

4. The final indicator included in the regression is the relative wage of the self-employed in comparison to the overall employed. The estimated coefficient is not significant, but the sign confirms the notion that the higher the share of the self-employed in the county, the lower their average wage on average is. This is another consequence of the type of self-employment dominant in Croatia, which is mostly related to the agricultural activity, and furthermore, the agriculture not strongly oriented towards the wider market, but probably more towards small size production locally oriented.

The analysis conducted so far has indicated that the most important factor behind the regional differences in self-employment in Croatia is related to the structure of economic activity. Specifically, the dominance of the public sector employment in the county acts adversely to the self-employment share. The other important factor is the available human capital. This second factor is related to the structure of self-employment itself in Croatia, where the agricultural sector dominates.

4   SELF-EMPLOYED FROM AN INDIVIDUAL PERSPECTIVE

Another approach to exploring the regional differences in self-employment in Croatia is to reconsider the issue from an individual – level perspective. The approach used in this paper is to estimate the probability of being self-employed versus having other types of employment.

This segment of the analysis is conducted using only the LFS data for 2008, with focusing on the sample already used in the regional level approach. The variables chosen for this analysis are common in the labour market literature in general, but are also frequently considered in the analysis of self-employment determinants. Notwithstanding this fact, each will be briefly explained.

Age. It is more likely that the person will not become self-employed directly from school, as they frequently do not yet have the required working skills demanded by the labour market. Blanchflower, Oswald and Stutzer (2001) have proposed

that the middle age cohorts usually have the highest rates of self-employment. In order to incorporate these arguments in the analysis, the overall sample was divided into 10-age cohorts, for which the dummy variables were constructed. The age cohort 26-35 was chosen to be the reference cohort, as it avoids the very young, who are either entering labour market from the secondary education or still participating in the tertiary education. It at the same time concentrates on those who are still not in paid employment for too long to be discouraged by the prospects of starting their own business.

Marital status. The link between the labour market outcome and marital status has also been analysed in the literature from very different aspects, most of which fall under the category of family economics. The intention in this paper was not to put emphasis on the marital status, but rather to include it as a control variable. Therefore, only three different categories of marital status were considered. Individuals either married or cohabitating are classified as married. Individuals divorced, widowed or separated are classified as divorced. The third category is singles, which is used again as a reference variable.

Gender variable is frequently included with the result that women are less likely to be self-employed than men. Although not shown in the preliminary analysis, this assumption is intuitively clear for the Croatian society as well. The gender is included in the analysis via dummy variable, taking the value of 1 when the person is female.

Immigrant[7] status is frequently included in the analysis, as the empirical results that they are quite important and significant in some countries (see, for instance, Delmar and Davidsson, 2000). Croatia is not dominantly immigration country with various cultural subgroups that instead of integrating in formal local labour markets tend to start their own business and work as self-employed almost during their own working life in the foreign countries. The main reason for inclusion of the variable is that it is frequently included in the analysis in similar studies in other countries.

Education[8] is a human capital variable, and it is frequently assumed that higher

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[7] In this paper immigrant status definition is very wide in order to avoid small population subgroups. All persons not born in Croatia are considered immigrants.

[8] Categories of level of education in LFS refer to the categories defined by the CBS, as

education leads to increased self-employment propensity. Both the preliminary analysis and the analysis on the regional level reveal that education seems to be important determinant of self-employment in Croatia as well. To account for possible nonlinearities in the effect of education on the probability of being self-employed, instead of using the years of schooling, the education was included in the estimates with the specification of three dummy variables, with the middle one used as the reference. However, some authors claim that effect of education differs according to different occupations. Lee, Florida and Acs (2004) found that for persons with post-secondary education, there is a positive tendency to start new businesses in service sector, and at the same time negative tendency for those in manufacturing.

For these reasons, occupation of individuals is also included in the analysis via a list of occupational dummy variables, based on the categories defined according to the ISCO classification. Based on the available data from the LFS, occupation in the analysis is defined as the occupation of the main job listed by the employed person. The overall sample included also individuals with "military" and "unknown" occupation. Due to the fact that their number was relatively small, they were excluded from the sample used for estimation. The reference occupational category in the estimation results is "technician".

