THE RELATIONSHIP BETWEEN LABOUR MARKET STRUCTURE AND THE PREVALENCE OF ‘NECESSITY’ SELF-EMPLOYMENT

– A MULTILEVEL APPROACH

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Preface

Initially, we would like to express our sincere thanks to our tutor Daniel Larsson, Director of Studies at the Department of Sociology at Umeå University. We are extremely grateful for your valuable advices about R-statistics, scientific method in general and multilevel analysis in particular. We also want to thank you for your interesting lessons in Star Trek-trivia, as well as increasing our understanding of why Linux operating systems are preferable.
Abstract
This paper contributes to the field of research on entrepreneurship and self-employment. More explicitly, it contributes to the research regarding heterogeneity by studying the ‘necessity’ self-employed. In this paper, we question the notion of ‘necessity’ and its connection to weak labour market attainment by measuring individual’s human capital in relation to local labour market structures. The used data derives from relevant labour market data combined with data from a postal survey study conducted in 2011, containing self-employed between the age 25–64. The results show no connection between labour market attainment and ‘necessity’ self-employment. The results however indicate a correlation between sociodemographic-aspects and ‘necessity’ self-employment.

Keywords: necessity, involuntary, self-employment, entrepreneurship, human capital, labour market position, labour markets, multilevel, interaction effect
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Introduction

In the field of labour market studies, entrepreneurship and self-employment have in recent years become an increasingly popular area of research. Recent studies regarding entrepreneurship and self-employment has however focused on highlighting heterogeneity among the self-employed (see e.g. Arum & Muller, 2004). One distinction that has been found is between the so called ‘opportunity’ self-employed and those that are self-employed out of ‘necessity’ (see e.g. Block & Wagner, 2007). The term ‘necessity’ refers to self-employed that prefer to be regular employees (Dennis, 1996; Johansson Sevä et al., 2016). This can be seen as a bit counterintuitive, since self-employment is usually associated with entrepreneurialism and an active choice to seek opportunities outside of the regular labour market. The notion of ‘necessity’ have therefore been generally associated with individuals weak labour market position, where self-employment are presented as the only alternative to avoid unemployment on the regular labour market.

There are however several questionable aspects that should be noted on the operationalization of ‘necessity’ self-employment. In previous studies, the ‘necessity’ self-employed are usually distinguished by one or a few survey questions regarding respondents current attitude to self-employment, while others defines ‘necessity’ as those previously unemployed who have turned into self-employment. This is a potential problem since the reason to why some self-employed prefer to be employees can derive from various aspects, where necessity may be only one, and maybe not even the most important aspect. Previous research (Shane, 2010) have found that new entrepreneurs often invest on an already established market, thus finding it difficult to be successful and competitive. It is possible that the ‘necessity’ self-employed relates to these kind of entrepreneurs, finding it difficult to be competitive which in turn entails a longing back to regular employment. The ‘necessity’ self-employed have also been found to be older than ‘opportunity’ self-employed (Block & Sandner, 2009; Verheul et al., 2010), which may indicate a general tiredness after a long work life. Even so, in research this group of self-employed are generally assumed to be so due to ‘necessity’, derived from a weak labour market position.
Labour market position have mainly been defined by the individual’s level of human capital. Results in previous research regarding human capital and ‘necessity’ self-employment is however ambiguous. Some have found that ‘necessity’ self-employed tend to have lower human capital compared to ‘opportunity’ self-employed (see e.g. Poschke, 2012, Malchow-Moller et al., 2010). Other have on the contrary not found any differences in human capital between ‘necessity’ self-employed and ‘opportunity’ self-employed (see e.g. Block & Wagner, 2006; Block & Sandner, 2009; Verheul et al., 2010; Johansson Sevä et al., 2016).

A common deficiency with these studies is that individual’s human capital, measured as education, have been used as an indicator of labour market position. However, since labour markets consists of a relationship between supply and demand, labour market position should thus be viewed as a dualistic phenomenon. Furthermore, this makes it reasonable to believe that individual human capital on its own is not a fully accurate measurement in determining the labour market position of individuals. Labour market position should instead be determined by individual’s access to human capital in relation to labour market conditions. In other words, the value of individual human capital will presumably differ depending on what is requested in a certain labour market context. This deficiency in previous measurement might be explained by the fact that the field of research regarding ‘necessity’ self-employment is fairly new, but also because there are few suitable methods to fully examine labour market position. Still, the notion of ‘necessity’ self-employment exhibits a complexity that implies a need for further studies.

Based on the above mentioned, it is likely that individuals labour market position are affected by the structure of the labour market. If ‘necessity’ self-employment indeed derives from a weak labour market position, as argued in previous literature, it is also likely that the labour market structure will affect the prevalence of ‘necessity’ self-employment in labour markets.

