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The Self-Employment of Immigrants and Natives in Sweden

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To what extent is it the "immigrant group" or the "labour market context" that affects the self-employment of individuals in Sweden?

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ABSTRACT

The Self-Employment of Immigrants and Natives in Sweden

To what extent is it the "immigrant group" or the "labour market context" that affects the self-employment of individuals in Sweden?

Earlier studies on entrepreneurship and self-employment among immigrants call attention to the fact that also the "market" for self-employment or entrepreneurs consists of a supply and demand side as well as the interaction between these two. More recent research suggests that a mix of personal resources, the surrounding structural context of markets, competition and the current political and economic environment, all acting together are seen as determining factors affecting self-employment by immigrants. However, few studies have been able to quantify the importance of these different aspects that determine ethnic self-employment. The central aim of this paper is therefore, by using multilevel regression, to quantify the role the country of birth respectively labour market area plays for understanding individual differences in self-employment. Using register data on individuals for the year of 2007 for the entire Swedish population we have in this study a unique opportunity to quantify the relative importance of the self-employers embeddedness in the social and ethnic networks (country of birth) and the regional business and public regulatory framework (labour market areas) measured. Our results suggest that of the total variation in individual differences in self-employment can 14 % (men) respectively 16 % (women) be attributed to the ethnic group and the labour market area. Furthermore, the ethnical groups accounted for 70 % (men) and 78 % (women) of this higher level variance. These results show that the social and ethnical context (measured by country of birth) and the economic environment (measured by local labour market areas) played a minor role for understanding individual differences in self-employment. These results can have important implications when planning interventions or other actions focusing on self-employment. Focusing only on ethnical groups/labour market areas might be inefficient as approximately 85 % of the variation is not explained by ethnical groups/labour market areas. Instead more general approaches or interventions focusing on other groups that capture a larger part of the variation might be more efficient.

JEL Classification: J15, J21, L26

Keywords: immigrants, self-employment, integration, entrepreneurship, multilevel logistic regression

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Introduction

Over the last decades, the research on ethnic enterprises and self-employment among immigrants has increased substantially. One body of research stresses the importance of the opportunities given by ethnic networks and resources for immigrants and ethnic minorities to start and run businesses. Another strand of research emphasizes the structural limitations of ethnic business by blocked mobility and discrimination instead. A more recent addition to the body of research that tackles the rationales why individuals from an immigrant background enter self-employment has been the emergence of the mixed embeddedness model advocated by Kloosterman and Rath (Kloosterman and Rath, 2001). This model suggests that that many layers or aspects meet at an intersection in order to facilitate ethnic self-employment and determine to a high degree why, how, who and where the immigrant becomes self-employed. This means that all aspects, and not a single independent factor, of the immigrant's inclusion in the host society help to explain their tendency towards self-employment. Ram et al. (Ram et al., 2008) support this model and describe the model as a mix of personal resources, the surrounding structural context of markets, competition and the current political and economic environment, all acting together, facilitating or obstructing ethnic entrepreneurship. However, we have only found one study with a quantitative attempt combining different "supply" and "demand" side factors that determine ethnic self-employment (Light and Rosenstein, 1995).

On this background the central aim of this paper is to explore the interrelationship between immigrant self-employment and different structural layers of the Swedish society. The layers chosen in this paper are based on the model suggested by Ram et al (Ram et al., 2008); the individual, the social and ethnical context (measured by country of birth) and the economic environment (measured by local labour market areas). We use multilevel logistic regression (MLRA) that allows us to quantify the role the country of birth respectively labour market area plays for understanding individual differences in self-employment. Since individuals are nested within different countries of birth and different labour market areas and there are potentially different processes operating at each level the use of MLRA appear appropriate. Using register data on individuals for the year of 2007 for the entire Swedish population we have in this study a unique opportunity to quantify the relative importance of the self-employers embeddedness in the social and ethnic networks (country of birth) and the local business and public regulatory framework (labour market areas) measured. The results might also be useful as a basis for future interventions or other actions focusing on self-employment. If self-employment is influenced to a high degree by the country of birth, then interventions

targeting different groups might be efficient. However, if individuals from the same country of birth are not more alike than individuals from different countries of birth, interventions focusing on the entire population might be more efficient.

This article proceeds with a context description on immigration and labour market integration of immigrants in Sweden. This is followed by section were we summarize earlier research on immigrant and ethnic minority entrepreneurship research as well as which factors have been brought forward for immigrant entrepreneurship and self employment in Sweden. After this we describe the data and method used in the analysis. We proceed with the results of the analysis and end with a discussion.

Context

After the Second World War, most refugees from neighboring countries who had fled to Sweden during the war returned home or left for new destinations. The Swedish population was at that time appeared to be homogeneously native and ethnically Swedish. However, the massive immigration of the post-war period changed the composition of the Swedish population once and for all. In 2007, about 13 percent of the total population consisted of immigrants. About one fourth of the immigrant population was of Nordic origin, one third from other European countries and the rest from non-European countries.

Post-war immigration to Sweden came about in two waves. In the 1940s, 50s and 60s labour immigration from the Nordic and other European countries was a response to excess demand for labour due to the rapid industrial and economic growth of that time. Organized recruitment of foreign labour and a general liberalization of immigration policy facilitated migratory moves to Sweden. The lower rate of economic growth and increased unemployment in the early 1970s diminished the demand for foreign labour. As a consequence, migration policy became harsher (Castles and Miller, 2003). Labour immigration from non-Nordic countries ceased in the 1970s while the number of labour immigrants from other Nordic countries decreased gradually. Since the early 1970s, refugees and tied-movers have dominated the migration inflow, coming primarily from Eastern Europe and non-European parts of the world.

Labour migration to Sweden was primarily from the Nordic countries, but also from other Western European countries (1950s) and the Balkans (1960s) (Lundh and Ohlsson, 1999).

These labour migrants typically had no difficulties in finding employment and settling down in Sweden with their families. According to earlier studies (Ohlsson, 1975; Wadensjö, 1973) foreign-born men and women had higher employment rates than natives in 1970. A gradual decrease in the employment rate of foreign-born men is noticeable from the 1970s and onwards. For foreign-born women we see an increase in employment up to the middle of the 1980s, but this increase is not in parity with the increase in employment of native women. Both natives and foreign-borns were negatively affected by the economic crisis of the early 1990s, but the relative decline of the immigrant employment rate was larger. The employment gap between natives and foreign-borns has narrowed since the middle of the 1990s. The lower employment integration of immigrants who arrived in the 1970s caused the average immigrant employment rate to decrease in the 1990s and early 2000s (Bevelander, 2000).

A snapshot of today's employment integration by country of birth shows us that almost all foreign-born groups and in particular newly arrived groups of refugees have lower employment rates than natives. The general pattern is that natives have the highest employment rate, followed by Europeans and thereafter non-Europeans. There is, however, a large variation in employment integration of the various countries within these geographical categories and between geographical regions in Sweden (Bevelander and Lundh, 2004; Lundh et al., 2002). This negative situation for immigrants relative to natives has in the economic literature been attributed to differences in human capital including native language skills, structural economic change, access to native networks and discrimination. Compared to the anglo-american research scene few studies have specifically studied the why of immigrants starting and running businesses in Sweden (Pripp, 2001). Some studies account for an increase in the share of starting and running enterprises, among immigrants in Sweden (Bevelander et al., 1997). In the Swedish case discrimination in the labour market has been attributed as one of the driving forces behind immigrant self-employment (Andersson, 2006; Habib, 1999; Hammarstedt, 2001; Khosravi, 1999; Najib, 1994). Factors such as; poor Swedish language skills, non-transferable "foreign" qualifications, immigration status and racial discrimination are among the arguments which explain why immigrants in Sweden are blocked from the wage employment market, resulting in these individuals being pushed into self-employment. Regarding the effect of cultural motivation and ethnic entrepreneurial background Hammarstedt (Hammarstedt, 2004) found that "Immigrants coming from regions with self-employment traditions also tend to have a high probability of being self-employed in Sweden". Hammarstedt (Hammarstedt, 2004) goes on to describe that these individuals are

more culturally likely to possess business skills. Najib (Najib, 1999) adds to the Swedish case, according to this author some ethnic minority cultures may view self-employment with more value than other groups. Andersson and Hammarstedt (Andersson and Hammarstedt, 2007) acknowledge different self-employment traditions in the home countries of immigrant entrepreneurs from different origins directly effects each groups tendency to engage in self-employment in the immigration country.

