

# Legal Status at Entry, Economic Performance, and Self-employment Proclivity: A Bi-national Study of Immigrants\*

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## Abstract

There are concerns about the attachment of immigrants to the labor force, and the potential policy responses. This paper uses a bi-national survey on immigrant performance to investigate the sorting of individuals into full-time paid-employment and entrepreneurship and their economic success. Particular attention is paid to the role of legal status at entry in the host country (worker, refugee, and family reunification), ethnic networks, enclaves and other differences among ethnicities for their integration in the labor market. Since the focus is on the understanding of the self-employment decision, a two-stage structural probit model is employed that determines the willingness to work full-time (against part-time employment and not working), and the choice between full-time paid work and self-employment. The choices are determined by the reservation wage for full-time work, and the perceived earnings from working in paid-employment and as entrepreneur, among other factors. Accounting for sample selectivity, the paper provides regressions explaining reservation wages, and actual earnings for paid-employment and self-employment, which provide the basis for such an analysis. The structural probit models suggest that the expected earnings differentials from working and reservation wages and for self-employment and paid-employment earnings matter much, although only among a number of other determinants. For Germany, legal status at entry is important; former refugees and those migrants who arrive through family reunification are less likely to work full-time; refugees are also less self-employed. Those who came through the employment channel are more likely to be in full-time paid work. In Denmark, however, the status at entry variables do not play any significant role. This suggests that the Danish immigrant selection system is ineffective.

**JEL classification:** C25; F22; J15; J23; J31; J61; J82

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## **1. Introduction**

How does the composition of immigrants affect their quality of labor market integration in the host country? There is wide agreement in the economic literature that non-economic migrants have more difficulties in economic performance and provide a larger potential burden to the social security systems than economic migrants. Recent work on Denmark and Germany (see Tranaes and Zimmermann, 2004a, and especially Schultz-Nielsen and Constant, 2004) has confirmed this for these immigration countries; it has found that an ever rising share of immigrants is not available to the labor market. Instead, migrants come as refugees or for family reunification purposes. Are differences in the labor market attachment due to differences in the individual characteristics or are they associated with the legal status at entry *per se*? Are there differences across ethnicities for instance in self-employment proclivity and other measures of labor market success? Answers to these open questions could provide valuable guidance to immigration policy.

The strength of this paper is that we investigate the same immigrant groups in a comparative setting using data from two different host countries; Denmark and Germany, provided by the 2002 Rockwool Foundation Migration Surveys (see Tranaes and Zimmermann, 2004a). With these data we are able to go beyond studying the standard immigrant groups, such as the Turks, Ex-Yugoslavs, and also consider Iranians, Lebanese, and Poles. We also use subjective measures of language, motives, reservation wages and actual years of residence in the host country.

The focus of the analysis is on the understanding of the self-employment decision. (See Constant and Zimmermann, 2005, Clark and Drinkwater, 1998, Fairlie and Meyer, 1996, Taylor, 1996, and Yuengert, 1995, for some recent contributions on ethnic entrepreneurship, and Zimmermann, 2005, for an overview on European findings.) Consequently, a model is employed that determines the choice between full-time paid work and self-employment. This is progress over previous contributions on self-employment that have not excluded part-timers from the reference category of paid workers. To deal with sample selectivity and to investigate the

selection mechanism into self-employment, we also study the propensity of full-time work against part-time work and not working. The complex decision structure can be captured by a two-stage sequential structural probit model.

We investigate the factors that affect and influence the sorting of individuals into self-employment, and estimate their proclivity and economic success as self-employed. For this sorting, we are able to compare predicted reservation wages, and predicted wages for full-time paid work and self-employment generated from the estimations of earnings functions. Specifically, in this paper we want to understand the role of the legal status of the migrant at the time of entry in the host country (work permit, refugee, kinship), the motives to become self-employed while living in the host country, the role of social and familial networks, and the transmittal of the entrepreneurial spirit from parents. Only recently, the issue of non-economic migration has found some interest in the economic literature (Bauer, Lofstrom and Zimmermann, 2000, Constant and Zimmermann, 2005, Hatton, 2004, Jasso and Rosenzweig, 1995, and Zimmermann, 1995a).

We address the following questions: Who are the self-employed, what are their characteristics, and are they a self-selected group among all workers? Does the proclivity to self-employment differ for migrants arriving as refugees, as workers, or as relatives? Are some immigrant groups more prone to self-employment than others, and can their self-reported reasons for becoming self-employed enlighten the push-pull theories of self-employment? Which characteristics can make a difference in the earnings of the self-employed? Do similar self-employed immigrants fare similarly in different host countries?

Section 2 summarizes the Danish-German migration evidence and the data used. Section 3 presents the economic framework and explains the econometric model, the variables used and the particular hypotheses employed. Section 4 summarizes our econometric results, and Section 5 concludes.

## **2. The Danish-German Migration Evidence**

### **2.1 Previous Findings**

The broad picture of the migration evidence is contained in Petersen (2005) for Denmark and in Bauer, Dietz, Zimmermann and Zwintz (2005) for Germany. An international comparative research team studying the immigration experiences in Germany and Denmark using the Rockwool Foundation Migration Survey reports the following findings (see Tranaes and Zimmermann, 2004a, especially Constant and Schultz-Nielsen, 2004a and 2004b). First, there are greater ethnic differences in Germany than in Denmark with respect to both educational attainment and vocational training. Immigrants in Denmark are less well educated upon arrival, but they acquire more schooling once they are in the country compared to immigrants in Germany. In comparison to natives, there is severe under-employment of immigrants in both countries. The employment rate is lower for non-Western immigrants in Denmark than it is in Germany, although natives are more attached to the labor force in Denmark than in Germany. Immigrants have a larger presence in the German labor market than in Denmark. This difference can be explained by the fact that immigrants in Denmark are less educated upon arrival, and that financial incentives to work are low in Denmark due to an unemployment benefit system that pays a higher replacement rate to the low-paid income groups. Education and vocational attainment are powerful determinants of labor market attachment in both countries. Whereas immigrants in Denmark are less financially motivated to seek employment than their counterparts in Germany, once at work, they earn more throughout their working lives than comparable immigrants in Germany. Although experience is not as well rewarded in Denmark, an initial earnings advantage upon arrival is sustained. Human capital acquired in the host country generates an earnings premium in both Denmark and Germany.

Second, while Denmark seems to be a more attractive country for employed immigrant workers, Germany was found to offer better opportunities for entrepreneurs. Although the self-employment rates are similar in both countries, self-employed immigrants in Germany are

clearly positively self-selected, while those in Denmark seem to be more randomly allocated. Consequently, self-employed immigrants earn much more in Germany than in Denmark, and also much more than migrant wage earners in Germany. The Danish self-employed migrants earn less than their salaried counterparts.

Third, immigrants induce redistribution through public sector finances whereby the net transfers in public contributions typically go from Western immigrants to the public sector and from the public sector to immigrants from non-Western countries. This confirms that depending on the selection mechanism, immigrants can contribute substantially to public sector finances or are a net burden, which supports the proposal to obtain more labor migrants. The employed redistribution efforts bring the average disposable income of Danish non-Western immigrants much closer to the disposable income of native Danes. The disposable income of Danish non-Western immigrants is much higher than that of German non-Western immigrants. These Danish immigrants have almost the same distribution as native Danes, while the distribution of migrants' disposable income in Germany is much more unequal.

A recent paper by Constant and Zimmermann (2005) contributes to a better understanding of the role of the legal status of the migrant at the time of entry in the host country (work permit, refugee, and kinship) on work participation and earnings. It also investigates actual migration policy mechanisms reflecting explicit or implicit policy decisions and the related characteristics among the immigrants within the different channels of entry. The research using the Rockwool Foundation Migration Survey suggests that, even after controlling for skill-level, non-economic migrants are less active in the labour market and exhibit lower earnings. There are only few migrants who arrive through the channel of an explicit work permit, and even those are not strongly selected to meet the needs of the labour markets. Those not selected through the economic channel are significantly less integrated into the labour market and earn less than their countrymen.

The results in the paper show furthermore that Denmark has very few economic immigrants: this category has a three times higher share in Germany, and indicators of labour market skills play a small role in distinguishing labour migrants from individuals arriving through other channels. Arriving through family reunion or as asylum seekers or refugees affects paid-employment earnings negatively in both Germany and Denmark. However, while the effect is of about the same size for both groups in Denmark, the refugee/asylum status is more harmful in Germany than the family reunion status. Individuals arriving with a work status in Germany are more likely to earn less when changing to self-employment than when arriving through another channel. These estimates suggest that there are long-lasting effects of the legal status at entry in the host country on the earnings potential of immigrants.