The aim with this paper is thereby to examine the interaction between individual human capital and contextual factors within labour markets. By doing this, it will be possible to see how labour market contexts affect the prevalence of ‘necessity’ self-employment, but also if the ‘necessity’ self-employed really are connected to a weaker labour market position. To conduct analyses, we use data from the “Employment, material resources, and political
preferences” (EMRAPP) survey, conducted in Sweden during 2011, combined with relevant labour market data collected by Statistics Sweden. This study contributes to the field of research regarding self-employment and entrepreneurship in general. More explicitly, by focusing on ‘necessity’ self-employed it contributes to the literature highlighting heterogeneity in self-employment, and the complexity regarding labour market position.

**Previous research**

Self-employed have in recent research been presented as a heterogeneous group with a wide variety of experiences and motives for self-employment (see e.g. Arum & Muller, 2004). Studies focusing on the prevalence of ‘necessity’ self-employment have found it to be a relatively widespread phenomenon. A study using data from the OECD countries shows that around 21% of the self-employed are so by ‘necessity’ (Poschke, 2012). Furthermore, studies of the entrepreneurial activity in Sweden have found that the distribution of ‘necessity’ self-employed was around 10% during 2011 (Braunerhjelm et al., 2012; Johansson Sevä et al., 2016). Recent studies on this phenomenon have also highlighted some troubling concerns regarding the ‘necessity’ self-employed. Firstly, ‘necessity’ self-employed have been found to experience low work autonomy and job satisfaction as well as high work-family conflict (Johansson Sevä et al., 2016). Other studies have found that ‘necessity’ self-employed experience higher levels of perceived economic vulnerability compared to ‘opportunity’ self-employed (Johansson Sevä, 2016).

Several examples of explanatory labels have been used to define ‘necessity’ self-employment. For example, terms as ‘necessity’ (Acs et al., 2004; Poschke, 2012; Tyszka et al., 2011), or ‘involuntary’ self-employment (Kautonen et al., 2009) have been commonly used and are both referring to individuals that became self-employed due to a lack of other alternatives, thus would prefer to be in a regular employment. The notion of ‘necessity’ self-employment is also linked to the push/pull factors, frequently discussed in previous literature on entrepreneurship and self-employment (e.g. Amit & Muller, 1995; Dawson et al., 2009). The concept of push/pull factors highlights why some of the self-employed are driven by opportunity while others are self-employed out of necessity. ‘Opportunity’ self-employed are perceived to be attracted to self-employment for positive reasons, e.g. seizing a business
opportunity during an economic boom. ‘Necessity’ self-employed are instead perceived to be pushed into self-employment due to negative factors, such as a lack of available vacancies during a period of recession (Dawson et al., 2009)

Individual’s prospects on the labour market is largely affected by their possessed level of human capital. The probability of seizing a profitable business opportunity or being competitive in today’s labour market is highly dependent of individuals’ access to skills and knowledge that are relevant in a labour market context. Human capital consists of education that can derive from schooling or within-work education (Weiss, 2015). Human capital theory states that knowledge increases individual’s efficiency and productivity (Schultz, 1959; Becker, 1964; Mincer, 1974). Individuals with higher levels of education is therefore considered as more appealing labour force suppliers due to their higher stock of knowledge, or knowledge of a better quality (Davidson & Honig, 2003; Shane, 2000). Individuals with higher levels of education are also believed to have acquired abilities to better recognize opportunities and potential risks in their labour market environment, which may improve their prospects as entrepreneurs (Shane, 2000).

Research regarding the connection between human capital and ‘necessity’ self-employment is fairly new and therefore relatively uncharted. Bhola et al. (2006) studied sociodemographic differences among ‘opportunity’ and ‘necessity’ self-employed. Their results indicates that individuals with lower human capital are more likely to be pushed into self-employment, whereas individuals with higher human capital are more likely to become self-employed due to pull factors. Other studies on the relation between ‘necessity’ self-employment and human capital is ambiguous. Some studies have found that ‘necessity’ self-employed seem to be connected to lower levels of completed education in comparison to ‘opportunity’ self-employed (Poschke, 2012; Malchow-Moller et al., 2010). Others have not found any difference between ‘necessity’ self-employed and ‘opportunity’ self-employed regarding educational attainment (Block & Wagner, 2006; Block & Sandner, 2009; Verheul et al., 2010; Johansson Sevä et al., 2016). The commonality with these previous studies is that reliable conclusions regarding the connection between human capital and weak labour market positioning is difficult to draw. This as previous studies on this connection have merely focused on one side of the phenomenon, namely the individual human capital.
It should be noted that individual brings their asset of human capital onto a labour market with already established structures and conditions which affects the request for labour force. Moreover, these aspects are not something that the single individual can influence. Individual’s prospects on the labour market are thus highly determined of to which extent their human capital matches the requested human capital in their local labour market. If an individual with low human capital is positioned on a labour market where the general level of human capital is fairly high, that individual will presumably be less competitive in relation to other, more well-educated, individuals. However, if the structure of human capital on the labour market is generally low, the same individual will presumably have a stronger labour market position, therefore being less likely to become self-employed out of ‘necessity’. The labour market requests of individual human capital can also be affected by other contextual factors, such as unemployment levels, industry branch structure and economic conditions, all together affecting the supply and demand of human capital.