Theory

Most theories concerning self-employment among immigrants have had the differences in the propensity to be self-employd between immigrant groups as a starting point for theory building (Walton-Roberts and Hiebert, 1997). The underlying idea is that demand and supply on markets shapes the differences in self-employment between immigrant groups in the society. On the supply side for instance the blocked mobility theory argues that immigrants have fewer opportunities in the larger labor market and therefore tend to engage themselves in self-employment more than others (Bailey and Waldinger, 1991; Light, 1984). Another supply side example explains the differences as effects of a dual labor market with high rates of self-employment in ethnically clustered metropolitan areas (Bonacich, 1993). The higher rates of self-employment stem from the creation of a community of entrepreneurial elite possessing capital and skills and the loyalty of cheap co-ethnic labor supply that arrives in succeeding immigrant waves. On the supply side some more cultural oriented explanation is forwarded. One argument suggests that some immigrant groups have high rates of self-employment because they come from countries with high rates of self-employment (Light, 1972; Yuengert, 1995). And scanning the literature on self-employment among immigrants it seems like the supply side examples are in abundance, probably due to the fact that most studies are done by researchers interested in ethnic minority studies, there are although some examples of demand side theories. The intuitively best demand theory approach argues for instance that concentration of immigrants in small geographic areas creates a demand for ethnically defined goods and services that are best provided by co-ethnic immigrants and this explains the differences in self-employment between immigrant groups (Wilson and Portes, 1980).

A much advocated theory of interaction between demand and supply argues that the entrepreneur population of any group emerges from the interaction of its resources and the

local demand environments (Waldinger et al., 1990). However, as Light and Rosenstein puts it:

"… the vast current literature on immigrant and ethnic entrepreneurship does not provide formal proof of the interaction theory. The basic reason is the absence of research designs that simultaneously vary supply and demand conditions. Only such designs would permit researchers to find the predicted interactions, and this design infrequently appears in the current literature. A paradoxical exception is the intercity research of Aldrich, Jones and McEvoy, which did have a design capable of finding interaction effects but which did not, in actuality, find them." (Light and Rosenstein, 1995)

The interaction theory claims that the interaction between supply and demand links specific resources (of an ethnic group) with specific demands (suited for/selected by the ethnic group). Such relationships are proved in case studies, but the Light and Rosenstein analysis shows that general demand effects and general supply effects does exist too, and that they overpower the specific interaction effects, especially on the supply side. One problem of the transaction theory is of course that the theory use ethnic group definitions of specific resources and of specific demands. What are left out in the transaction theory are general resources, like education and other socio-economic competencies, which are not only specific ethnic group characteristics but also general. Demand for goods and services, can sometimes be specific in ethnic terms, locally or related to income, but the overwhelming demand for goods and services are general in any society.

The whole idea of ethnic groups meeting specific market demands and thereby creating entrepreneurs might seem intuitively convincing and is widely proclaimed but lack the strength of formal proof and probably also the necessary complexity of categorisation of driving forces for entrepreneurship. Entrepreneurship is a diverse and multi-faceted form of economic activity, and therefore it is unlikely that one all-encompassing theory will explain why immigrants are over-represented in self-employment (Clark and Drinkwater, 2000). One recent addition to research efforts to tackle the reasons why individuals from an immigrant background enter self-employment has been the emergence of the mixed embeddedness model advocated by Kloosterman and Rath (Kloosterman and Rath, 2001). What the mixed embeddedness model suggests is that many layers or aspects meet at an intersection in order to facilitate ethnic minority entrepreneurship. Ram et al. support the mixed embeddedness

perspective and apply it in their explanation of the recent trend of Somalia entrepreneurs in the UK (Ram et al., 2008). They describe the model as a mix of personal resources, the surrounding structural context of markets, competition and the current political and economic environment, all acting together, facilitating or obstructing ethnic entrepreneurship. Basically mixed embeddedness equates to a model to explain different contributing elements. The mixed embeddedness model incorporates all the aspects of the immigrant's insertion in the host society to explain their propensity towards self-employment. Kloosterman et.al. explain the aspects of the immigrant's insertion in the host country as:

- The formal or informal economic activities of immigrant entrepreneurs embedded with respect to their customers, workers, suppliers, competitors, and business association.
- The formal or informal economic activities of immigrant entrepreneurs and their relationship with the welfare system, overall regulatory framework and enforcement regimes.
- The social networks the immigrant entrepreneur is embedded in, how these networks are constituted and to what extent these networks help facilitate entrepreneurship. (Kloosterman et al., 1999)

The mixed embeddedness model adds, one can say, a socio-economic complexity to the transaction theory of demand and supply that makes the theory more realistic but, as embeddednes in socio-economic entities hardly is easy to study in a formal way, an added vagueness, that makes anything or everything matter. The big advantage of the model is rather the focus on the individual entrepreneur in relation to different structures in the society. The individual is seen an actor, not a mindless creature locked into ethnicity to behave in a certain way and have a certain competence or a captured prisoner of the surrounding environmental limitations, rather a person carving out a position in the intersection of those elements of society. Therefore, as the individual act within a collective, the multilevel approach that aims to investigate both individuals and their collectives all together seems to be an appropriate method for examining our research question.

Data, method and models

Our data are drawn from the 2007 Swedish register through STATIV, the statistical integration database held by Statistics Sweden. These data contain information for every legal Swedish resident, age, sex, marital status, children in the household, educational level, employment status, labour market area, country of birth and years since migration. The sample we employ in the analysis is the population aged 25-64 (n = 4 838 227). The lower-age boundary was chosen mainly because of the presumption that individuals older than 24 have finished their studies and are likely to be active in the labour market. The upper-age demarcation was chosen because many individuals leave the labour market at this age. In order to ensure the anonymity of the individuals Statistics Sweden did not disclose the country of birth for individuals from countries with few numbers of individuals in Sweden. These individuals were excluded from the analysis (n =107 324). In line with earlier studies (Bevelander and Lundh, 2004) the Nutek ('LA regions'), local labour market regions are used to measure the local business and public regulatory environment, which are based on distance between communities as well as average commuting patterns within the local labour market areas and "chains" of communities in one local labour market (NUTEK, 2002). In total we investigated 2 332 436 women and 2 398 469 men from 44 different countries of birth and 81 different labour market areas.

Outcome variable

At the individual level the main outcome variable in this study is self-employed or not. In this study, and in line with the definition of Statistics Sweden, we define individuals as self-employed when individuals were registered as self-employed in the Swedish tax register.

Explanatory variables

In the analysis we included age, marital status, education, number of years in Sweden and number of kids of the individual. *Age* was categorized into four groups; 25-34 years, 35-44 years, 45-54 years and 55-64 years. 25-34 years was used as reference in the analysis. *Marital status* was divided into three group; single, married, widow/widower. Single individuals were used as reference in the analysis. *Education* was categorized into four groups; low (0-9 years), middle (10-11 years), high (12 years and more) and a separate group for missing values. Low education was used as reference in the analysis. *Number of years in Sweden* was categorized into four groups; 0-4 years, 5-9 years, 10-19 years and 20 years or more (this group included native Swedes). The last group was used as reference in the

analysis. *Number of kids* was dichotomized to a yes/no variable and no kids was used as reference in the analysis.