From all this it can be concluded that Germany is able to attract better educated immigrants than Denmark, get them into employment, and offer more to people with entrepreneurial talents. Denmark keeps more immigrants in the welfare system, but offers better remuneration to regular workers and some incentives for immigrants to educate themselves at higher levels – but not to undertake vocational training. Both countries could benefit considerably by executing more pro-active labor market recruitment and integration measures. Economic incentives seem to matter and a more selective immigration policy that generates more active labor market participants should be beneficial to the economy.

## **2.2 Details on the used data**

We use data from the Rockwool Foundation Migration Survey for Germany and Denmark. A detailed presentation of the data set is provided by Tranaes and Zimmermann (2004b) and Bauer and Niels-Kenneth-Nielsen (2004). Conducted by Infratest Sozialforschung in Munich and Statistics Denmark in Copenhagen these surveys are based on very similar questionnaires and administered to the same ethnic groups in Germany in 2002 and Denmark in 2001. Unlike the German data set, the Danish data combines survey information with information from the

registers of Statistics Denmark. There are 5,569 immigrants from ex-Yugoslavia, Poland, Iranian, Lebanon, and Turkey in the German survey and 3,262 in the Danish survey.

These surveys give us the opportunity to access immigrant differences within each country, as well as to assess cross-national differences. There are several comparative advantages on these data sets: they contain information on the pre-migration experiences of immigrants, including schooling, family background, social and environmental settings, and visa status at migration. They also provide rich information on post-migration schooling investments and labor market experiences. Important is the information on actual years of residence in the host country, accounting for both uninterrupted residence and for residence interrupted by return or frequent remigration. Consequently, estimations based on these surveys avoid measurement errors due to the calculation of potential years of residence and potential years of schooling.

The selected samples for the analysis include individuals aged 18 to 65, who are not students, or in training/apprenticeship. We also exclude military personnel and those in early retirement, or those who rule out regular work. We include the second generation immigrants - those born in Germany/Denmark or those migrating as children - and those who have acquired German/Danish citizenship. Applying these selection criteria and taking account of missing data leads to smaller samples. We also obtain somewhat different samples for the analysis of the employment decisions and the earnings analysis. The full sample includes those not employed, unemployed, part-timers, full-time employed and self-employed. The German (Danish) full sample is 4,839 (1,585) observations with 2,373 (843) men and 2,466 (742) women, and the full-time employed or self-employed amount to 1,864 individuals in the German and 867 in the Danish sample. In the German (Danish) sample 295 (133) observations are self-employed or 15.8% (15.3%) of the total of the full-time employed or self-employed. For the actual and reservation earnings analysis, the final sample of individuals is based on those who reported positive earnings, hours of work, and tenure or longevity on business, and reservation earnings for full employment. The usable total sample sizes here are 2,450 observations for Germany and

1,067 for Denmark. In the German (Danish) sample, there are 1,219 (577) in full-time paid-employment, 179 (101) in self-employment, and we have 1,052 (389) observations in Germany (Denmark) to study reservation earnings for full-time employment for those not in full-time employment.

### **3. Methodological Framework and Model Specification**

#### **3.1 The modeling concept**

The analysis in this paper is focused on the decision of migrants to engage in self-employment. Entrepreneurship is typically a full-time venture, and the appropriate work alternative is full-time paid-employment. We are therefore interested in investigating the two-step decision process of individuals to take up full-time work, and to sequentially choose self-employment against full-time paid-employment. These decisions can be modeled on the basis of a comparison of the expected earnings at full-time paid-employment, the expected earnings of self-employment and the reservation wage for full-time employment. Individuals choose self-employment over full-time paid-employment, if the expected earnings in the former state exceed that of the latter. Individuals choose to work full-time, if the reservation wage for full-time employment is smaller than the expected earnings in a full-time work position. Since most of the individuals will consider self-employment only when they have opted for full-time work, we will use the expected earnings from full-time paid work as the market remuneration for full-time work. This requires expected earnings from both types of work and reservation wages, which are typically not available in survey data and have to be estimated.

Fortunately, our survey contains data for actual earnings and the reservation wage of full-time work for those not working. This data can be used to estimate the expected earnings and the perceived reservation wages for all individuals. However, such an analysis is not straightforward given the associated selectivity problems associated with the data generation process. We deal with this issue by employing a three-stage estimation technique. In a first step we estimate

reduced form probit models with selectivity to avoid biased estimation of the earnings and reservation wage functions in the second step. Two reduced form probit models determine the probability to take up part-time and full-time work, and to choose self-employment over full-time paid-employment. The selectivity variables generated from this step ensure that the earnings regressions for the full-time paid employees and the self-employed that include these generated variables are unbiased. The reservation wages for full-time work are only available for non-working individuals in the sample that includes the unemployed. We therefore employ another reduced form selectivity probit model estimating the probability of not-working against full-time and part-time working. Corrected for selection, an appropriate reservation wage function is specified and estimated.

The earnings and reservation wage functions provide various possibilities to investigate the effects of differences in ethnic characteristics on economic performance. However, a final judgment on the attachment of the various migrants to the labor market can only be achieved through the estimations of structural probit equations on the probabilities to: (i) work full-time as paid employee or self-employed among all individuals in the sample and (ii) choose self-employment among those who are full-time employed. The structural probit models make use of the estimated difference in the expected earnings from full-time paid-employment and the reservation wage for full-time work (to model the likelihood of full-time work), and the estimated difference in the expected earnings from self-employment and full-time paid-employment (to model the likelihood of self-employment). The variables are imputed for all individuals of the sample. The structural probits also contain other variables that are explained below.

### **3.2 The variables used in the analysis**

This section provides an overview of the variables used at the various steps of the analysis. They do not appear in all equations because of theoretical reasoning, and to ensure identification in the

estimations. We distinguish between human capital variables, ethnicity variables and reasons for migration, individual characteristics, labor market structures, legal status at entry and attachments and adjustments in the host country. (The Appendix Table A contains a complete listing of all employed models, the included variables and informs about the significance of the estimates in the various steps in the sequence the variables are introduced in this section.)

Under the rubric human capital acquired in the host country we first include relative exposure to the country, constructed from actual years of residence divided by age. This captures the share of a person's life in Germany or Denmark. We expect to find that immigrants who are longer in the host country have a higher probability to work and choose self-employment, and their earnings increase with relative exposure albeit in a non linear relation. Pre- and post-migration schooling, disability status, and pre-migration work experience are also included in all models. We expect to find that immigrants who have more human capital and better health have a higher probability to work and choose self-employment, and their earnings increase with more human capital. For post-migration human capital the reference category is no schooling in the host country.

Fluency in German or Danish is constructed from the objective assessment of the interviewer. We include this variable in the earnings regressions only. We expect that the earnings of immigrants who are fluent in the language of the host country are higher than the earnings of those who are not fluent. We include the variable father self-employed only in the probits on self-employment. Following the literature, this variable is the best predictor of self-employment proclivity and is expected to positively influence the probability to choose self-employment through intergenerational transmission of skills, extra know-how, and inheritance of the business.

Homeownership captures attachment to the host country but also wealth status. Immigrants who are homeowners have a higher probability to work because they need to pay the mortgage to maintain their house. They are also more prone to choose self-employment, since

wealth facilitates liquidity constraints, and they can use the house as collateral. We include this variable in all probits. Living in enclaves is constructed from the percentage of immigrants living in the neighborhood being over 50%. Immigrants who live in such neighborhoods are expected to have lower probabilities to work because they have fewer chances, but higher probabilities to be pushed into self-employment because they have fewer chances in paid-employment and once they are self-employed they can rely on the enclave to have a prosperous business. However, living in enclaves depresses wages and thus, immigrants who live in enclaves earn less than immigrants who do not live in enclaves. From several questions on discrimination we construct a composite variable for whether someone has experienced any form of housing, education, employment, or unemployment discrimination due to ethnicity. We expect that individuals who have experienced discrimination due to their origin will be less likely to work. If they decide to work, however, they will be more likely to be pushed into self-employment as an outlet to avoid discrimination. Their earnings should also be lower than the earnings of those who have not experienced discrimination.

The following variables are only employed to predict the probabilities of work and self-employment. Immigrants who arrived in the host country using their network (e.g. family and friends) should be more likely to work and choose self-employment because they can rely on their network to find a job and establish a business. Similarly, immigrants whose status upon arrival is employment migration should exhibit a higher probability to work, although the probability to choose self-employment could go either way. Immigrants who arrive to reunite with their families or as refugees should have a lower probability to work in general and to choose self-employment in particular. The reference category for legal status at entry is the availability of a citizenship upon arrival or birth in the host country.

Nationality dummies are included in all models. The reference group is Turks. We expect to find significant differences among nationalities in both the probits and earnings regressions. We also construct and include two variables for whether immigrants are citizens and are born in

the home country. In principle, immigrants who ascend to citizenship are different than their peers in that they value to new country, they want to stay and take advantage of the new opportunities that citizenship can offer. With citizenship they have access to all jobs. They will, thus, have a higher probability to work and choose self-employment, as they will also have higher earnings. Similarly, immigrants who are born in the host country are more “assimilated” and resemble the natives. They are expected to be more likely to work, choose self-employment, and have higher earnings.