The aspects discussed above are all vital factors that should be taken into account. To our knowledge, no one has however examined the asset of individual human capital in relation to the requested human capital in labour markets. Moreover, there has been no attempt to determine labour market position of the ‘necessity’ self-employed, based on the idea of an interaction between individual human capital and contextual labour market factors. This paper will therefore, in order to further examine the connection between labour market position and ‘necessity’ self-employment, study the interaction between individual human capital and labour market structure.

Method and data

Data

This study uses data from the “Employment, material resources, and political preferences” (EMRAPP) study, conducted by Statistics Sweden at the request of Umeå university. The study was conducted in 2011 with the main purpose to compare self-employed with regular employed regarding material resources, political preferences and working conditions. The
survey does therefore contain a relatively large sample of self-employed, as well as a representative sample of Swedish non-self-employed between the ages 25–64. In total, the study contained 11967 individuals, with a response rate of 41.4% among the self-employed and 42% among other respondents. A response analysis was conducted, showing a bias in terms of underrepresentation among low-income earners and younger individuals, whereas older individuals and high-income earners are overrepresented in the data.

**Ethical considerations**

The EMRAPP-study have used a randomized sample when collecting the data. Since the study contains questions regarding respondents health as well as other areas that might be of a sensitive nature, it has been ethically reviewed by the ethical review board at Umeå university (ref DNR: 2011-101-31 Ö). In order to conduct the analyses in this study, register data have been used as a complement to the EMRAPP-data. To guarantee respondents integrity, all data used have been anonymised in order to ensure complete anonymity for the respondents.

**Variables**

‘Necessity’ self-employment

The dependent variable in this study is the individual level variable identifying ‘necessity’ self-employed. In order to identify this group, register data on all self-employed during 2011 have been gathered from Statistics Sweden’s longitudinal integration database for health insurance and labour market studies (LISA by Swedish acronym). To further sort out the ‘necessity’ self-employed, following question from the EMRAPP-study is used: “If you had the possibility to choose, would you rather be working as a self-employed or as a regularly employed?” The question shows that around 13% of the self-employed in the dataset are so by ‘necessity’, which conforms with previous research finding around 10% of self-employed being so out of ‘necessity’ (Braunerhjelm et al, 2012; Johansson Sevä et al., 2016).
Individual human capital

As mentioned earlier, human capital can be viewed as an important determinant for individuals labour market positioning. Individual level human capital is therefore the main independent variable of interest in this study. Human capital is measured through an EMRAPP-survey question, where the respondents are asked to state their educational level. Possible answers reaches from 1 to 6, where 1 represents elementary school and 6 represents university studies for a minimum of three years and with a university degree. Since the variable values does not have equidistance, the question was dichotomized in order to be useful in multilevel analyses. Values 1, 2 and 3 (elementary school up to theoretically oriented secondary education) were merged and labeled as “lower education” and values 4, 5 and 6 (university education without graduation up to university degree for 3 years or longer) were merged and labeled as “higher education”.

The notion of human capital includes other educational resources than formal education. Due to shortcomings in the EMRAPP-data, formal education will be used as the only human capital measurement. This is however a measurement commonly used in previous research (see e.g. Poschke, 2012; Malchow-Moller et al., 2010; Johansson Sevä et al., 2016), making it applicable in this study as well.

Local labour markets

As mentioned earlier in this paper, individual human capital is an important asset that in relation to the demanded human capital determines individuals’ labour market position. The individual human capital becomes more or less valuable depending on what is requested on the labour market in which the individual is active. Local labour market regions is therefore used as geographical division in this paper, since it is this type of market that is most applicable for the single individual.

The term was established in the end of the 1980’s by Statistics Sweden, based on commuting patterns between municipalities. The amount and direction of commuting defines which municipality should be part of which local labour market region. The classification is
functional and aims to delineate geographical regions or regions that independently of other regions works as fully functioning labour market segments (SCB, 2005; SCB, 2010).

In order to examine the relation between ‘necessity’ self-employment and labour market conditions, Statistics Sweden's labour market division from 2011 is used. Since Statistics Sweden's division (2011a) uses the same municipality codes as the EMRAPP dataset, it was possible to connect individuals to labour market belonging. Statistics on contextual differences between municipalities was also possible to aggregate based on labour market belonging.