Methods

As we want to distinguish the role that the country of birth and the labour market area plays for understanding individual differences in self-employment we use multilevel logistic regression (MLRA) (Goldstein, 2003). Since individuals are nested within different countries of birth and different labour market areas and there are potentially different processes operating at each level the use of MLRA appear appropriate. MLRA allows us to quantify the role of three different structural layers in Swedish society; the individual, the social and ethnical context (measured by country of birth) and the economic environment (measured by local labour market areas) (Snijders and Bokser, 1999). If there are variation between different countries of birth in their propensity of being self employed, then the tendency of being self employed would be more similar among individuals from the same country of birth than among individuals from different countries of birth. This similarity (i.e. residual correlation, in statistical terms) would express itself as a clustering of self employed within different countries of birth. That is, a part of the individual propensity of being self employed could be attributed to the country of birth. This phenomenon can be investigated by measures of variance and clustering in multilevel models (Merlo et al., 2006).

The use of multilevel models has some appealing attributes compared to the OLS regression. With OLS there are two options when analyzing data from different levels (Diez-Roux, 1998). One could either aggregate the data to the higher level or one could distribute characteristics of higher levels to all individuals. However aggregated analyses cannot distinguish the contextual (the difference the ethnical group makes) from the compositional (individuals within an ethnical group) effect. This problem has been named the sociologistic fallacy (Diez Roux, 2002). Moreover, aggregating and distributing data pose further problems of interpretation of the results known as the ecological and the atomistic fallacy (Diez Roux, 2002). The ecological fallacy means that you identify a relationship at an area level between an outcome and a contextual characteristic, and attribution of the relationship to individuals when it actually does not exist at the individual level. The atomistic fallacy suggests that you identify a relationship between an outcome and an individual characteristic, and attribution of the relationship to the contextual level, when it does not exists. Moreover, distributing data to lower levels is associated with a statistical problem as treating individuals as if they are

independent implies that the sample size is dramatically exaggerated (Goldstein, 2003). If the outcome varies across higher-level units then individuals cannot be considered to be independent. If the hierarchical structure is ignored too many relationships will be found significant.

Multilevel regression models

In order to obtain a model describing the relationship between the response variable (self employed yes/no) and the independent variables as well as considering the clustering of observations within higher level units (country of birth) we have used multilevel logistic regression (MLRA). The model is constructed as follows: Consider a population of N individuals. Each individual has a vector of covariates, **x**, and each individual belongs to one of K countries of birth. The parameters corresponding to the covariates are in the vector β. It is the variation between the K cluster variables, $u_1 \ldots u_j$ (mutually independent) that are of interest. The random intercept model (2 levels), with the logit function will be specified as follows (equation 1):

$$\mathbf{y}_{i(j)} = \mathbf{X}_{i(j_1)}\boldsymbol{\beta} + \mathbf{u}_{0j_1}$$

$$u_{(i)}^{(1)} \sim N(0, \sigma_{u(1)}^2)$$

However, as the aim of the study also was to establish the influence of the local labour market as well as country of birth on individual self-employment opportunities we had to take into account that the higher level effects were more complex and that the probably arose from two cross cutting hierarchies. Therefore, we also estimated a cross-classified model with countries of birth and labor market areas as higher classifications (levels) (Fielding and Goldstein, 2006). Extending the methodology for such structures means that, besides from recognize that higher level effects are more complex, we can separate out the effects of both country of birth and labor market areas on our studied outcome. This is particularly important if there is a degree of association between the labor market areas the individual lives in and the country of birth they belong to. If labor market area effects are important and they are left unspecified in a model the effect of the country of birth may 'draw to itself' some effects attributable to its associated areas. The model will then be specified as follows:

$$\mathbf{y}_{i(j_1,j_2)} = \mathbf{X}_{i(j_1,j_2)}\boldsymbol{\beta} + \mathbf{u}_{0j_1}^{(1)} + \mathbf{u}_{0j_2}^{(2)} + \mathbf{e}_{0i(j_1,j_2)}.$$

$$u_{(i)}^{(2)} \sim N(0, \sigma_{u(2)}^2)$$
$$u_{(i)}^{(1)} \sim N(0, \sigma_{u(1)}^2)$$

The regression coefficients associated with the covariates in the models estimates the odds ratio (OR). All parameters were obtained via Markov Chain Monte Carlo simulation using the software MLwiN (Rasbash et al., 2003). As an uncertainty measure of our estimates we calculated the 95 % credible interval (95 % CI) (Browne, 2003).We prefer to use the 95 % CIs instead of p-values because they convey information about the range of plausible effects. In other words, the CI provides information of how precise the estimate of the effect is (Gardner and Altman, 2002).

Variance

The evaluation of the variance is not simply of technical value; rather the variance is of substantive interest in research (Goldstein et al., 2002; Merlo, 2003). However, in a model with dichotomous outcome the 1st level variance depends on the expected value, and the higher level variance is measured on a different scale than the 1st level variance and hence therefore not comparable (Snijders and Bokser, 1999). One suitable alternative is calculating the intra class correlation (ICC) using the *latent variable method* (Snijders and Bokser, 1999). This method converts the individual level variance from the probability scale to the logistic scale. The unobserved individual variable follows a logistic distribution with individual variance equal to 3.29 ($\Pi^2/3$). The ICC, in the cross classified model, is then calculated by the following formula:

$$((\text{var}_{country\ of\ birth}) + (\text{var}_{labor\ market\ areas})) / ((\text{var}_{country\ of\ birth}) + (\text{var}_{labor\ market\ areas}) + (\text{var}_{individuals}))$$

and is as a result, a function of the higher level variance and does not directly depend on the prevalence of the outcome. The ICC indicates how much of the total variance "belongs" to the higher levels, interpreted as the proportion of the variance explained by the grouping structure in the population (Hox, 2002). A large resemblance between individuals from the same country of birth group will result in a high ICC.

We present the variance attributed to the different classifications together with a 95 % credible interval (95 % CI). We also refer to the ICC in order to quantify how much of the

total variance that can be attributed to higher levels. Another alternative that has been proposed to express the magnitude of the higher level variance is the median odds ratio (MOR) (Larsen and Merlo, 2005). In simple terms the MOR is interpreted as the increased (median) odds of being self employed if an individual changes country of birth to a different country of birth with higher odds of being self employed. By using the 2nd level residuals of the model we compute the odds ratio for each pair of individuals with the same individual covariates (but from different ethnical groups) and with the higher odds placed in the numerator. This yields a distribution of the odds ratio. The MOR is the median of the odds ratios. The MOR depends directly on the 2nd level variance and can be computed with the following formula:

$$MOR = \exp\left[(2 \times var_{2ndlevel})^{0.5} \times 0.6745\right] \approx \exp(0.95 \times var_{2ndlevel}^{0.5})$$

where 0.6745 is the 75th percentile of the cumulative distribution function of the normal distribution with mean 0 and variance 1.

If the MOR was equal to 1, there would be no differences between different countries of birth regarding the odds of being self employed. However, if there were important differences between different countries of birth, the MOR would be large.

Ranking of higher level units

The higher level units are ranked according their posterior means (also known as "shrunken residuals") obtained from the MLRA. Since the higher level units are treated as coming from a population distribution of higher level units, the estimation procedure can pool all the information in the data thus allowing the predictions of place-specific relationships to be based on precision-weighted estimators, which take account of sample sizes. Imprecisely estimated, the posterior means are shrunk towards the overall mean, while reliably estimated, posterior means are largely immune to this shrinkage.