Work effort is a predictor of the earnings of the self-employed and full-time workers and conventional employment. In principle, immigrants who work more hours should receive higher payments. In the rubric labor market structures we include the unemployment rate in the geographical region. The rationale is that high unemployment rates decrease the probability to work, in general, but may increase the probability to choose self-employment as an outlet to working. The earnings of immigrants in high unemployment regions should also be lower because high unemployment rates depress wages.

The next two variables are only included in the earnings regressions for workers. Individuals who work in small companies with less than 99 employees or entrepreneurs without any employees should earn less than individuals in large companies and big businesses. Immigrants, who have longer tenure or more seniority in the job, if they are in paid-employment, are expected to earn more. Likewise, immigrants who have their business for a longer time should earn more. Longevity indicates a steady and successful business that is monetarily rewarded. Entrepreneurs who employ family members are included as a predictor of the self-employed earnings only. They should earn less because part of their earnings goes to others in the household. Lastly, industry dummies are included in the reduced form probit for self-employment (for a better fit) and the earnings regressions of workers. The reference group is industry without construction. We expect that the earnings of workers in self- or paid-employment are higher or lower than the reference group depending on the industry.

The most important variable that determines the probability to work is the difference in the expected earnings between full-time paid-employment and reservation wages. The higher the difference, the more likely individuals are to work. Similarly, the difference in expected earnings between self-employment and full-time paid-employment determines the probability to choose self-employment. These differences in earnings are calculated from predicted earnings and included in the structural probits only.

The last block of predictors pertains to demographics and individual characteristics. With the exception of religion, these variables are included in all models. Both the probabilities to work and choose self-employment as well as the earnings of the individuals should increase with age, discounted for non linearities. Following empirical findings, male and married immigrants are expected to have higher probabilities to work and choose self-employment, and higher earnings. Female immigrants with young children should be less likely to work and receive lower earnings from work. However, they might be more likely to choose self-employment because self-employment offers women time and space flexibility. The faith under which immigrants were brought up is an important predictor of the probits. We constructed a variable Islam for those immigrants who were brought up in the Muslim faith. We expect to find differences in the probability to choose self-employment for Islam immigrants. We also include a variable for the religiousness of immigrants in the probits. This variable is constructed from a self-reported question on whether they attend church/synagogue/mosque regularly.

## **4. Empirical findings**

### **4.1 Reduced form probits**

As explained in the previous section, we employ a three-stage estimation procedure. In a first step, we estimate reduced form probit models to correct for selectivity in the analysis of the reservation wage and the earnings for the self-employed and the paid-employed in the second step. In the third step, we impute the reservation wages and the earnings of full-time paid-employment and self-employment and use them as regressors in the structural form probit

models on the probability to choose full-time work, and self-employment in particular. All findings report the estimated coefficients, the associated robust t-ratios, performance measures (including a Pseudo-R<sup>2</sup> suggested by Veall and Zimmermann, 1996), and the marginals (with the corresponding robust t-ratios) in the case of the structural probit estimates. Note that the Appendix Table A contains a review of the findings in a qualitative form where 'G' and 'D' ('-G' and '-D') refer to positive (negative) estimated effect parameters, and the appearance of a '\*' indicates statistical significance at least at a 5%-level (one-sided test).

Both reduced form models for Denmark and Germany are provided as Appendix Tables B and C; they have a high level of explanatory power, and a larger number of the coefficients point to a plausible direction for the effects of the respective determinants. They have been estimated for Germany (Denmark) on the full data set with 4,839 (1,585) individuals for the analysis of the probability of not working against working part-time, full-time, and as self-employed, and 1,864 (867) individuals for the analysis of the probability of working as self-employed against working as full-time employees. However, the major purpose of these estimations is to serve as a basis for the proper estimation of earnings and reservation wages and as a reference for the structural probits. Only the structural probits will tell us more about the true underlying relationships. Nevertheless, there are a number of marked ethnic differences in the reduced form probits suggesting that ethnicity is an important category in both the German and Danish sample. However, legal status at entry seems to be significant in determining work effort and engagement in self-employment in the German sample only. The German results suggest that former refugees and asylum seekers are more likely to stay home and less prone to choose self-employment. Immigrants entering Germany on the basis of family reunion are also more likely to stay home while those who arrived through the employment status are more likely to remain at work than those who came with a German citizenship or for other reasons. It will be noteworthy to see whether these findings will prevail in the structural estimations.

## 4. 2 Earnings and reservation wage regressions

The analysis of the earnings and reservation wages can only use a lower number of observations for two reasons: First, reservation wages for taking up full-time work are only available for non-workers. Second, there are missing earnings data in a number of cases. This has reduced the samples for Germany (Denmark) to 1,052 (389) not employed people (reservation wage function), 179 (101) working in self-employment (self-employed earnings), and 1,219 (577) working full-time (paid-employed earnings). These samples are used to estimate proper earnings regressions corrected for the effects of potential misspecification due to sample selectivity. Regression results are contained in Table 1 for Germany and Table 2 for Denmark.

Table 1 shows that there is (positive) self-selection for the not employed and the full-time paid employed in Germany. Human capital variables play a significant role in explaining differences in earnings. Education in the home country increases and pre-migration work experience decreases the reservation wage to work full-time. High school degree (*Abitur*) or a degree from a German university, speaking German well and age lead both to higher reservation wages for working full-time and to larger full-time paid earnings. Relative exposure to Germany and vocational training reduce reservation wages, while vocational training leads to higher earnings for full-employed paid workers.

Gender and family issues play a limited role and only for earnings: Single self-employed females earn more than males in general, while married females clearly earn the least among ethnic entrepreneurs. Among the full-time employees, married men earn more than single men, and those earn more than females in general. Labor market conditions like local unemployment rates and industry dummies affect only the pay conditions among the full-time paid workers. Work effort (hours worked) and tenure in the company or longevity in the business play a role for both self-employment and paid-employment earnings.

Finally, ethnicity variables provide a significant source of differences in earnings and in the reservation wages. Poles receive higher and Lebanese receive lower earnings than Turks

among the full-time employees. German citizens obtain significantly higher earnings in both types of working, while they also exhibit higher reservation wages. Living in ethnic enclaves leads to higher reservation wages for full-time work, and lower earnings when self-employed. Ethnic discrimination in the labor market is associated with lower earnings for both types of full-time work.

Table 2 shows the selection earnings results for Denmark. Only for the paid-employed earnings we find some (negative) self-selection. Human capital variables do not exhibit a relevant impact on earnings and reservation wages. The exception is high-school or university degree in Denmark, which raises the reservation wage for full-time work and increases earnings paid in full-time paid employment in a similar way as age; the age-earnings profile of the paid-employed is concave, however. Exposure to Denmark has no effect on any of the earnings measures. The earnings from paid-employment raise with knowledge of Danish, but are lower for individuals with pre-migration work experience. Disabled self-employed earn less. Single men earn more than single females, if not self-employed, but have a higher reservation wage for full-time work. Family variables (marriage status and small children), work effort measured by hours worked and working in a small company just affect earnings in paid-employment, and only in the last case in a negative way.

The role of ethnic factors on earnings is also limited in the Danish data: Those living in ethnic enclaves have a somewhat smaller income from paid-employment, but no significant differences in the cases of self-employment and the reservation wage for full-time work. Most of the ethnic dummies have no significant effect parameters. The exceptions are Danes and Poles only: both earn more than the Turkish reference group in paid-employment, and Poles earn more than the Turks in self-employment and have smaller reservation wages for full-time work.

### 4.3 Structural probits

Based on the earnings and reservation wage functions, we are able to impute values for all 4,839 individuals in the German sample and for all 1,585 people in the Danish sample for the expected earnings difference between self-employment and full-time paid-employment and between the earnings of full-time paid-employment and the reservation wages of full-time paid-employment. Results of the structural probit models for the two central choices are provided in Tables 3 and 4. There, we first show the simple models containing only the intercept and the expected earnings differences (see columns 1 and 4 in Tables 3 and 4). The choice to work full-time involves all 4,839 (1,585) individuals for Germany (Denmark) and strongly confirms that such a decision is motivated by economic incentives. The same holds for the decision to choose self-employment conditioned on the decision to work full-time; here the sample sizes are 1,864 individuals for Germany and 867 for Denmark. In all cases the Pseudo-R<sup>2</sup>'s are fairly high already for these simple specifications: (i) in the probability to work equation it is 0.19 for Germany and 0.20 for Denmark; (ii) for the probability of self-employment estimates it is 0.51 for Germany and 0.38 for Denmark, respectively. The full models are presented in columns 2 and 5 of Tables 3 and 4, for which we also provide the estimated marginals (see columns 3 and 6). Here, the Pseudo-R<sup>2</sup>'s improve still quite a lot: (i) for the probability to work estimates it is then 0.45 for Germany and 0.49 for Denmark; (ii) in probability of self-employment equation it is then 0.90 for Germany and 0.67 for Denmark, respectively.