**Measurements of labour market contexts**

As mentioned above, individual’s labour market position depends partly on the individual characteristics. That position is however also expected to be affected by certain labour markets contexts. Labour market position can thereby be seen as the interaction between individual level aspects and contextual level aspects. The variables used to measure contextual level aspects on the labour market will be presented below.

**Human capital structure**

The human capital structure within local labour markets can be seen as a measurement of human capital demand. A highly educated labour market is expected to have a corresponding high demand of human capital, which in turn would affect individual’s labour market position. In order to measure education on a contextual level, register data from Statistics Sweden (2017) is used. The collected register data shows educational levels during 2011 on the population between 16-74 years within municipalities, and have been aggregated to the local labour market level defined by Statistics Sweden (2011a). Education is measured on seven levels, the lowest level representing elementary school for maximum 9 years and the highest level representing postgraduate studies. The variable have been dichotomized where levels between elementary school and secondary school for three years is merged and labeled as “lower education”, and levels between post-secondary education for less than three years and postgraduate studies is merged and labeled as “higher education”.


A high contextual human capital could however also indicate saturation of a certain human capital on the labour market, with an increasing demand of a lower individual human capital. This eventuality is however difficult to take into consideration due to the lack of more accurate data, making contextual human capital within labour markets the closest measurement of labour market demand.

**Unemployment levels**

As mentioned earlier, previous research have highlighted unemployment as a push factor for self-employment. A study by Aaronson et al. (2004) found that high unemployment rates correlated with high amounts of unincorporated self-employment, which seemed to be connected to a weak labour market created by recession. This push factor makes it relevant to include contextual level of unemployment in this study and examine its connection to ‘necessity’ self-employment. Moreover, unemployment levels within labour markets might affect the value of individual human capital. For example, a high level of unemployment should lead to an increased competitiveness on the labour market, making individual human capital differently valued than on a labour market with low unemployment levels.

To measure contextual unemployment levels, statistic data from the employment agency Arbetsförmedlingen (2016) was collected. The data includes unemployment numbers during 2011 in each municipality in Sweden. Unemployment numbers and municipality codes were then aggregated to local labour market level, giving a overlook of unemployment levels in labour market regions.

**Gross regional domestic product**

Previous research have indicated a relation between regional economic condition and the prevalence of self-employment. Alba-Ramirez (1994), Evans and Leighton (1989), von Greiff (2009) and Scheutze (2000) have found economic recession to work as a push factor, increasing the amount of self-employed. Findings by Garofoli (1994) and Audretsch and Fritsch (1994) however indicates the opposite, self-employment numbers decreasing during economic downfall. Furthermore, the distribution of ‘necessity’ self-employed have been found to vary depending on the country's gross domestic product (GDP), were a higher GDP per capita relates to fewer ‘necessity’ self-employed (Acs et al., 2004; Poschke, 2012). Since
there seem to be a connection, although contradictory, between economic conditions and self-employment, the push effect connected to economic conditions will be further examined in this study. Changes in the labour markets surrounding economy is expected to impact the value of individual human capital and thereby the prevalence of ‘necessity’ self-employed.

In order to study economic conditions within labour markets, statistic of regional gross domestic products (GRDP) is used. GRDP is an activity related measurement showing the quantity of a region's production (SCB, 2005; SCB, 2014). This study uses the measurement of GRDP per inhabitant, previously used by both Eurostat and Statistics Sweden. GRDP per inhabitant is affected by the population structure where a region with a substantial part of the population outside of the labour market tend to get a lower GRDP per inhabitant than a region where a larger part of the population takes part in the production. Since no data from 2011 was available, statistic gathered by Statistics Sweden (2015) of GRDP within municipalities during 2012 have been used to create the economic measurement. Based on municipality codes, each municipalities value has then been aggregated to a value representative for the whole labour market.

Since resources produced in a region is common for the whole country, GRDP can unlike the national measurement GDP not be solely used to measure a region's economic condition. Individuals within a country is however covered by the same social security system and have the same access to higher education. When comparing economic growth between countries, social security systems and economic policies will instead differ between countries. Disparities in measured economic growth is hence not equal to disparities in wealth. An advantage by using GRDP is therefore that institutions such as social security systems are equivalent between local labour market regions, making conditions for economic growth comparable between regions.