Models

We constructed four different model following previous recommendations for model building (Snijders and Bokser, 1999). Model A is a two level empty model with individuals nested within different countries of birth, in order to separate the variance into different levels. Model B includes individual characteristics in order to understand the influence of individual composition on the variance. Model C is a cross classified model with individuals nested within cross cutting hierarchies of countries of birth and labor market areas. Model D includes

individual characteristics in order to understand the influence of individual composition on the variance. Since males and females sharing the same countries of birth and the same labour market area do not necessarily interact with each other, separate analysis have been performed for males and females. We evaluate the different models with the DIC-value that is a generalisation of Akaike's Information Criterion adapted for hierarchical models. The model with the smallest DIC is estimated to be the model that would best predict a replicate dataset which has the same structure as that currently observed (Spiegelhalter et al., 2002).

Applying an established procedure, we used the variance obtained in the empty model as reference ($Var_{reference}$) to calculate the percentage of change in the magnitude of clustering, which was explained by including individual in the model with more variables (Var_{more}).

$$\text{Percentage change in variance (PCV)} = ((Var_{reference} - Var_{more})/(Var_{reference})) \times 100$$

We used this percentage for estimating the relevance of individual characteristics when understanding a possible clustering of similar behaviour.

Results

As shown in figure 1a and 1b 19.5 % of the men and 10.7 % of the women in the Swedish population aged 25-64 years were defined as self employed.

>>>>> Figure 1a and 1b here >>>>

Figure 1a and 1b also illustrate that there seems to be some variation between different countries of birth as only 2% of men from Somalia and Burma, but 23% of the men from Syria and Turkey was defined as self employed. For women only 1 % of the Somalis and the Burmese were defined as self employed, while this figure was 14 % for women from USA and the Netherlands. Figure 2a and 2b illustrates that among the labour market areas the number of self employed ranged from 13 % to 43 % for men and from 7 % to 27 % for women.

>>>>> Figure 2a and 2b here >>>>

Table 1 illustrates that the individuals defined as self employed were older than other individuals. Moreover, they were married and had lived in Sweden for a longer period of time than individuals not defined as self employed.

>>>>> Table1 here >>>>

Table 2a (women) and 2b (men) illustrates the results from the multilevel analysis. In model A it is shown that approximately 9 % (men) and 11 % (women) of the total variance can be attributed to the country of birth. The MOR value indicates that if a person were able to change country of birth, to a different country of birth with higher odds of being an self employed, the odds for this individual will increase, in median by 1.88 (women) and 1.74 (men).

>>>>> Table 2here >>>>

As the MOR is comparable with the OR of fixed effects, we can imagine that the importance of the country of birth for understanding the propensity of being self employed is similar to the importance of being 35-44 years (compared to being 24-35 years). The ICC and the MOR was attenuated when including individual covariates in the model (model B); the ICC decreased to 7.6 % (men) and 9.8 % (women). The PCV illustrates that 9 % (men) and 18 % (women) of the higher level variance was explained when including individual characteristics. This means that parts of the differences between different countries of birth are due to the included individual covariates. Figure 3a (men) and 3b (women) illustrates the residuals from the MLRA, and shows that approximately 90 % of the different countries of birth were different from the mean value.

>>>>> Figure 3a and 3b here >>>>

However, one must keep in mind that approximately 90 % of the variation in the individual differences in self-employment can be attributed to the individual level. These results suggest that individuals from the same country of birth are rather heterogeneous.

Older people had a higher OR of being a self employed compared to younger. Moreover, individuals that had resided in Sweden more than five years had a higher OR of being self employed than individuals that only resided for less than 5 years in Sweden. For women, individuals with high education had 1.53 (95 % CI: 1.50 – 1.55) times higher odds of being self employed compared to low educated individuals, while the same figure for men was 1.02 (95 % CI: 1.01 -1.03). For both men and women having a kid increased the odds of being self employed.

Model C illustrates that when including labour market areas in a cross classified model, the $ICC_{\text{country of birth + labour market areas}}$ was 14 % for men and 16 % for women. Nevertheless, the variance for country of birth was unchanged for both men and women. This illustrates that the effect of labour market areas and country of birth seems to be independent of each other. However, the country of birth seemed to be more important than the labour market areas for understanding individual differences in self-employment. 70 % of the higher level variance (the variance attributed to countries of birth and labour market areas) could be attributed to country of birth. This figure was 78 % for women. The $MOR_{\text{country of birth + labour market areas}}$ was approximately 2 for both men and women, which could be interpreted that if you change both country of birth and labour market area your odds of being self employed would increase 2 times. This is comparable to the odds ratio between the age group 45-54 and the age group 25-34 years. Including individual characteristic, model D, did not attenuate the variance for the labour market areas. However, the PCV for country of birth was 22 % for women and 21 % for men, but in comparison with model B, the variance for country of birth is rather similar. The ORs for the individual characteristics did not change notably when comparing model D and model B. Model D, for both men and women, had the lowest DIC, and would therefore be the model that would best predict a replicate dataset which has the same structure as that currently observed.

We also performed a sensitivity analysis were we only investigated individuals within the work force. The outcome variable was still self-employed or not, but in these models the nonself-employed only included working individuals. In this sensitivity analysis we investigated 1 973 428 men and 1 822 590 women. For individual within the workforce 23.0 % of the men and 13.1 % of the women were defined as self employed. In an empty model with individuals nested within country of birth the results from the multilevel analysis illustrates that approximately 7.7 % (men) and 8.6 % (women) of the total variance can be

attributed to the ethnical group. These point estimates seems to be, to a small degree, lower compared to the analysis of the entire population.

Discussion

As earlier pointed our most theories concerning self-employment among immigrants have had the differences between immigrant groups as a starting point for theory building. The theories concerning the propensity to be self-employed have focused on the ethnic perspectives of supply and demand, disregarding the general aspects. In this study our aim has been to estimate the importance of "ethnic answers" and "area answers" to the differences between immigrant groups and natives in Sweden in the propensity to be self-employed. In this study we have therefore investigated to what extent the individuals' propensity to be self employed was influenced by three different structural layers in Swedish society; the individual, the social and ethnical context (measured by country of birth) and the economic environment (measured by local labour market areas). We focused mainly on interpretation of the components of variance in self-employment to understand individual differences. We found that the intra-class correlation for country of birth/labour market areas suggests that of the total variation in individual differences in self-employment can 14 % (men) respectively 16 % (women) be attributed to the country of birth and the labour market area. The country of birth seemed to be more important than labour market areas as it accounted for approximately 70 % of the higher level variance. These results denote that there is still approximately 85 % of the variation that has not been explained by these two layers and can therefore be attributed to individual differences within each group. However, these results do not dismiss the idea that there might be other groups or layers that have not been included in this analysis that affects the individual differences in self-employment. Neither do these results dismiss the idea that entrepreneurs use the ethnic resources that are available for their business or the specific ethnic demand that could be served by their business.

This study clarifies that, even though previous studies primarily have focused on the ethnical context and/or different types of areas in order to explain differences in self-employment, the largest part (85 %) of the variation is explained by other factors, possibly at the individual level. These results suggest that it might be the individuals that should be the focus of policy interventions. But, one must be aware that this is not contradictory to general interventions that focus on the entire population regardless of their country of birth or residential area.