The findings for Germany are contained in Table 3, which we summarize based on the estimates of the marginals of the full model. As explained before, both decisions are strongly affected by the expected earnings differentials from the alternative states. Age does not affect the full-time work decision significantly. However, the likelihood of choosing self-employment over full-time paid-employment increases with age, although at a declining rate. Disabled people are less likely to work full-time and to be self-employed. Schooling, Abitur and university education lead to a higher presence among full-time workers and among the self-employed. Vocational

training in Germany fosters the ability to open up one's own business, but does not make people more likely to take-up full-time work. Education in the home country leads to higher full-time work participation and to an (insignificantly) higher probability to engage in full-time paid-employment. Pre-migration work experience affects the full-time work decision positively, but has no consequences for the self-employment choice. Relative exposure to Germany, a measure for the integration potential, has a strong and positive effect on work participation and self-employment, although at a decreasing rate. In contrast to previous studies, we actually find significant differences between the self-employment probabilities of migrants according to different levels of education.

Parental experience as entrepreneur (father self-employed) has some positive effect on the self-employment decision of the individual, but they are not significant for the marginals. Homeowners are more likely to work full-time, but they are not more present among the self-employed. Regional unemployment does not affect these choices at all. Married men are more and married females are much less likely to work full-time than single males and females. Small kids in the household reduce the probability to work, especially among the females. However, the presence of children does not affect the self-employment choice. Married females have the highest self-employment probability, followed by single men, married men and single females.

Ethnicity matters. Iranians are clearly more likely to be in full-time employment than Turks, Ex-Yugoslavians and the Lebanese. German citizen are also more likely to be in such a way integrated in the labor market. While ethnic networks help inducing immigrants to work, living in ethnic enclaves reduces the chances to take-up full-time work. However, concerning the self-employment decision (versus working as a full-time employee), we observe that Ex-Yugoslavs and Poles are less entrepreneurial than the Turks, who are outperformed by the Iranians and the Lebanese. However, those migrants who have taken the German citizenship are less likely to choose self-employment. Entrepreneurial activity seems to be quite diverse among ethnicities. Those migrants living in ethnic enclaves are more likely to be entrepreneurs. Having

experienced ethnic discrimination in the labor market is a strong motive for taking up self-employment. Therefore, ethnic entrepreneurship seems largely not to be motivated by the incentive to integrate into the German society, but as a way to achieve economic success independent from the host country's labor market institutions. Finally, Muslim faith exhibits a negative integration signal: Muslims have a lower probability to engage both in full-time work and in self-employment. Church attendance does not seem to matter for either decision.

A final but most important issue for this paper is whether residence status at entry affects the full-time work and self-employment decisions. The results have changed somewhat in the structural probits (see Table 3), compared to the reduced form probits of Appendix Table B. Migrants arriving with a work permit have a higher probability to engage in paid-employment and to stay at full-time work, but they are somewhat less likely to choose self-employment than individuals from the reference group (German citizenship, born in Germany and other motives). Immigrants who come as refugees or asylum seekers are less probable to be in full-time work or self-employment. Migrants reuniting with their families show no preference for self-employment over paid-employment, but similar to refugees and asylum seekers, they are also hesitant to take up work.

The findings for Denmark are contained in Table 4, which we summarize again based on the estimates of the marginals of the full model. As outlined above, both decisions are strongly determined by the expected differentials from the earnings of the alternative choices. In addition, a larger number of variables have proven to be of importance. Age has a convex and relative exposure a concave relationship to the probability of full-time work, while both variables do not affect the self-employment decision. The human capital variables exhibit some positive impact on the work choice, but are hardly related to the self-employment choice. This is in contrast to the German findings, where more educated migrants have a higher probability to be self-employed and to be at full-time work. While in Germany immigrants with an education from the sending country are more likely to be at full-time work, they are less likely so in Denmark.

However, like in Germany, pre-migration work experience is a good predictor of full-time work in Denmark. Disability predicts a low work participation in both countries, and has a negative impact on self-employment in Germany but a positive in Denmark.

Demographic variables like gender, marriage status and small kids play an important role for work participation, but not for the self-employment choice. Single men are more self-employed than single women. Married women with small kids are less likely to be in full-time employment than single women (or men) without children under 14 in the household. Homeowners work more likely full-time. A higher regional unemployment is also associated with a larger probability to work full-time; an explanation for this finding could be that in the face of the unemployment threat, migrants prefer to take over full-time instead part-time work to save for a potential period of unemployment.

A number of variables measure ethnicity effects. Living in enclaves, using migration networks at the time of immigration, Danish citizenship and experienced discrimination and Muslim faith all have statistically insignificant parameter estimates. However, the dummies for the ethnic groups are all very significant and negative, indicating that the Turkish reference group has a much larger probability to work full-time than the other ethnic groups. No ethnic group has a particular advantage when it comes to the self-employment choice, where none of the marginals is statistically significant. Those who attend often religious services exhibit a lower probability to work full-time.

Finally, an inspection of the status at entry variables demonstrates that none of these variables has any impact neither on the full-employment nor on the self-employment choice of migrants in Denmark. This can be interpreted in two ways. One is that the status at entry concept is flawed, because these variables contain no useful information. This view is contradicted by the fact that those variables how worked comparably well for Germany, a country that has only a somewhat ineffective immigration system. The other interpretation is that the channels in

Denmark are really arbitrary, and the Danish immigration selection system is ineffective. We tend to conclude that this is the more probable case.

## **5. Summary and conclusions**

This paper uses a bi-national migration survey for Denmark and Germany to investigate the sorting of individuals into full-time paid-employment and entrepreneurship and their economic performance. Particular attention is paid to the role of legal status at entry in the host country (worker, refugee, and family reunification), ethnic networks, enclaves and other differences among ethnicities for their integration in the labor market. Since the focus is on the understanding of the self-employment decision, a two-stage structural probit model is employed that determines the willingness to work full-time (against part-time employment and not working), and the choice between full-time paid work and self-employment. The choices are determined by the reservation wage for full-time work, and the perceived earnings from working in paid-employment and as entrepreneur, among other factors. Accounting for sample selectivity, the paper provides regressions explaining reservation wages, and actual earnings for paid-employment and self-employment, which is the basis for such an analysis. The structural probit models suggest that the expected earnings differentials from working and not working (reservation wages) and from self-employment and full-time paid-employment earnings matter much for both countries, although only among a number of other determinants.

Ethnic differences are marked in Germany for the full-employment and the self-employment decisions, and for full-employment decisions in Denmark, but there are no common patterns across countries and ethnicities. The self-employment decision in Denmark seems to be rather unsystematic; lower schooling levels and disability exhibit positive effect parameters, which points at a negative selection of individuals escaping misery. As a contrast, in Germany entrepreneurship is positively affected by human capital variables and perceived ethnic

discrimination. Individuals react stronger on expected earnings differentials between self-employment and paid-employment.

For Germany, the legal status of immigrants at entry in the country is important; former refugees or asylum seekers are less likely to work full-time, and to choose self-employment. Those who come through the employment channel are more likely to be in full-time paid work, while those who arrive through the status of family reunion, are less. However, none of these variables has any impact neither on the full-employment nor on the self-employment choice of migrants in Denmark. We conclude that the Danish immigration selection system is very ineffective, while it can be improved in Germany.

Immigrants with a refugee or asylum status or coming through the process of family reunion may have problems to integrate in the economic system of the host country. While economic migrants are typically doing fairly well, they are often no entrepreneurs. Ethnic networks can help new immigrants to integrate into paid labor. Ethnic entrepreneurs may use a separate channel to gain economic independence and escape unemployment and perceived ethnic discrimination. Their chances are in ethnic enclaves, which at the same time are an obstacle to an easy integration into full-time paid work. These issues have to be further studied to improve the design of immigration and integration policies.