Industry branch structure

Similar to labour markets, business sectors also have distinguishing characteristics, i. e. different entry and exit conditions, which affects to what extent self-employment occurs in a certain sector (Bates, 1995). A variety of characteristics determine how open a sector is for self-employment. Firstly, the sectoral structure may include many or few branches with a
high degree of competitiveness, as well as an absence of monopoly or oligopoly. Secondly, the organisational structure may be more or less favourable for openness due to the nature of the business. For example, capital-intensive production may lessen the openness for self-employment while labour-intensive production tend to open up for self-employment. Finally, requirements and restrictions from public and private organisations may increase or decrease a sector’s openness to self-employment (Ohlsson et al., 2013). It is therefore possible that an individual with a weak labour market position would have an increased risk of being pushed into self-employment if the dominant businesses in a labour market region is fairly open and accessible for new business start-ups.

In order to examine the distribution of industries on a contextual level, register data from Statistics Sweden (2016) have been used. The register data contains numbers of individuals working in different industries during 2011, and is based on the SNI 2007 division. Industry branches has then, based on Almega’s (2017) definition, been divided into two categories: “service sector” and “manufacturing sector”. Manufacturing sector consists of the main SNI 2007 groups 10-33, while service sector consists of the main groups 45-96. The data was then aggregated to represent distribution of industries within labour markets.

**Interaction effects**

The assumption in this paper is that *individual human capital* should correlate with *contextual labour market factors*, affecting individual's labour market position. The labour market structure, affected by supply and demand of human capital, economic conditions, unemployment levels and industry branch structure, are expected to affect the value of human capital. For example, on a labour market with high unemployment levels, the individual human capital would need to be higher in order to be competitive. In order to explore the correlation between labour market position and ‘necessity’ self-employment, test for interaction effects between individual and contextual factors will therefore be included in this study.
Confounders

There is reason to believe that there might be confounding variables affecting the relation between ‘necessity’ self-employed and labour market position. Previous research have identified gender, age and ethnicity to have significance for ‘necessity’ self-employment. Studies have for example shown that the probability of becoming ‘necessity’ self-employed may differ between men and women (Poschke, 2012; Tervo & Haapanen, 2010; Dawson & Henely, 2012), possibly due to discrimination on the labour market (see e.g. Elson, 1999). Gender has therefore been used as a confounder, and have been coded so that 0 represents men and 1 represents women. As shown in Table 1, a majority of the self-employed are men. Among the ‘necessity’ self-employed the proportion of women is however higher, indicating that women's human capital may be received differently on the labour market than men's.

Table 1. Descriptive statistics of the confounding variables

<table>
<thead>
<tr>
<th></th>
<th>Self-employed</th>
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<th>'Necessity’ self-employed</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. dev.</td>
<td>Range</td>
<td>Mean</td>
</tr>
<tr>
<td>Gender</td>
<td>.27</td>
<td>.45</td>
<td>0–1</td>
<td>.36</td>
</tr>
<tr>
<td>Age</td>
<td>50.95</td>
<td>9.35</td>
<td>25–64</td>
<td>51.77</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.40</td>
<td>1.41</td>
<td>0–9</td>
<td>.67</td>
</tr>
</tbody>
</table>

Research have also indicated that ‘necessity’ self-employment is more common among older individuals (Block & Sandner, 2009; Verheul et al., 2010). Table 1 displays the age variable ranging from 25 to 64 years where the mean age among ‘necessity’ self-employed being similar to the mean age among ‘opportunity’ self-employed, 51 years versus 52 years. Despite the small age difference between the two groups of self-employed, age will be used as a confounder since previous research have found it to be of significance. In order to take the possibility of a nonlinear relationship into account, the original variable was recoded so that ages from 25 to 39 were merged as one group, age 40 to 55 were merged as a second group, and ages from 56 to 64 as a third group.

Ethnicity have also been found to affect the probability of becoming ‘necessity’ self-employed, with immigrants being an overrepresented group (Andersson & Wadensjö, 2004; Dana, 1997). Research have shown immigrants to be victims of discrimination on the labour
market (see e.g. Nilsson & Wrench, 2009), which may push this group into self-employment. In order to investigate correlations between ethnicity and self-employment, data from Statistics Sweden's (2011b) LISA-register was used. As viewed in Table 1, ‘necessity’ self-employed are to a higher extent born outside of Sweden compared to ‘opportunity’ self-employed. The ethnicity variable have been recoded into larger categories, with Sweden as a own category, the EU-countries and Norway in one category, and countries outside of EU as a third category.

**Method**

Since individuals in the data are nested in their local labour markets, linear regression modelling is not a suitable analytic method. In hierarchically organized data the analysis units are dependent of each other, creating a possible risk of underestimating the standard errors, which can lead to an overestimation of statistical significance (Hox, 2010). To avoid this risk, multilevel modeling is used as it makes it possible to analyse individuals in the context which they function (Finch et al., 2014). Multilevel models uses the maximum likelihood estimation method that estimates which parameter values that maximizes the likelihood of making the observations given the parameters (Finch et al., 2014). Both fixed effects and random effects will be tested for in a mixed model. It is appropriate to check for random effect when a variation within a variable is suspected (Wooldridge, 2016). In this case it is plausible to assume the effect of human capital to differ between labour markets.