The investigation of these types of effects, i.e. contextual effects, on various social and economic outcomes is an attempt to determine whether the propensity (to be self-employed) might vary between individuals belonging to different types of groups. The general concept is that individuals interact with the social context to which they belong, meaning that individuals are influenced by the context or group to which they belong, and that the properties of those groups are in turn influenced by the individual who make up the group (Hox, 2002). As regards to our study, the more the propensity of being self-employed of the individuals from the same country of birth and the same labour market area are alike (as compared with individuals from other countries of birth and other labour market areas), the more likely it is that the determinants of individual self-employment have to do directly with the ethnical context or the contextual environment of the labour market area (Merlo, 2003). The structure of the data, with individuals that are nested within different groups can be conceptualized as a hierarchical scheme, which logically leads the researcher into studying the importance of the different hierarchical levels, variables at different levels as well as interactions between different levels within the framework of what is often called multilevel research. In previously quantitatively orientated research within immigrant research, it has been common to identify the effect of the ethnical context by including dummy variables for each country of birth in a multiple OLS/logit regression when controlling for confounders. However, in this study, the magnitude of the effect of the country of birth/labour market is synonymous with the size of the ICC. The ICC is important as it points to the level where the action lies. In this study a large ICC would have demonstrated that the country of birth/labour market area is an important dimension in structuring individuals' propensity to be self employed. Moreover, the ICC provides the theoretical maximum effect of a characteristic of the country of birth/labour market area. Without quantifying the importance of the defined levels, the OLS approaches essentially decontextualize the importance of the fixed effect parameters (Clarke and Wheaton, 2007). It is well recognized that it is possible to find large significant fixed effects (at the higher levels) in conjunction with small between-group variation. By ignoring the importance of quantifying the effect of the country of birth/labour market, the pitfalls of using OLS are considerable, particularly from a policy standpoint. For example, a study may show a low propensity of being self-employed for individuals from a country of birth with small number of individuals residing in Sweden. But an intervention targeted towards groups with small number of individuals may be misplaced if unimportant between-group variance (small ICC) in self-employment indicates that they are not dissimilar from other apparently

advantaged groups. From a policy perspective, it is therefore very important to distinguish the effect of the country of birth/labour market area on the propensity of being self-employed. In this study we have therefore, both as a breach for future research but also because previous research have focused on these two layers, tried to quantify the importance of the social and ethnical context (measured by country of birth) and the economic environment (measured by local labour market areas).

An essential question is indeed how we define large respectively small effect of the country of birth /labour market area. The use of multilevel methods has been extensively used within different research areas, and those studies have, for the most part, shown that differences between individuals are expected to be far more important than differences between different types of groups. In educational research, the effect of school has been shown to account for approximately 5-20 % of the differences in individuals' outcome (Goldstein et al., 2002).Within the epidemiological field, the effect of neighborhoods on different health outcome has in several studies shown to be insignificant and only accounted for few percentages of the difference between the individual outcomes under study (Clarke and Wheaton, 2007). In the sociological field, previous studies have shown that prior place of residence only accounts for a small proportion of the variation in the individuals subsequent income and receipt of social assistance (ICC < 2 %) (Brännström 2005). Similar studies as ours have been performed in order to investigate the importance of country of one's birth in relation to the probability of having disability pension. In these studies the MOR-values were approximately 2 (Beckman, 2005). Moreover, analogous studies have shown that country of birth explained approximately 15 % of the individual differences in the probability of having a low income and living alone. However, this figure was only 3% for having some health expenditure (Beckman, 2005).By relating the variation between the different countries of birth and between the labour market areas to the variation between individuals within each group, as the ICC does, can give important signals to what level interventions ought to be targeted. As we show in this study the variation at the individual level seem to account for approximately 85 % of the total variation. We also calculated the Median Odds Ratio that quantifies the variance at the higher levels (country of birth/labour market areas). The MOR value was approximately 2 (model C) which also gives an indication of the importance of the country of birth/labour market areas in comparison with the odds ratios of the fixed effects.

In conclusion the major implications of this study is that even though the country of birth and labour market areas can explain parts of the individual differences in self-employment there is still a large part of the variation that is not explained. One might even say that it is the individual and not the ethnical context that matters. This indicates that it is primarily individuals that should be the focus of policy interventions. However, one must be aware that this is not contradictory to general interventions that focus on the entire population regardless of their country of birth or residential area. As this approach is rather new within this area, the need for further studies investigating factors at different levels, other groups that might be of importance to understand individual differences is obvious, e.g. the family group as an entrepreneurial background and the family as an institution or as socio-economic class.

Figure legends

Figure 1a: Share of individuals (men) that are self-employed in Sweden 2007. Divided according to country of birth

Figure 1b: Share of individuals (women) that are self-employed in Sweden 2007. Divided according to country of birth

Figure 2a: Share of individuals (men) that are self-employed in Sweden 2007. Divided according to labour market area

Figure 2b: Share of individuals (women) that are self-employed in Sweden 2007. Divided according to labour market area

Figure 3a: Residuals from the multilevel model (model A, men)

Figure 3b: Residuals from the multilevel model (model A, women)

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Table 1: Characteristics of individuals age 25-64 in Sweden 2007.								
	Women				Men			
	Not Self Employed		Self Employed		Not Self Employed		Self Employed	
Age								
•25-34	509 406	24,5%	31 783	12,7%	500 438	25,9%	64 852	13,9%
•35-44	554 719	26,6%	64 794	26,0%	521 788	27,0%	123 479	26,4%
•45-54	492 566	23,6%	75 424	30,2%	448 805	23,2%	133 585	28,6%
•55-64	526 221	25,3%	77 523	31,1%	460 187	23,8%	145 335	31,1%
Marital status								
•Single	736 225	35,3%	63 753	25,5%	876 103	45,4%	159 416	34,1%
•Married	1 306 484	62,7%	180 447	72,3%	1 043 618	54,0%	304 479	65,2%
•Widow	40 203	1,9%	5 324	2,1%	11 497	0,6%	3 356	0,7%
Number of years in Sweden								
•0-4	77 668	3,7%	3 479	1,4%	84 173	4,4%	5 612	1,2%
•5-9	59 668	2,9%	4 548	1,8%	51 030	2,6%	7 400	1,6%
•10-19	109 664	5,3%	8 422	3,4%	98 172	5,1%	15 641	3,3%
•20-	1 835 912	88,1%	233 075	93,4%	1 697 843	87,9%	438 598	93,9%
Kids								
•No	1 197 241	57,5%	145 589	58,3%	1 265 185	65,5%	278 828	59,7%
•Yes	885 671	42,5%	103 935	41,7%	666 033	34,5%	188 423	40,3%
Education								
•Low	290 792	14,0%	26 779	10,7%	342 092	17,7%	87 735	18,8%
•Middle	951 631	45,7%	113 782	45,6%	937 311	48,5%	225 614	48,3%
•High	816 080	39,2%	108 416	43,4%	620 323	32,1%	152 132	32,6%
•Missing	24 409	1,2%	547	0,2%	31 492	1,6%	1 770	0,4%

Table 2a: Multi-level logistic regression analysis of self employed - women aged 25-64 in Sweden				
	Model A	Model B	Model C	Model D
Age				
- 25-34		Reference		Reference
- 35-44		1.66 (1.63-1.69)		1.65 (1.63-1.68)
- 45-54		2.23 (2.20-2.27)		2.20 (2.16-2.23)
- 55-64		2.19 (2.16-2.23)		2.16 (2.12-2.19)
Marital status				
- Single		Reference		Reference
- Married		1.33 (1.32-1.34)		1.35 (1.34-1.36)
- Widow		1.26 (1.22-1.30)		1.27 (1.24-1.31)
Number of years in Sweden				
- 0-4		Reference		Reference
- 5-9		1.48 (1.42-1.55)		1.51 (1.44-1.58)
- 10-19		1.57 (1.52-1.64)		1.62 (1.55-1.69)
- 20-		1.48 (1.42-1.53)		1.52 (1.46-1.58)
Kids (yes vs. no)		1.12 (1.11-1.13)		1.11 (1.10-1.12)
Education				
- Low		Reference		Reference
- Middle		1.29 (1.27-1.31)		1.28 (1.26-1.30)
- High		1.53 (1.50-1.55)		1.54 (1.52-1.56)
- Missing		0.53 (0.48-0.56)		0.51 (0.47-0.56)
$Variance_{country\ of\ birth}$	0.44(0.29-0.71)	0.36 (0.24-0.57)	0.45 (0.30-0.74)	0.35 (0.23-0.57)
$Variance_{labarea}$			0.14 (0.10-0.20)	0.15 (0.11-0.20)
Total variance			0.59 (0.40-0.78)	0.50 (0.31-0.69)
ICC_{Tot}	11.8% (8.0-17.8)	9.8 % (6.7 -14.8)	15.3 % (10.9-19.2)	13.1 % (8.6-17.3)
MOR	1.88	1.77	2.08	1.96
DIC	1572567.95	1542191.82	1562292.74	1531979.91