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TABLE 1: Selection Adjusted Earnings Regressions: German Data

Parameters	Not Employed Coefficient (t-ratio)	Self- Employed Coefficient (t-ratio)	Paid- Employed Coefficient (t-ratio)
Intercept	5.169** (39.95)	6.763** (4.63)	4.005** (17.96)
Age	0.017** (2.63)	0.033 (0.98)	0.079** (8.64)
Age squared	-0.0002* (-1.86)	-0.0005 (-1.28)	-0.001** (-7.87)
Relative exposure to Germany	-0.374* (-2.02)	-1.457 (-1.31)	0.220 (0.82)
Relative exposure to Germany squared	0.380* (2.02)	1.497 (1.34)	-0.278 (-0.99)
Primary-secondary schooling in Germany	-0.049 (-1.48)	-0.156 (-0.95)	-0.006 (-0.13)
Abitur, University in Germany	0.096* (1.94)	-0.109 (-0.76)	0.191** (3.35)
Vocational training in Germany	-0.078* (-2.27)	-0.014 (-0.10)	0.195** (5.80)
Education in home country	0.051* (1.79)	0.021 (0.12)	-0.021 (-0.45)
Disability	0.048 (1.52)	0.010 (0.05)	-0.062 (-1.46)
Speak German well	0.058** (2.90)	0.160 (1.28)	0.051* (1.75)
Pre-migration work experience	-0.053* (-2.32)	-0.067 (-0.59)	-0.016 (-0.46)
Male	0.045 (1.24)	-0.489* (-2.32)	0.108* (2.13)
Married	0.035 (0.91)	0.175 (1.24)	0.116** (2.75)
Female * Married	-0.073 (-1.34)	-0.678** (-2.56)	-0.060 (-0.98)
Kids under 14 in household	0.068* (2.07)	0.068 (0.52)	0.025 (0.69)
Female * Kids under 14 in household	0.026 (0.64)	-0.145 (-0.50)	-0.016 (-0.26)
Live in Enclaves	0.045** (2.35)	-0.187* (-1.69)	-0.019 (-0.72)
Unemployment in region	-0.004 (-1.28)	-0.025 (-1.57)	-0.024** (-4.81)
Ex-Yugoslav	-0.021 (-0.72)	0.141 (0.82)	0.041 (1.08)
Polish	0.036 (1.04)	0.230 (1.22)	0.078* (2.03)
Iranian	0.016 (0.52)	-0.046 (-0.26)	0.025 (0.51)
Lebanese	0.010 (0.30)	-0.177 (-1.02)	-0.133** (-2.80)
German citizen	0.108** (2.36)	0.482* (2.14)	0.079* (1.76)
Born in Germany	0.037 (0.59)	0.036 (0.11)	0.107 (1.30)

TABLE 1: Selection Adjusted Earnings Regressions: German Data

Parameters	Not Employed Coefficient (t-ratio)	Self- Employed Coefficient (t-ratio)	Paid- Employed Coefficient (t-ratio)
Worked Hours per week		0.008** (2.89)	0.008** (3.81)
Work in Small company or sole ownership of the business		-0.101 (-0.91)	-0.154** (-5.80)
Tenure in company or longevity in business		0.021* (2.25)	0.008** (3.33)
Experienced Discrimination in Germany	0.022 (1.26)	-0.205* (-2.07)	-0.051* (-1.88)
Employ family members in business		0.071 (0.62)	
Banking, Service industry		-0.208 (-0.66)	-0.148** (-2.94)
Commerce industry		-0.319 (-0.92)	-0.158** (-2.66)
Government, Non-profit organization industry		-0.405 (-0.69)	0.093* (2.08)
Other industry		-0.075 (-0.26)	-0.103* (-1.73)
Construction, Mining		0.160 (0.63)	0.042 (0.94)
$\lambda$	0.123* (1.91)	-0.413 (-1.57)	0.255* (2.17)
Log weekly earnings (std.dev)	5.720 (0.286)	6.332 (0.674)	5.986 (0.503)
Log-Likelihood value	-76.705	-113.931	-609.496
R <sup>2</sup>	0.1483	0.420	0.352
Number of observations	1,052	179	1,219

Note: t-ratios are adjusted for heteroscedasticity

\*  $p < 0.05$  in one-tail test

\*\*  $p < 0.01$  in one-tail test

TABLE 2: Selection Adjusted Earnings Regressions: Danish Data

Parameters	Not Employed Coefficient (t-ratio)	Self- Employed Coefficient (t-ratio)	Paid- Employed Coefficient (t-ratio)
Intercept	5.619** (22.62)	4.114** (2.55)	4.521** (18.68)
Age	0.018* (1.78)	0.013 (0.33)	0.065** (6.19)
Age squared	-0.0002 (-1.53)	-0.0002 (-0.36)	-0.001** (-5.27)
Relative exposure to Denmark	0.271 (0.82)	-0.175 (-0.12)	0.261 (0.85)
Relative exposure to Denmark squared	-0.287 (-0.81)	0.887 (0.58)	-0.143 (-0.49)
Primary-secondary schooling in Denmark	-0.010 (-0.23)	-0.260* (-1.98)	-0.021 (-0.51)
Abitur, University in Denmark	0.098* (1.67)	-0.108 (-0.51)	0.158** (3.66)
Vocational training in Denmark	0.003 (0.05)	-0.043 (-0.35)	0.003 (0.10)
Education in home country	-0.038 (-0.71)	0.005 (0.02)	0.036 (0.69)
Disability	-0.060 (-0.97)	-0.404* (-2.28)	-0.0002 (-0.004)
Speak Danish well	0.020 (0.70)	-0.049 (-0.41)	0.066* (2.03)
Pre-migration work experience	-0.011 (-0.33)	-0.055 (-0.47)	-0.092** (-2.56)
Male	0.137* (2.15)	-0.208 (-1.05)	0.120** (2.35)
Married	-0.012 (-0.21)	0.219 (1.26)	0.079* (1.74)
Female * Married	0.008 (0.11)	-0.436 (-1.51)	-0.022 (-0.33)
Kids under 14 in household	0.001 (0.02)	0.103 (0.78)	0.066* (1.69)
Female * Kids under 14 in household	0.045 (0.75)	-0.301 (-1.19)	-0.087 (-1.48)
Live in Enclaves	-0.020 (-0.57)	-0.047 (-0.33)	-0.062* (-1.86)
Unemployment in region	0.005 (0.41)	0.010 (0.21)	-0.016 (-1.25)
Ex-Yugoslav	-0.066 (-1.20)	0.395 (1.11)	0.041 (0.87)
Polish	-0.138* (-1.87)	0.488** (2.61)	0.138** (3.24)
Iranian	-0.026 (-0.50)	0.339 (1.45)	0.002 (0.04)
Lebanese	-0.013 (-0.21)	-0.126 (-0.54)	0.003 (0.04)
Danish citizen	0.035 (0.98)	0.066 (0.57)	0.086** (2.46)

TABLE 2: Selection Adjusted Earnings Regressions: Danish Data

Parameters	Not Employed Coefficient (t-ratio)	Self- Employed Coefficient (t-ratio)	Paid- Employed Coefficient (t-ratio)
Born in Denmark	0.086 (0.78)	-0.100 (-0.18)	0.029 (0.36)
Worked Hours per week		0.003 (0.81)	0.007* (2.27)
Work in Small company or sole ownership of the business		0.049 (0.43)	-0.066** (-2.61)
Tenure in company or longevity in business		0.025* (1.87)	-0.005 (-1.42)
Experienced Discrimination in Denmark	-0.006 (-0.20)	0.062 (0.60)	0.014 (0.47)
Employ family members in business		0.083 (0.70)	
Banking, Service industry		1.138* (1.87)	0.179** (2.89)
Commerce industry		1.410* (1.98)	0.138* (1.71)
Government, Non-profit organization industry		1.363** (3.68)	-0.003 (-0.08)
Other industry		0.886* (1.81)	0.036 (0.79)
Construction, Mining			0.056 (0.81)
$\lambda$	0.040 (0.43)	0.276 (0.64)	-0.227* (-1.72)
Log weekly earnings (std.dev)	6.107 (0.260)	6.363 (0.527)	6.394 (0.361)
Log-Likelihood value	22.904	-22.214	-74.118
R <sup>2</sup>	0.173	0.494	0.381
Number of observations	389	101	577