In order to study how contextual differences within labor market region’s affects labour market position and thereby the prevalence of ‘necessity’ self-employed, aggregations were conducted. Through aggregation, it is possible to move lower level variables to a higher level (Hox, 2010). Aggregated data on local labour market level was created with each of the contextual variables, i.e. unemployment, human capital, GRDP and industry branch structure.

To conduct analyses, R Statistic have been used as the primary tool. R is a free software environment, designed for statistical computing and graphics (R Core Team, 2017). To import csv files for analyses in R, package ‘haven’ (Wickham & Miller, 2016) have been used. Recoding of variables have been done using the package ‘car’ (Fox & Weisberg, 2011)
while data reshaping have been conducted with package ‘reshape’ (Wickham, 2007). For multilevel models, packages ‘lme4’ (Bates et al., 2015) have been used for fitting the models and package ‘lmerTest’ (Kuznetsova et al., 2016) to test for linear mixed effects.

Results

In Figure 1, the distribution of ‘necessity’ self-employed in the different local labour markets is visualized. The proportion of ‘necessity’ self-employed differs between local labour markets, whereas some labour markets have as much as 60% ‘necessity’ self-employed. However, it should be noted that the distribution of self-employed are not even between labour markets, with some region's having relatively few respondents. Even so, the variation between labour markets makes it interesting to further examine the connection between labour market contexts and ‘necessity’ self-employment.

Figure 1. Scatter plot showing the distribution of ‘necessity’ self-employed between labour markets

In Table 2 the individual and contextual variables distribution, mean value and standard deviation is described. The variable for individual human capital reveals practically no difference in individual human capital between ‘opportunity’ self-employed and ‘necessity’ self-employed. Human capital on a contextual level does however seem to vary between local labour markets, which means that there might be a relation between contextual level human
capital and individual level human capital, affecting the prevalence of ‘necessity’ self-employment. There is also considerable variation in contextual unemployment between local labour markets, which will make the relation between human capital and contextual unemployment's possible impact on ‘necessity’ self-employment interesting to examine.

Table 2. Descriptive statistics of the individual and contextual variables

<table>
<thead>
<tr>
<th>Individual level variables</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Range</th>
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<tbody>
<tr>
<td>Human capital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Necessity' self-emp.</td>
<td>3.18</td>
<td>1.75</td>
<td>1 – 6</td>
</tr>
<tr>
<td>'Opportunity' self-emp.</td>
<td>3.22</td>
<td>1.76</td>
<td>1 – 6</td>
</tr>
<tr>
<td>Contextual level variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td>76.38</td>
<td>2.45</td>
<td>69.0 – 83.0</td>
</tr>
<tr>
<td>Unemployment</td>
<td>7.64</td>
<td>1.79</td>
<td>5.5 – 17.8</td>
</tr>
<tr>
<td>Service sector</td>
<td>68.82</td>
<td>6.89</td>
<td>46.8 – 83.9</td>
</tr>
<tr>
<td>Manufact. sector</td>
<td>27.04</td>
<td>5.81</td>
<td>14.8 – 44.7</td>
</tr>
<tr>
<td>GRDP</td>
<td>299.09</td>
<td>48.36</td>
<td>177 – 833</td>
</tr>
</tbody>
</table>

The variables describing industry branch structure in Table 2 shows that service sector is the most common sector within labour markets. The prevailing branch structure is expected to affect the prevalence of ‘necessity’ self-employment. Capital intense businesses could be expected to be less common in the service sector due to the nature of provided services, and it should therefore be a correlation between industry branch structure and ‘necessity’ self-employment. The measurement of economic conditions indicates a quite large variation in GRDP between labour markets, ranging from 177 thousand swedish crowns to 833 thousand swedish crowns. This variation might be connected to ‘necessity’ self-employment, considering economic conditions previously shown effect as a push factor (Alba-Ramirez, 1994; Evans & Leighton, 1989; von Greiff, 2009; Scheutze, 2000).