Table 2b: Multi-level logistic regression analysis of self employed - men aged 25-64 in Sweden				
	Model A	Model B	Model C	Model D
Age				
- 25-34		Reference		Reference
- 35-44		1.53 (1.51-1.55)		1.53 (1.51-1.54)
- 45-54		1.98 (1.96-2.00)		1.95 (1.93-1.97)
- 55-64		2.22 (2.20-2.25)		2.17 (2.14-2.20)
Marital status				
- Single		Reference		Reference
- Married		1.24 (1.23-1.25)		1.26 (1.25-1.28)
- Widow		1.15 (1.10-1.19)		1.17 (1.12-1.21)
Number of years in Sweden				
- 0-4		Reference		Reference
- 5-9		1.75 (1.69-1.81)		1.78 (1.71-1.85)
- 10-19		2.11 (2.05-2.18)		2.16 (2.09-2.23)
- 20-		2.18 (2.13-2.23)		2.23 (2.16-2.30)
Kids (yes vs. no)		1.37 (1.36-1.38)		1.35 (1.34-1.36)
Education				
- Low		Reference		Reference
- Middle		0.99 (0.98-1.00)		0.99 (0.99-1.00)
- High		1.02 (1.01-1.03)		1.07 (1.06-1.08)
- Missing		0.54 (0.51-0.57)		0.54 (0.51-0.57)
$Variance_{country\ of\ birth}$	0.34 (0.22-0.54)	0.27 (0.28-0.43)	0.38 (0.25-0.61)	0.30 (0.20-0.51)
$Variance_{labarea}$			0.16 (0.11-0.22)	0.16 (0.12-0.23)
Total variance			0.53 (0.34-0.72)	0.46 (0.28-0.65)
ICC_{Tot}	9.3% (6.1-14.1)	7.6 % (5.2 -11.6)	13.9 % (9.4-18)	12.4 % (7.7-16.6)
MOR	1.74	1.64	2.00	1.91
DIC	2341108.78	2286403.50	2322211.89	2268237.27

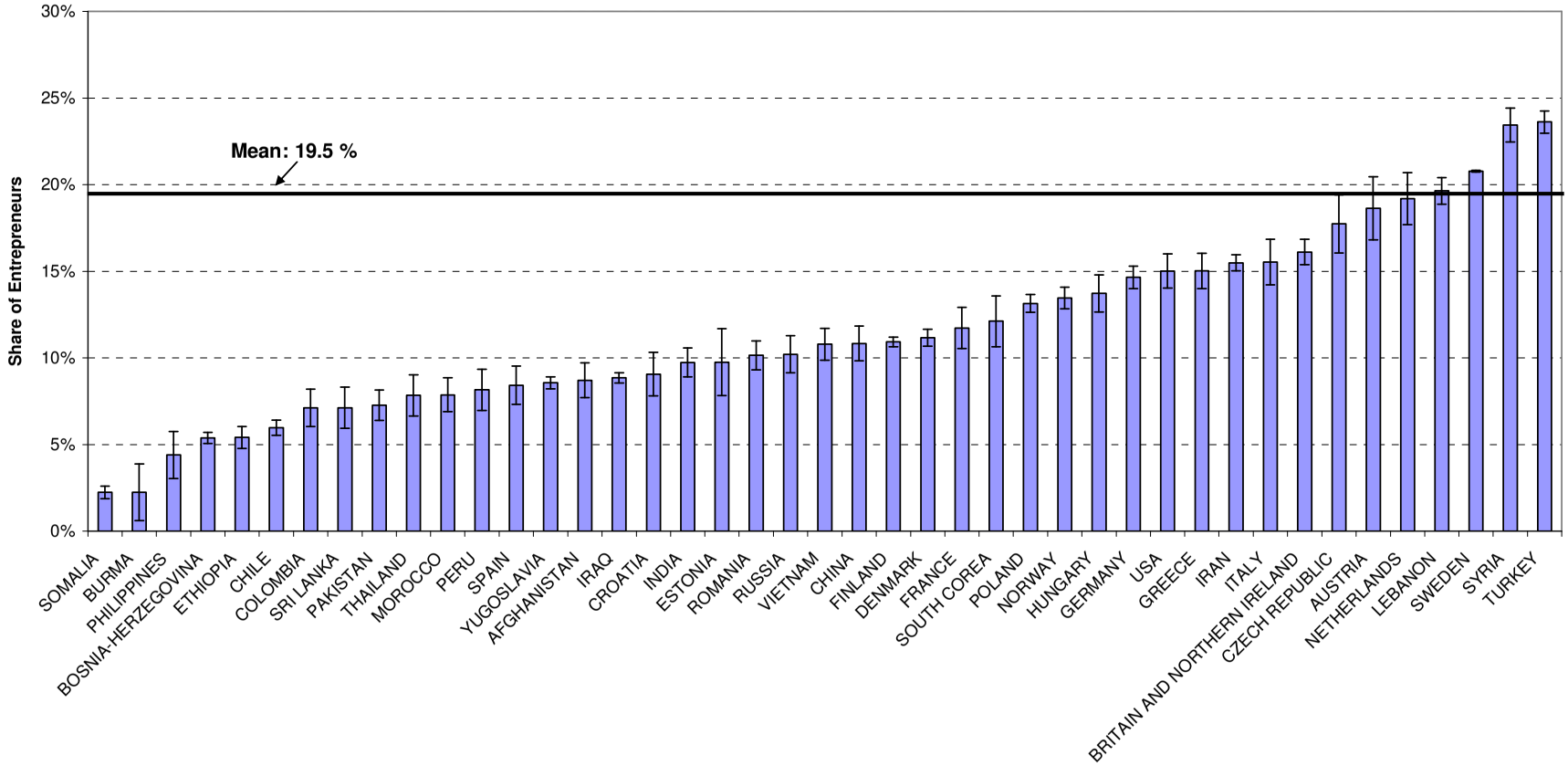
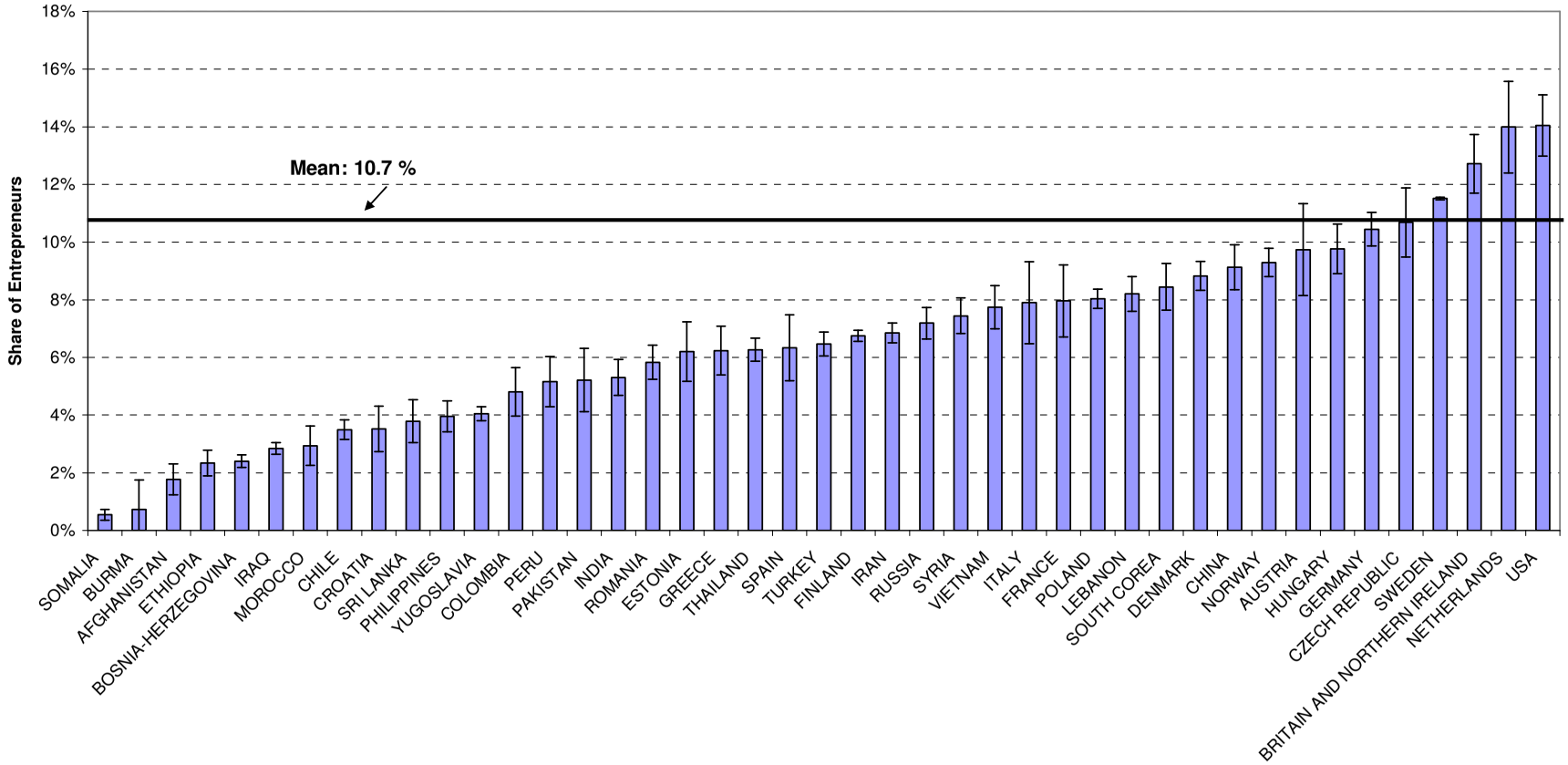