County dummies have been included in order to capture the regional differences, which are the special focus of this paper. The reference county for the analysis is City of Zagreb. The results of the estimation are presented in the following table.

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published in Statistical Yearbook (Državni zavod za statistiku, 2008.). As lower secondary education, categories "No school", "1-3 basic school grades", "4-7 basic school grades" and "Basic school" are considered. As upper secondary education, categories "School for skilled and highly skilled workers", "Vocational secondary schools" and "Grammar school" are included. As tertiary education, categories from "Non-university college" to "Doctorate" are considered. The detail structure of employed, unemployed, and inactive by education is generally available in LFS First Release.

TABLE 3 Probit estimation, predicting the self-employment vs. other employment status

	Estimated coefficients (robust standard errors)	Marginal effects (at x-bar)*100
Constant	-1,95***	
	(0,12)	
Age (vs. 26-35 years old)		
- up to 25	-0,46***	**-0,05**
	(0,13)	
- 36-45	0,27***	**0,05**
	(0,07)	
- 46-55	0,31***	**0,05**
	(0,07)	
- older than 55	0,37***	**0,07**
	(0,08)	
Marital status (vs. single)		
Married	0,22***	**0,03**
	(0,07)	
Divorced	0,46***	**0,09**
	(0,10)	
Female	-0,35***	**-0,05**
	(0,05)	
Immigrants	0,07	0,01
	(0,07)	
Education (vs. upper secondary education)		
Lower secondary	-0,12*	**-0,02**
	(0,06)	
Tertiary	-0,62***	**-0,07**
	(0,10)	
Occupation dummy variables (vs. technician)		
Managers	2,63***	**0,80**
	(0,10)	
Professionals	0,79***	**0,18**
	(0,13)	
Clerical support workers	-0,36***	**-0,04**
	(0,12)	
Service and sales workers	0,35***	**0,06**
	(0,09)	
Skilled agricultural, forestry and fishery workers	2,56***	**0,75**
	(0,10)	
Craft and related trades workers	0,18*	**0,03**
	(0,09)	

End of table 3.

Plant and machine operators, and assemblers	-1,20* (0,11)	**-0,03**
Elementary occupation	-0,68*** (0,17)	**-0,07**
County dummy variables (vs. City of Zagreb)		
Zagrebačka	-0,08 (0,10)	-0,01
Krapinsko-zagorska	-0,22** (0,11)	**-0,03**
Sisačko-moslavačka	-0,11 (0,12)	-0,02
Karlovačka	-0,13 (0,14)	-0,02
Varaždinska	-0,04 (0,11)	-0,01
Koprivničko-križevačka	0,11 (0,11)	0,02
Bjelovarsko-bilogorska	-0,33*** (0,12)	**-0,04**
Primorsko-goranska	0,10 (0,12)	0,02
Ličko-senjska	0,35** (0,14)	**0,07**
Virovitičko-podravska	0,14 (0,12)	0,02
Požeško-slavonska	0,01 (0,16)	0,00
Brodsko-posavska	0,00 (0,12)	0,00
Zadarska	-0,08 (0,13)	-0,01
Osječko-baranjska	0,00 (0,10)	0,00
Šibensko-kninska	0,30 (0,20)	0,06
Vukovarsko-srijemska	-0,25* (0,14)	**-0,03**

Splitsko-dalmatinska	0,10	0,02
	(0,10)	
Istarska	0,28**	**0,05**
	(0,11)	
Dubrovačko-neretvanska	-0,02	-0,00
	(0,17)	
Međimurska	0,23*	**0,04**
	(0,12)	

N		9416
LogL		-2136,33
Wald (38) chi^2		3177,44***
Pseudo R^2		0,52
Prediction (%)		92,37
Hosmer-Lemeshow		38,59***
Classification table		True
Classified	Self employed	Other employment
Self employed	1334	359
Other employment	359	7364

Source: author's estimates.

Note: Coefficients marked *** are significant at level of 1%, ** at level of 5%, and * at level of 10%

Marginal effects are evaluated at the mean of the sample data. The marginal effect of specific variable is expressed as the percentage point changes from this level of the predicted probability of self-employment at the mean of the data. For dummy variables, the marginal effect represents the change in the probability of self-employment for persons with and without that characteristic, holding other characteristics constant at the same time.