The relation between variables have been further investigated in multilevel analyses. The null-model in Table 3 shows that 2.7% of the unexplained variation in the dependent variable derives from contextual factors (calculated as labour markets/labour markets + individuals). The main reason behind ‘necessity’ self-employment does therefore seem to derive from individual factors. Since there is an expected interaction effect between individual and contextual aspects, further multilevel analyses is however still relevant to conduct.
Table 3. Multilevel regression model showing the correlation between the dependent variable ‘necessity’ self-employment and examined independent variables

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Model 0</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>p-value</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.13</td>
<td>2.321</td>
<td>-1.405</td>
</tr>
<tr>
<td><strong>Ind. factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td>22.80</td>
<td>.339</td>
<td>21.08</td>
</tr>
<tr>
<td><strong>Context. factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td>-.524</td>
<td>.222</td>
<td>-.608</td>
</tr>
<tr>
<td>Unemployment</td>
<td>.622</td>
<td>.359</td>
<td>.564</td>
</tr>
<tr>
<td>Service sector</td>
<td>.279</td>
<td>.279</td>
<td>.279</td>
</tr>
<tr>
<td>Manufact. sector</td>
<td>-.262</td>
<td>.832</td>
<td>-.28</td>
</tr>
<tr>
<td>GRDP</td>
<td>.003</td>
<td>.874</td>
<td>.005</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind. human cap. *hum cap.</td>
<td>.434</td>
<td>.601</td>
<td>.537</td>
</tr>
<tr>
<td>Ind. human cap. *unemp</td>
<td>-.702</td>
<td>.566</td>
<td>-.056</td>
</tr>
<tr>
<td>Ind. human cap. *service</td>
<td>-.309</td>
<td>.548</td>
<td>-.366</td>
</tr>
<tr>
<td>Ind. human cap. *manufact.</td>
<td>.087</td>
<td>.947</td>
<td>.057</td>
</tr>
<tr>
<td>Ind. human cap. *GRDP</td>
<td>-.029</td>
<td>.475</td>
<td>-.025</td>
</tr>
<tr>
<td><strong>Confounders</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>4.828</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>-.50</td>
</tr>
<tr>
<td>40 - 55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56 - 64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td>.855</td>
</tr>
<tr>
<td><strong>Random effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>1172.7</td>
<td>34.24</td>
<td>1112.26</td>
</tr>
<tr>
<td>Labour markets</td>
<td>32.9</td>
<td>5.74</td>
<td>.76</td>
</tr>
<tr>
<td>Human capital</td>
<td></td>
<td></td>
<td>.92</td>
</tr>
<tr>
<td>Signif. codes:</td>
<td>0.001</td>
<td>‘***’</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Model 1 in Table 3 presents results from the conducted multilevel models without confounders included. The results reveals no correlation between ‘necessity’ self-employment and individual human capital. A very interesting find, due to individual human capitals previously found effect on labour market position. When studying human capital on a contextual level, which is used as a measurement of labour market demand of human capital, no correlation is found found between contextual human capital and ‘necessity’ self-employment. This indicates that neither individual supply nor contextual demand of human
capital on the labour market correlates with ‘necessity’ self-employment. Unemployment levels within labour markets was also expected to affect labour market position and thereby the prevalence of ‘necessity’ self-employment. Results in Model 1 however indicates that there is no correlation between contextual unemployment levels and ‘necessity’ self-employment. The differences in GRDP between labour markets shown in Model 1 does neither seem to have an effect on ‘necessity’ self-employment, indicating labour markets economic condition not corrating with ‘necessity’ self-employment. Furthermore, a labour markets industry branch structure was due to different entry conditions between industries expected to affect the duration of self-employed, but does also not seem to be related to ‘necessity’ self-employment.

The results show that neither individual nor contextual variables correlates with ‘necessity’ self-employment on its own. The individual and contextual variables are thus assumed to interact, thereby affecting individual labour market position. The results in Model 1 does however not show an interaction effect between individual human capital and contextual level human capital on ‘necessity’ self-employment. This rather surprising finding indicates that the relation between supplied human capital and demanded human capital is not the reason behind ‘necessity’ self-employment. Other contextual factors such as unemployment levels, GRDP and industry branch structure was also expected to affect individuals labour market position, but in Model 1 no interaction was found between neither of the tested relations. The assumptions regarding labour market positions effect on ‘necessity’ self-employment does therefore not seem to be valid, raising question about other possible reasons for ‘necessity’ self-employment.

The test for random effects can be seen in Model 2, Table 3. The results reveals that the variation within individual human capital is slightly larger than differences between labour markets. The largest variation is however clearly among individuals within labour markets. Furthermore, Model 2 shows the multilevel model with confounders added. The confounders have not affected the significance of relations explored in Model 1, but reveals interesting results regarding the duration of ‘necessity’ self-employment. The result shows a correlation between ‘necessity’ self-employment and both of the individual factors gender and ethnicity. Women and individuals born outside of Sweden are to a higher extent ‘necessity’ self-
employed compared to men and individuals born in Sweden. These results reinforces the idea of ‘necessity’ self-employment deriving from other factors than labour market position, highlighting individual characteristics as worth examining.