30%
25%
20%
15%
10%
5%
0%
Share of Entrepreneurs
Mean: 19.5 %
SOMALIA
BURMA
PHILIPPINES
BOSNIA-HERZEGOVINA
ETHIOPIA
CHILE
COLOMBIA
SRI LANKA
PAKISTAN
THAILAND
MOROCCO
PERU
SPAIN
YUGOSLAVIA
AFGHANISTAN
IRAQ
CROATIA
INDIA
ESTONIA
ROMANIA
RUSSIA
VIETNAM
CHINA
FINLAND
DENMARK
FRANCE
SOUTH COREA
POLAND
NORWAY
HUNGARY
GERMANY
USA
GREECE
IRAN
ITALY
BRITAIN AND NORTHERN IRELAND
CZECH REPUBLIC
AUSTRIA
NETHERLANDS
LEBANON
SWEDEN
SYRIA
TURKEY

Figure 1a


Share of Entrepreneurs
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Mean: 10.7 %
SOMALIA
BURMA
AFGHANISTAN
ETHIOPIA
BOSNIA-HERZEGOVINA
IRAQ
MOROCCO
CHILE
CROATIA
SRI LANKA
PHILIPPINES
YUGOSLAVIA
COLOMBIA
PERU
PAKISTAN
INDIA
ROMANIA
ESTONIA
GREECE
THAILAND
SPAIN
TURKEY
FINLAND
IRAN
RUSSIA
SYRIA
VIETNAM
ITALY
FRANCE
POLAND
LEBANON
SOUTH COREA
DENMARK
CHINA
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BRITAIN AND NORTHERN IRELAND
NETHERLANDS
USA