Note: t-ratios are adjusted for heteroscedasticity

\* p < 0.05 in one-tail test

\*\* p < 0.01 in one-tail test

TABLE 3: Structural Probits: German Data

Parameters	Probability to work			Probability to choose self-employment		
	Parsimonious model	Full model	Marginals	Parsimonious model	Full model	Marginals
	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)
Intercept	-0.513** (-21.91)	-0.139 (-0.41)	-0.051 (-0.41)	-2.722** (-22.64)	-16.709** (-10.33)	-0.674** (-4.89)
Difference in expected earnings from paid-employment and expected reservation wages	1.751** (20.97)	1.386** (11.06)	0.509** (11.14)			
Difference in expected earnings from self-employment and expected earnings from paid-employment				2.078** (17.60)	5.982** (13.97)	0.241** (5.37)
Age		-0.025 (-1.50)	-0.009 (-1.50)		0.287** (5.47)	0.012** (3.82)
Age squared		0.0001 (0.62)	0.00005 (0.62)		-0.003** (-4.32)	-0.0001** (-3.28)
Relative exposure to Germany		1.787** (5.16)	0.656** (5.16)		9.467** (8.14)	0.382** (4.03)
Relative exposure to Germany squared		-0.861** (-2.46)	-0.316** (-2.46)		-11.408** (-10.46)	-0.460** (-4.32)
Primary-secondary schooling in Germany		0.151* (1.85)	0.057* (1.82)		0.770** (2.94)	0.050* (1.79)
Abitur, University in Germany		0.166* (1.67)	0.063 (1.63)		2.189** (7.78)	0.435** (4.71)
Vocational training in Germany		-0.020 (-0.27)	-0.007 (-0.27)		1.218** (5.66)	0.114** (3.31)
Education in home country		0.309** (4.23)	0.109** (4.44)		-0.768** (-2.59)	-0.050 (-1.64)
Disability		-0.490** (-7.23)	-0.164** (-8.16)		-0.473* (-1.97)	-0.013** (-2.37)
Pre-migration work experience		0.138** (2.49)	0.051** (2.50)		-0.063 (-0.29)	-0.003 (-0.29)
Father self-employed					0.269* (1.68)	0.013 (1.42)
Male		0.031 (0.38)	0.012 (0.38)		3.863** (11.18)	0.150** (7.20)
Married		0.322** (4.09)	0.114** (4.27)		-0.700** (-3.43)	-0.041** (-2.34)
Female * Married		-0.867** (-8.27)	-0.298** (-9.07)		4.654** (11.43)	0.954** (35.01)
Kids under 14 in household		-0.155* (-2.16)	-0.057* (-2.17)		0.191 (1.21)	0.008 (1.03)
Female * Kids under 14 in household		-0.511** (-5.39)	-0.176** (-5.87)		0.403 (1.04)	0.024 (0.77)
Homeowner		0.285** (3.66)	0.109** (3.56)		0.223 (0.92)	0.011 (0.76)
Live in Enclaves		-0.082* (-1.89)	-0.030* (-1.89)		0.920** (5.14)	0.053** (3.64)
Unemployment in region		-0.010 (-1.25)	-0.004 (-1.25)		-0.035 (-1.43)	-0.001 (-1.32)

TABLE 3: Structural Probits: German Data

Parameters	Probability to work			Probability to choose self-employment		
	Parsimonious model	Full model		Parsimonious model	Full model	
	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)
Ex-Yugoslav		-0.018 (-0.23)	-0.006 (-0.23)	-0.577* (-1.93)	-0.017** (-2.78)	
Polish		0.142* (1.66)	0.053 (1.64)	-0.755** (-2.85)	-0.022** (-3.34)	
Iranian		0.196** (2.50)	0.074** (2.45)	0.842** (3.35)	0.061* (1.92)	
Lebanese		-0.028 (-0.35)	-0.010 (-0.35)	0.993** (3.86)	0.092* (2.07)	
German citizen		0.280** (2.91)	0.107** (2.83)	-2.284** (-7.01)	-0.025** (-4.05)	
Used network migration		0.085* (1.65)	0.031* (1.66)	-0.360* (-1.98)	-0.016 (-1.62)	
Initial residence status based on employment		0.240** (2.91)	0.091** (2.84)	-0.384 (-1.44)	-0.012* (-1.76)	
Initial residence status based on family reunion		-0.152* (-2.10)	-0.055* (-2.13)	-0.192 (-0.70)	-0.007 (-0.77)	
Initial residence status based on refugee/asylum seeker status		-0.242** (-3.14)	-0.087** (-3.21)	-0.520* (-2.17)	-0.017** (-2.34)	
Experienced discrimination in Germany				1.262** (7.23)	0.095** (4.14)	
Muslim faith		-0.110* (-1.83)	-0.041* (-1.83)	-0.329* (-2.30)	-0.013* (-1.86)	
Attend religious services often		-0.067 (-1.50)	-0.025 (-1.49)	0.130 (0.81)	0.005 (0.82)	
$\chi^2$ value	574.667	1,684.441		581.695	1,346.115	
Log-Likelihood value	-2,938.122	-2,383.235		-523.304	-141.093	
Veall / Zimmermann Pseudo-R <sup>2</sup>	0.186	0.452		0.510	0.899	
Number of observations		4,839			1,864	

Note: t-ratios are robust  
 \* p < 0.05 in one-tail test  
 \*\* p < 0.01 in one-tail test

TABLE 4: Structural Probits: Danish Data

Parameters	Probability to work			Probability to choose self-employment		
	Parsimonious model	Full model	Marginals	Parsimonious model	Full model	Marginals
	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)
Intercept	-0.471** (-8.52)	3.861** (5.58)	1.517** (5.58)	-0.075 (-0.75)	-3.874** (-3.17)	-0.077 (-1.60)
Difference in expected earnings from paid-employment and expected reservation wages	2.492** (13.66)	5.478** (15.04)	2.152** (14.97)			
Difference in expected earnings from self-employment and expected earnings from paid-employment				1.572** (8.32)	3.611** (6.45)	0.072* (1.77)
Age		-0.222** (-6.51)	-0.087** (-6.51)		0.216** (3.37)	0.004 (1.53)
Age squared		0.002** (5.26)	0.001** (5.26)		-0.002** (-2.67)	-0.00004 (-1.42)
Relative exposure to Denmark		1.883* (2.29)	0.740* (2.29)		1.602 (0.75)	0.032 (0.82)
Relative exposure to Denmark squared		-2.456** (-3.23)	-0.965** (-3.23)		-3.748* (-1.87)	-0.074 (-1.50)
Primary-secondary schooling in Denmark		0.043 (0.36)	0.017 (0.37)		0.899** (3.67)	0.038* (1.88)
Abitur, University in Denmark		-0.109 (-0.88)	-0.043 (-0.87)		0.252 (1.04)	0.006 (0.95)
Vocational training in Denmark		0.271** (2.51)	0.104** (2.59)		0.051 (0.27)	0.001 (0.25)
Education in home country		-0.516** (-3.51)	-0.191** (-3.81)		-0.195 (-0.62)	-0.005 (-0.49)
Disability		-1.088** (-8.67)	-0.404** (-10.48)		1.799** (4.79)	0.217* (2.29)
Pre-migration work experience		0.367** (3.53)	0.143** (3.57)		-0.211 (-1.21)	-0.004 (-0.97)
Father self-employed					-0.160 (-0.91)	-0.003 (-0.87)
Male		0.170 (1.06)	0.067 (1.07)		1.862** (5.55)	0.038* (1.83)
Married		-0.162 (-1.11)	-0.063 (-1.12)		-0.559* (-1.93)	-0.016 (-1.24)
Female * Married		-0.527** (-2.75)	-0.207** (-2.80)		1.351** (3.25)	0.070 (1.48)
Kids under 14 in household		-0.329** (-2.49)	-0.129** (-2.52)		-0.262 (-1.23)	-0.005 (-0.84)
Female * Kids under 14 in household		0.509** (3.01)	0.192** (3.19)		0.711* (1.71)	0.026 (1.10)
Homeowner		0.493** (5.08)	0.187** (5.35)		0.130 (0.77)	0.003 (0.56)
Live in Enclaves		-0.003 (-0.04)	-0.001 (-0.04)		-0.067 (-0.39)	-0.001 (-0.41)
Unemployment in region		0.144** (3.86)	0.057** (3.86)		-0.042 (-0.56)	-0.001 (-0.51)

TABLE 4: Structural Probits: Danish Data

Parameters	Probability to work			Probability to choose self-employment		
	Parsimonious model	Full model		Parsimonious model	Full model	
	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)	Marginals (t-ratio)
Ex-Yugoslav		-0.453** (-2.91)	-0.179** (-2.94)		-1.780** (-5.35)	-0.019 (-1.47)
Polish		-1.207** (-6.22)	-0.447** (-7.48)		-1.052** (-3.01)	-0.013 (-1.59)
Iranian		-0.340* (-2.03)	-0.135* (-2.03)		-0.567* (-2.05)	-0.008 (-1.37)
Lebanese		-0.841** (-5.55)	-0.323** (-6.15)		1.191** (3.00)	0.084 (1.47)
Danish citizen		-0.078 (-0.73)	-0.031 (-0.73)		-0.172 (-0.83)	-0.003 (-0.71)
Used network migration		0.088 (0.94)	0.035 (0.94)		0.067 (0.36)	0.001 (0.33)
Initial residence status based on employment		0.352 (1.44)	0.132 (1.53)		-0.229 (-0.59)	-0.004 (-0.70)
Initial residence status based on family reunion		0.064 (0.36)	0.025 (0.37)		-0.048 (-0.17)	-0.001 (-0.17)
Initial residence status based on refugee/asylum seeker status		0.083 (0.49)	0.032 (0.50)		-0.263 (-0.82)	-0.005 (-0.82)
Experienced discrimination in Denmark					-0.015 (-0.11)	-0.0003 (-0.11)
Muslim faith		-0.083 (-0.73)	-0.033 (-0.73)		0.071 (0.34)	0.001 (0.34)
Attend religious services often		-0.184* (-2.22)	-0.072* (-2.21)		-0.026 (-0.16)	-0.001 (-0.17)
$\chi^2$ value	202.760		621.193	185.800		389.260
Log-Likelihood value	-990.245		-781.028	-278.667		-176.937
Veall / Zimmermann Pseudo-R <sup>2</sup>	0.196		0.486	0.382		0.671
Number of observations		1,585			867	