Discussion

The aim with this paper have been to examine the interaction between individual human capital and contextual factors within labour markets, and its effect on labour market position. In recent research regarding ‘necessity’ self-employment, a weak labour market position defined as low human capital has been the generally accepted explanation for why some individuals are assumed to be pushed into self-employment. However, individuals are a part of the supply-demand relationship on the labour market with their human capital as a vital asset in this exchange. In order to give reliable conclusions of labour market positions impact on ‘necessity’ self-employment, human capital have therefore been examined in relation to contextual factors on the labour market.

When examining local labour markets, a variation between labour markets regarding amount of ‘necessity’ self-employed, unemployment levels, human capital level and economic conditions have been found. Conducted multilevel analyses did not find any connection between neither individual human capital nor contextual factors impact on ‘necessity’ self-employment. Furthermore, no interaction effect was found between individual human capital and contextual labour market factors, indicating labour market position not being the reason for ‘necessity’ self-employment. These findings highlight that the reason for why some self-employed wishes to be regular employees is more complex than previous research have assumed.

The notion of ‘necessity’ self-employment does thereby not seem to purely derive from a low individual human capital, which the correlation between sociodemographic confounders and ‘necessity’ self-employed also indicates. These connections have to some extent been documented in previous studies showing ‘necessity’ self-employment to be more common among women than men (Poschke, 2012; Tervo & Haapanen, 2010) as well as overrepresented among immigrants (Andersson & Wadensjö, 2004; Dana, 1997). Ethnic minorities and
women are social groups that have been discussed in relation to discrimination on the labour market (Elson, 1999; Nilsson & Wrench, 2009). Discriminating structures could hence be a possible explanation for ‘necessity’ self-employment, pushing individuals from certain social groups into self-employment. These structures could in some aspects be argued to affect labour market position, as individuals with some sociodemographic characteristics should find it harder to compete on the labour market regardless of their human capital.

Another explanation for the somewhat unexpected findings could be that there actually isn't any connection between labour market position and ‘necessity’ self-employment. Instead, the ‘necessity’ aspect might derive from other factors. Upbringing could for example be one explanation, with some individuals growing up in families or societies with high entrepreneurial commitment, making self-employment an expectation rather than a choice. In the same way, the 'necessity' aspect of self employment might derive from an entrepreneurial heritage. Individuals growing up in families with an inherited family business might be pressured by responsibility to involve themselves in order to keep the business going.

These findings could also be a case of reversed causality. Previous research (Shane, 2008) have found that new entrepreneurs often invest on an already established market. After some time they might find the market not being spacious enough for yet another company and their entrepreneurial dream goes from success to defeat. If this group are the ‘necessity’ self-employed, the wish to go back to regular employment might derive from a sense of entrepreneurial failure and not from an initially weak labour market position. It does however not change the fact that some individuals are trapped in ‘necessity’ self-employment. The unwillingness to proceed as self-employed might as well be an indicator of difficulties to re-enter the regular labour market, perhaps due to a labour market position that have weakened during their time as self-employed.

These arguments, not based on low human capital or requested human capital on the labour market, could be possible explanations for the notion of ‘necessity’ self-employment. It is however clear that ‘necessity’ self-employment is a complex notion, and the reason behind ‘necessity’ self-employment should be further investigated, taking factors such as sociodemographic aspects into consideration.
Methodological discussion

In this paper, the demand of human capital on labour markets have been taken into consideration. This have been done by conducting aggregations of individual human capital in each local labour market, which have provided a picture of the labour market supply of human capital. The supply of human capital can however differ from the labour markets demand of human capital, e.g. the demand of high education may be low despite of a highly educated labour market or vice versa, the demand being high regardless of generally low human capital among labour market participants. It is therefore not possible to ensure that the used measurement of human capital demand corresponds with the actual demand of human capital. With the currently available data it is however hard to find a more accurate measurement and the findings in this paper should still be considered valid.

In order to examine individual human capital in relation to labour markets, the sample of ‘necessity’ self-employed in the EMRAPP-study have been paired with their current local labour market. An uneven distribution of self-employed compared with few inhabitants in some labour markets have however lead to some labour markets having small numbers. In order to increase the number of respondents, a merge of some regions might be a relevant action. Doing so would however result in loosing the connection between an individual and the specific labour market she or he is tied to, which have motivated the current division. Another solution might be to conduct Monte Carlo simulations. It is however questionable whether such a method would generate a different result considering the main reason behind ‘necessity’ self-employment appearing to derive from individual factors.

The group of self-employed that would prefer to be regular employees have previously been defined as ‘necessity’ self-employed, assumed to have been forced into self-employment due to a weak labour market position. Labour market position have been defined by individual’s human capital, whereas a low human capital have been equated to a weak labour market position. Human capital does however not determine labour market position on its own as it needs to be put in relation to the requested human capital on the labour market. This study have therefore investigated whether the reason behind ‘necessity’ self-employment can be derived the dualistic relationship between supply and demand of human capital.
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