Figure 1b

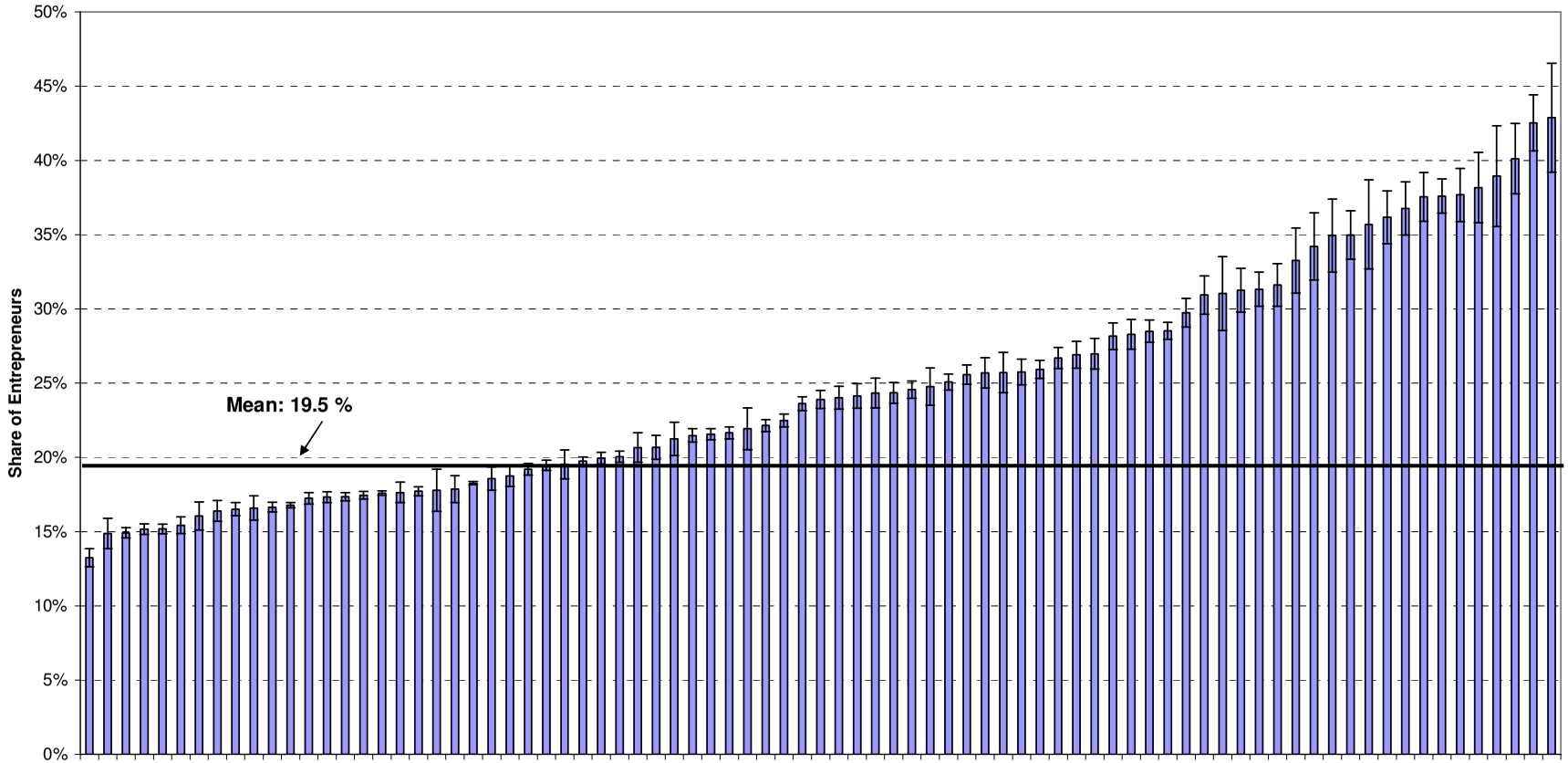

Figure 2a

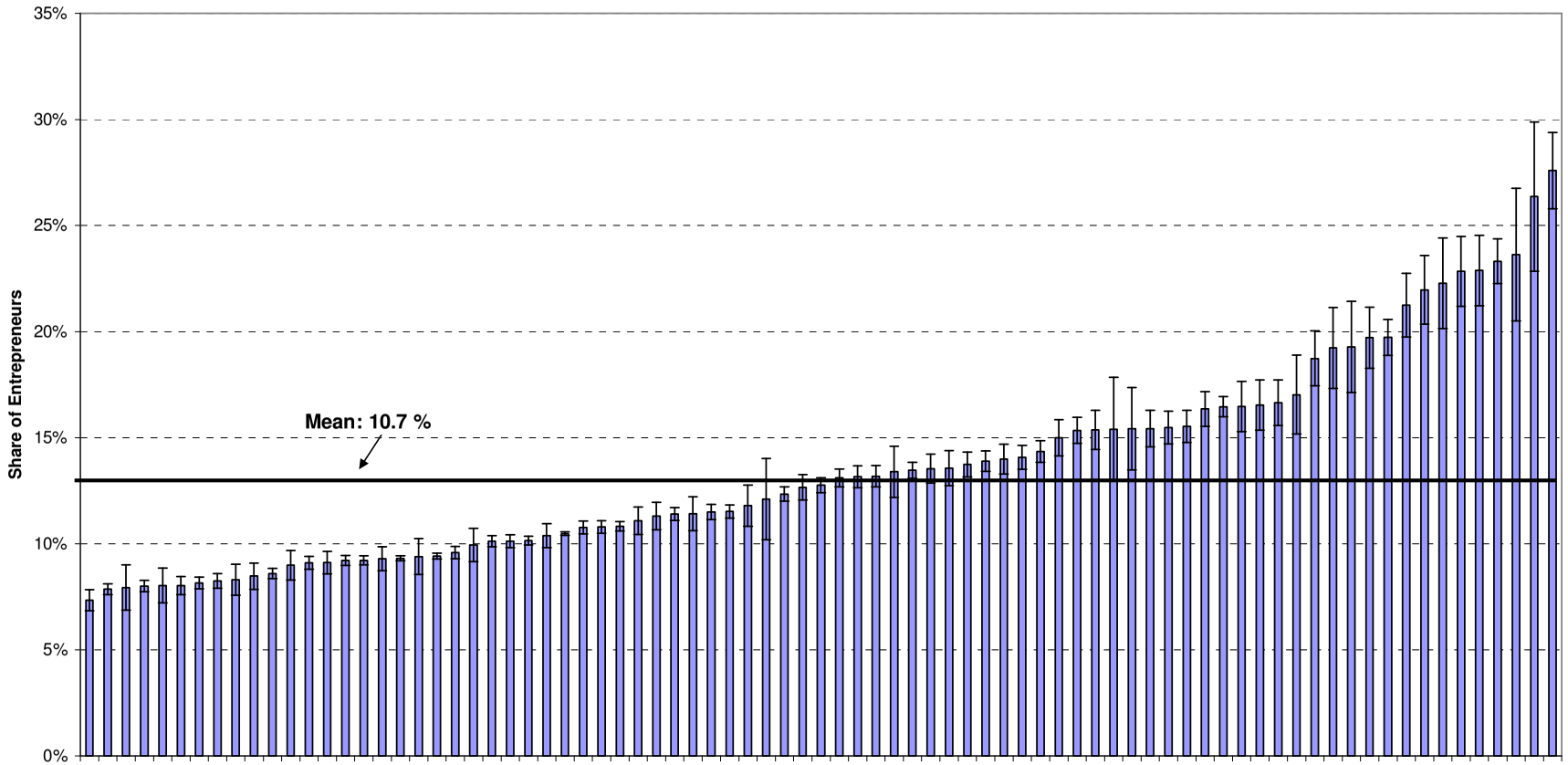

Figure 2b

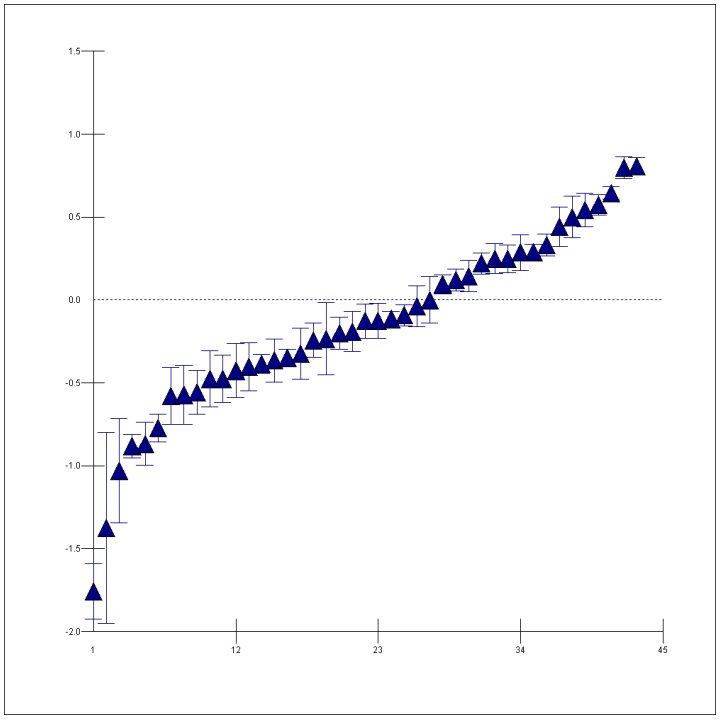

Figure 3a

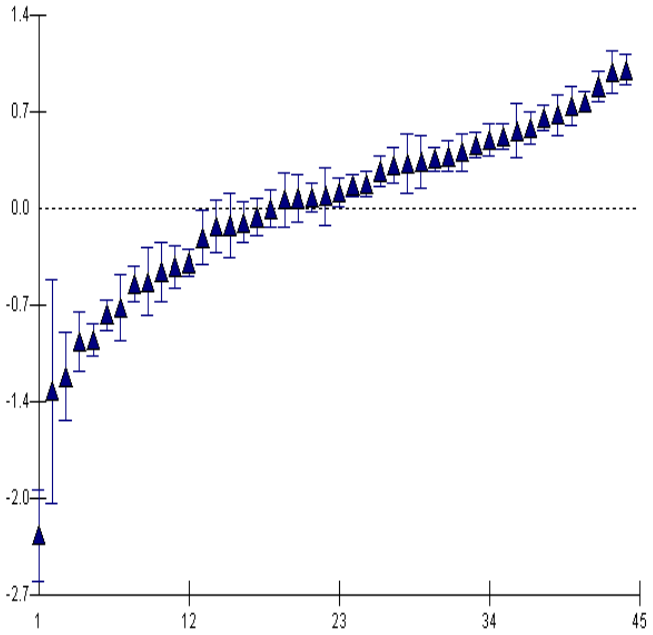

Figure 3b