Note: t-ratios are robust  
 \* p < 0.05 in one-tail test  
 \*\* p < 0.01 in one-tail test

APPENDIX TABLE A: Overview of Modeling Structure, Variables and Significance

Variables and Explanation	Reduced Form Probits		Earnings Regressions			Structural Form Probits	
	Not Work	Self-employed	Not Employed	Self-employed	Paid-employed	Full time Work	Self-employed
<b><u>Dependent Variables</u></b>							
Probability to not work (i.e. not employed and unemployed) versus working full- or part-time as paid- or self-employed	X						
Probability to work as self-employed versus paid-employed fulltime		X					
Weekly earnings of fulltime not employed = reservation wages			X				
Weekly earnings of self-employed				X			
Weekly earnings of fulltime paid-employed					X		
Probability to work fulltime as paid- or self-employed versus not working (i.e. not employed or unemployed) or working part time						X	
Probability to work as self-employed versus paid-employed fulltime							X
<b><u>Predictor Variables</u></b>							
<i>Human Capital</i>							
Relative Exposure to the host country = Years since arrival / Age	X <sub>-*</sub> <sup>-*</sup>	X <sub>+</sub> <sup>+</sup>	X <sub>+</sub> <sup>-*</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>+</sub> <sup>+</sup>	X <sub>++</sub> <sup>++</sup>	X <sub>+</sub> <sup>++</sup>
Relative Exposure squared	X <sub>++</sub> <sup>++</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>-</sub> <sup>++</sup>	X <sub>+</sub> <sup>+</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>-*</sub> <sup>-*</sup>	X <sub>-*</sub> <sup>-*</sup>
Host country schooling dummies							
No schooling (reference)							
Primary or Secondary schooling	X <sub>-</sub> <sup>-*</sup>	X <sub>+</sub> <sup>++</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>-*</sub> <sup>-</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>+</sub> <sup>++</sup>	X <sub>++</sub> <sup>++</sup>
Abitur or University	X <sub>-*</sub> <sup>-*</sup>	X <sub>-*</sub> <sup>++</sup>	X <sub>++</sub> <sup>++</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>++</sub> <sup>++</sup>	X <sub>-</sub> <sup>++</sup>	X <sub>+</sub> <sup>++</sup>
Vocational training	X <sub>-*</sub> <sup>-*</sup>	X <sub>-</sub> <sup>-*</sup>	X <sub>+</sub> <sup>-*</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>+</sub> <sup>++</sup>	X <sub>++</sub> <sup>-</sup>	X <sub>+</sub> <sup>++</sup>
Disability	X <sub>++</sub> <sup>++</sup>	X <sub>+</sub> <sup>-</sup>	X <sub>-</sub> <sup>+</sup>	X <sub>-*</sub> <sup>+</sup>	X <sub>-</sub> <sup>-</sup>	X <sub>-*</sub> <sup>-*</sup>	X <sub>++</sub> <sup>-*</sup>
Fluent in host country language			X <sub>+</sub> <sup>++</sup>	X <sub>-</sub> <sup>+</sup>	X <sub>++</sub> <sup>++</sup>		

APPENDIX TABLE A: Overview of Modeling Structure, Variables and Significance

Variables and Explanation	Reduced Form Probits		Earnings Regressions			Structural Form Probits	
	Not Work	Self-employed	Not Employed	Self-employed	Paid-employed	Full time Work	Self-employed
<i>Pre-migration Human Capital dummies</i>							
Home country schooling	$X_{+}^{-*}$	$X_{-}^{+}$	$X_{-}^{+*}$	$X_{+}^{+}$	$X_{+}^{-}$	$X_{-*}^{+*}$	$X_{-}^{-*}$
Pre-migration work experience	$X_{+}^{-*}$	$X_{-}^{-}$	$X_{-}^{-*}$	$X_{-}^{-}$	$X_{-*}^{-}$	$X_{+*}^{+*}$	$X_{-}^{-}$
Father self-employed		$X_{+}^{+*}$					$X_{-}^{+*}$
<i>Attachments and adjustments in the host country</i>							
Homeownership	$X_{-*}^{-*}$	$X_{+}^{+*}$				$X_{+*}^{+*}$	$X_{+}^{+}$
Living in Enclaves	$X_{+*}^{+*}$	$X_{+}^{-*}$	$X_{-}^{+*}$	$X_{-}^{-*}$	$X_{-*}^{-}$	$X_{-}^{-*}$	$X_{-}^{+*}$
Experienced discrimination	$X_{+*}^{-}$	$X_{+}^{+}$	$X_{-}^{+}$	$X_{+}^{-*}$	$X_{+}^{-*}$		$X_{-}^{+*}$
<i>Migration reasons and conditions</i>							
Network Migration = Family and friends in host country	$X_{-}^{-*}$	$X_{+}^{-}$				$X_{+}^{+*}$	$X_{+}^{-*}$
<i>Residence status upon arrival based on Citizenship or other reason (reference)</i>							
Employment	$X_{-}^{-*}$	$X_{+}^{-}$				$X_{+}^{+*}$	$X_{-}^{-}$
Family reunion	$X_{-}^{+*}$	$X_{+}^{-}$				$X_{+}^{-*}$	$X_{-}^{-}$
Refugee/asylum	$X_{-}^{+*}$	$X_{-}^{-*}$				$X_{+}^{-*}$	$X_{-}^{-*}$
<i>National Origin</i>							
Turk (reference)							
Ex-Yugoslavian	$X_{-}^{-}$	$X_{-*}^{-}$	$X_{-}^{-}$	$X_{+}^{+}$	$X_{+}^{+}$	$X_{-*}^{-}$	$X_{-*}^{-*}$
Polish	$X_{-*}^{-*}$	$X_{+}^{-}$	$X_{-*}^{+}$	$X_{+*}^{+}$	$X_{+*}^{+*}$	$X_{-*}^{+*}$	$X_{-*}^{-*}$
Iranian	$X_{+}^{-}$	$X_{+}^{+*}$	$X_{-}^{+}$	$X_{+}^{-}$	$X_{+}^{+}$	$X_{-*}^{+*}$	$X_{-*}^{+*}$
Lebanese	$X_{+*}^{+*}$	$X_{+}^{+*}$	$X_{-}^{+}$	$X_{-}^{-}$	$X_{+}^{-*}$	$X_{-*}^{-}$	$X_{+*}^{+*}$
Citizen	$X_{-}^{-*}$	$X_{-}^{-}$	$X_{+}^{+*}$	$X_{+}^{+*}$	$X_{+*}^{+*}$	$X_{-}^{+*}$	$X_{-}^{-*}$
Born in host country			$X_{+}^{+}$	$X_{-}^{+}$	$X_{+}^{+}$		

APPENDIX TABLE A: Overview of Modeling Structure, Variables and Significance

Variables and Explanation	Reduced Form Probits		Earnings Regressions			Structural Form Probits	
	Not Work	Self-employed	Not Employed	Self-employed	Paid-employed	Full time Work	Self-employed
<i>Work Effort</i>							
Hours per week				$X_{+}^{+*}$	$X_{+*}^{-*}$		
<i>Labor Market Structures</i>							
Unemployment in geographical region	$X_{+}^{+*}$	$X_{+}^{+*}$	$X_{+}^{-}$	$X_{+}^{-}$	$X_{-}^{-*}$	$X_{+*}^{-}$	$X_{-}^{-}$
Small company / business = sole proprietor or company with less than 99 employees				$X_{+}^{-}$	$X_{-*}^{-*}$		
Tenure in company / longevity in business in years				$X_{+*}^{+*}$	$X_{-}^{+*}$		
Employ family members in business				$X_{+}^{+}$			
<i>Industry dummies</i>							
Industry without construction (reference)							
Banking / Service		$X_{+*}^{+*}$		$X_{+*}^{-}$	$X_{+*}^{-*}$		
Commerce		$X_{+*}^{+*}$		$X_{+*}^{-}$	$X_{+*}^{-*}$		
Government / Non Profit Organization		$X_{+}^{-}$		$X_{+*}^{-}$	$X_{-}^{+*}$		
Other industry		$X_{+*}^{+*}$		$X_{+*}^{-}$	$X_{+}^{-*}$		
Construction / Mining		$X_{+}^{+*}$		$X_{a}^{+}$	$X_{+}^{+}$		
Difference in expected earnings between paid-employment and reservation wages						$X_{+*}^{+*}$	
Difference in expected earnings between self-employment and paid-employment							$X_{+*}^{+*}$
<i>Demographics</i>							
Age	$X_{-}^{-*}$	$X_{+}^{+*}$	$X_{+*}^{+*}$	$X_{+}^{+}$	$X_{+*}^{+*}$	$X_{-*}^{-}$	$X_{+*}^{+*}$
Age square	$X_{+*}^{+*}$	$X_{-}^{-}$	$X_{-}^{-*}$	$X_{-}^{-}$	$X_{-*}^{-*}$	$X_{+*}^{+}$	$X_{-*}^{-*}$