The characteristics of the model in general are favourable. All the variables are jointly significant, as confirmed by the Wald statistics, McFadden's statistics is also relatively high, and the prediction rate of the model is satisfactory. Even though the sample consists of unbalanced 2 subgroups (self-employed and other employees), the model does not seem to suffer from the usual unbalanced sample problem (Greene, 2000: 833).

The analysis reveals that the probability that the self-employed in Croatia belong to the population subgroups of those older than 35 years are higher (when

compared to the age group 26-35), which is consistent with the results obtained for other countries. Younger population (aged 16-25) is also less likely to be self-employed. In terms of age structure, Croatia exerts no specific behaviour, as self-employment usually requires certain amount of available working skills, which most of the self-employed first obtain by working for another employer, and then decide to start their own business.

The results of marital status variable are also probably related to the results of age variables. Specifically, since the reference category is being single, the category which predominately consists of younger population, the other categories are intuitively more likely to be self-employed, since they are at the same time more likely to have prior working experience.

Also, the negative and significant predictor for women to be self-employed is expected. It confirms the results of similar studies in other countries, but also confirms the intuitive reasoning for Croatian labour market.

The small and insignificant coefficient for immigrant status in Croatia is also expected, since Croatia was mostly emigration and not immigration country during the analyzed period.

The results related to education are interesting. It seems that, in comparison to medium level of education, both persons with lower and higher education levels are less likely to be self-employed. The estimated marginal effect is even more pronounced in the case of higher education. The reason behind these results is probably related to the fact that the overall subsample of the self-employed was included in the analysis. It would be interested to see whether the same conclusion holds it the sample contained only non-agricultural self-employment.

Occupation variables are all significant. The highest positive marginal effect indicating the strongest positive predictor for self-employment is in the occupation of "managers" and "agricultural workers". This is not surprising. The first result is attributed to the fact that most small business owners consider themselves managers. The second result is related to the fact that among the self-employed there is a large share of those working in agriculture. The strongest negative predictor of self-employment is for those persons working in elementary occupations. The reason for this is that they probably do not have the skills which

would allow them to work independently. Instead, they are more likely to be a part of more complex work organization, where there is a division of labour, and their work contributes to the final product in a certain segment.

Finally, regional perspective is taken into account. First, it can be noticed that only few county dummy variables are significant. When comparing to City of Zagreb, the strongest positive predictor of self-employment is for persons from Ličko-senjska county, followed by Istarska and Međimurska county. Strongest negative predictor is Bjelovarsko-bilogorska county, followed by Vukovarsko-srijemska and Krapinsko-zagorska. Unfortunately, these results cannot be straight-forwardly related to the analysis presented on the regional level. The main reason behind this is probably related to the sample design, which is not supposed to be representative at the county level, and thereby the results might strongly differ from year to year. Thereby, the county dummies results should be treated with caution.

5   CONCLUSIONS

The paper has addressed two questions. The first one is what the differences between the self-employed individuals and those who are employees in Croatia are. The second one is why shares of self-employed in some Croatian counties are higher. The answers to both are looked for in the Labour Force Survey data. The regional differences question was sought on the data sample covering 1998-2008 period, while the individual self-employment predictors where analyzed based on the LFS results for the year 2008.

The results of the analysis conducted on the level of region suggests that public sector employment is negatively related to the self-employment share and that the educational attainment of the self-employment is also significant for explaining the differences across Croatian counties.

Analysis of the individual level data in the segment of demographic variables confirms the results of similar studies in other countries, with the exception of immigrant status, which was not found significant in Croatian case. The interesting results come from the analysis of education variable, where both

persons with lower and higher levels of education are less likely to be self-employed. Occupational variables reveal the underlying structure of the self-employment in Croatia, but also imply the high heterogeneity. The regional dummies are significant only for certain counties and their sign cannot be easily interpreted based on the information available from other indicators analyzed through the LFS data.

Due to the quality of the underlying data source used for the analysis, the results presented here should be taken with caution. Further research endeavours should be focused on the self-employment in the non-agricultural sector. The more insight could be also gained from matching the LFS data with other possible available sources on individual and regional level. However, even the results presented so far enables us to conclude that regional differences in self-employment in Croatia exist. Whether this can be extended to the question of the differences in entrepreneurial propensity of Croatian counties, remains open for future research.

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