APPENDIX TABLE A: Overview of Modeling Structure, Variables and Significance

Variables and Explanation	Reduced Form Probits		Earnings Regressions			Structural Form Probits	
	Not Work	Self-employed	Not Employed	Self-employed	Paid-employed	Full time Work	Self-employed
Male	$X_{+}^{+*}$	$X_{+}^{+*}$	$X_{+*}^{+}$	$X_{-}^{-*}$	$X_{+*}^{+*}$	$X_{+}^{+}$	$X_{+*}^{+*}$
Married	$X_{-*}^{-*}$	$X_{+}^{-*}$	$X_{-}^{+}$	$X_{+}^{+}$	$X_{+*}^{+*}$	$X_{-}^{+*}$	$X_{-*}^{-*}$
Kids under 14 in household	$X_{-}^{+*}$	$X_{-}^{+}$	$X_{+}^{+*}$	$X_{+}^{+}$	$X_{+*}^{+}$	$X_{-*}^{-*}$	$X_{-}^{+}$
Female * Married	$X_{+*}^{+*}$	$X_{-}^{+}$	$X_{+}^{-}$	$X_{-}^{-*}$	$X_{-}^{-}$	$X_{-*}^{-*}$	$X_{+*}^{+*}$
Female * Kids under 14 in household	$X_{+*}^{+*}$	$X_{-}^{-}$	$X_{+}^{+}$	$X_{-}^{-}$	$X_{-}^{-}$	$X_{+*}^{-*}$	$X_{+*}^{+}$
Grew up in Muslim faith	$X_{+}^{+*}$	$X_{-}^{-}$				$X_{-}^{-*}$	$X_{+}^{-*}$
Goes to church often or practicing religious	$X_{+*}^{+}$	$X_{-}^{-}$				$X_{-*}^{-}$	$X_{-}^{+}$

Note: 'X' refers to 'present' in the particular regression, the upper (lower) sign is the sign of the estimated parameter for Germany (Denmark), and '\*' indicates statistical significance at least at the 5% level (one-tail test).

APPENDIX TABLE B: Reduced Form Probits: German Data

Parameters	Not Work	Self-Employment
	Coefficient (t-ratio)	Coefficient (t-ratio)
Intercept	0.402 (1.34)	-4.345** (-6.28)
Age	-0.055** (-3.85)	0.070** (2.36)
Age squared	0.001** (4.93)	-0.001 (-1.51)
Relative exposure to Germany	-2.213** (-6.68)	0.909 (1.12)
Relative exposure to Germany squared	1.491** (4.51)	-0.973 (-1.27)
Primary-secondary schooling in Germany	-0.135* (-1.75)	0.255* (1.71)
Abitur, University in Germany	-0.337** (-3.33)	0.337* (2.26)
Vocational training in Germany	-0.336** (-5.08)	-0.212* (-1.78)
Education in home country	-0.205** (-3.09)	0.148 (0.93)
Disability	0.602** (10.30)	-0.226 (-1.56)
Pre-migration work experience	-0.098* (-1.88)	-0.150 (-1.34)
Father self-employed		0.202* (2.08)
Male	0.138* (1.67)	0.480** (2.76)
Married	-0.503** (-6.38)	-0.250* (-1.89)
Female * Married	0.818** (7.96)	0.238 (1.09)
Kids under 14 in household	0.294** (4.01)	0.120 (1.02)
Female * Kids under 14 in household	0.300** (3.33)	-0.206 (-0.93)
Homeowner	-0.303** (-3.85)	0.522** (4.21)
Live in Enclaves	0.190** (4.66)	-0.169* (-1.89)
Unemployment in region	0.047** (7.01)	0.033* (2.28)
Ex-Yugoslav	-0.024 (-0.33)	-0.034 (-0.22)
Polish	-0.273** (-3.35)	-0.164 (-0.96)
Iranian	-0.093 (-1.26)	0.361** (2.50)
Lebanese	0.319** (4.47)	0.315* (2.00)
German citizen	-0.191* (-2.02)	-0.215 (-1.33)

APPENDIX TABLE B: Reduced Form Probits: German Data

Parameters	Not Work Coefficient (t-ratio)	Self-Employment Coefficient (t-ratio)
Used Network migration	-0.086* (-1.80)	-0.072 (-0.74)
Initial residence status based on employment	-0.213** (-2.52)	-0.212 (-1.45)
Initial residence status based on family reunion	0.210** (3.03)	-0.193 (-1.42)
Initial residence status based on refugee/asylum seeker status	0.394** (5.35)	-0.296* (-2.23)
Experienced discrimination in Germany	-0.0002 (-0.004)	0.132 (1.47)
Muslim faith	0.160** (2.84)	-0.102 (-0.94)
Attend religious services often	0.026 (0.61)	-0.099 (-1.13)
Banking, Service Industry		1.172** (8.41)
Commerce Industry		1.346** (9.04)
Government, Non-profit organization Industry		-0.432 (-1.58)
Other industry		0.684** (3.24)
Construction, Mining		0.594** (3.41)
$\chi^2$ value	1,323.054	417.366
Log-Likelihood value	-2,657.890	-605.468
Veall / Zimmermann Pseudo-R <sup>2</sup>	0.371	0.392
Number of observations	4,839	1,864

\* p < 0.05 in one-tail test

\*\* p < 0.01 in one-tail test

APPENDIX TABLE C: Reduced Form Probits: Danish Data

Parameters	Not Work	Self-Employment
	Coefficient (t-ratio)	Coefficient (t-ratio)
Intercept	0.015 (0.02)	-4.025** (-3.52)
Age	-0.039 (-1.31)	0.063 (1.21)
Age squared	0.001* (2.02)	-0.001 (-0.83)
Relative exposure to Denmark	-2.332** (-2.87)	0.755 (0.55)
Relative exposure to Denmark squared	2.157** (2.82)	-0.950 (-0.76)
Primary-secondary schooling in Denmark	-0.015 (-0.13)	0.053 (0.29)
Abitur, University in Denmark	-0.332** (-2.57)	-0.557** (-2.86)
Vocational training in Denmark	-0.390** (-3.52)	-0.080 (-0.51)
Education in home country	0.149 (1.01)	-0.041 (-0.17)
Disability	0.925** (8.26)	0.333 (1.38)
Pre-migration work experience	0.115 (1.16)	-0.226 (-1.36)
Father self-employed		0.215 (1.35)
Male	0.054 (0.32)	0.172 (0.63)
Married	-0.299* (-2.11)	0.031 (0.14)
Female * Married	0.579** (2.93)	-0.168 (-0.50)
Kids under 14 in household	-0.068 (-0.54)	-0.061 (-0.32)
Female * Kids under 14 in household	0.371* (2.28)	-0.115 (-0.38)
Homeowner	-0.514** (-5.08)	0.194 (1.30)
Live in Enclaves	0.326** (3.91)	0.241 (1.48)
Unemployment in region	0.016 (0.45)	0.061 (0.97)
Ex-Yugoslav	-0.213 (-1.34)	-0.837** (-2.82)
Polish	-0.481** (-2.61)	0.068 (0.23)
Iranian	0.234 (1.48)	0.394 (1.46)
Lebanese	0.642** (4.31)	0.296 (1.03)
Danish citizen	-0.165 (-1.63)	-0.086 (-0.52)

APPENDIX TABLE C: Reduced Form Probits: Danish Data

Parameters	Not Work	Self-Employment
	Coefficient (t-ratio)	Coefficient (t-ratio)
Used Network migration	-0.057 (-0.62)	0.066 (0.43)
Initial residence status based on employment	-0.256 (-1.06)	0.086 (0.24)
Initial residence status based on family reunion	-0.099 (-0.56)	0.025 (0.09)
Initial residence status based on refugee/asylum seeker status	-0.145 (-0.84)	-0.002 (-0.01)
Experienced discrimination in Denmark	0.154* (1.89)	0.197 (1.45)
Muslim faith	0.070 (0.61)	-0.065 (-0.34)
Attend religious services often	0.204** (2.39)	-0.151 (-1.01)
Banking, Service Industry		1.529** (6.20)
Commerce Industry		1.949** (7.32)
Government, Non-profit organization Industry		0.346 (1.21)
Other industry		0.984** (3.76)
Construction, Mining		0.206 (0.39)
$\chi^2$ value	465.407	205.679
Log-Likelihood value	-773.141	-268.727
Veall / Zimmermann Pseudo-R <sup>2</sup>	0.406	0.415
Number of observations	1,585	867

\* p &lt; 0.05 in one-tail test

\*\* p &lt; 0.01 in one-tail test