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Immigrants' Location Preferences: Exploiting a Natural Experiment

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Abstract

This paper exploits a dispersal policy for refugee immigrants to estimate the importance of local and regional factors for refugees' location preferences.

The main results of a mixed proportional hazard competing risks model are that placed refugees react to high regional unemployment and lack of a local immigrant population by migrating to large municipalities. Lack of local fellow countrymen, however, increases the exit rate to medium-sized as well as large municipalities. This finding is likely to be a result of the dispersal policy. Finally, refugees react strongly to assignment to small municipalities by migrating mainly to medium-sized municipalities.

JEL classifications: J15, R15 and H0.

Keywords: Location Preferences, Internal Migration, Immigrants, Dispersal Policies, Duration Analysis.

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1 Introduction

It is a common international phenomenon that the immigrant population is geographically clustered. In 1990, 63% of the foreign born population in the US were clustered in the four most populous states, California, New York, Florida and Texas, where only 31% of the overall population lived (Zavodny 1997). In 1997, 53% of the Swedish immigrant population lived in one of the three largest cities, although only 35% of the native population lived in these cities (Åslund 2001). Similarly in 1998, 52% of the foreign born population in Denmark lived in the metropolitan area, while only 34% of the overall population lived there (Ministry of Internal Affairs 1999).

In the policy discussion, critics blame residential concentration and segregation of immigrants for hampering the integration process of immigrants by slowing down the acquisition of country-specific human capital, such as language skills and knowledge about the host country (Åslund 2001). In addition, cities receiving a large proportion of the immigrant inflow often consider this a financial and social burden since new immigrants tend to have a low labour market attachment. For these reasons, policies affecting the location of refugees are carried out in the US, Germany, the Netherlands, Norway and Denmark. Such policies are called dispersal policies, settlement policies or placement policies. Also the UK has recently implemented a new system where refugee immigrants are located away from the London region and Southeast England where most previous refugees stay. Sweden, however, partly abandoned its dispersal policy, the "Whole of Sweden Strategy", in 1994.[1]

Those criticizing dispersal policies claim that not allowing people to choose for themselves will lead to higher subsequent migration rates, i.e. refugees will relocate after initial placement within the host country, which will undo some of the intended results of the policy. Empirical studies on dispersal policies in the US (Forbes 1985), Norway (Djuve and Kavli 2000), Sweden (Åslund 2001) and Denmark (Hummelgaard et al. 1995) all confirm that the secondary migration rates are high. For example, 45% of the 1975 arrivals to the US from Indochina lived in a different state in 1980 than they did upon placement (Forbes 1985). Similarly, 38% of the refugee immigrants who were placed according to the Whole of Sweden Strategy during 1987-1989 had re-

[1] Since 1994, the Swedish authorities have placed only about 50% of new refugee immigrants in Sweden.

located to another municipality within four years after the initial settlement (Åslund 2001). Concerning the choice of destination, these studies suggest that secondary migration occurs towards larger cities with members of the same ethnic group. This is in line with empirical US studies which consistently find that new immigrants tend to settle in the large cities where other ethnic minorities live (Bartel 1989, Zavodny 1997, Borjas 1999, Jaeger 2000, Bauer et al. 2002).

Migration theory predicts that there may be other determinants of immigrants' location decision than presence of country fellowmen and other immigrant groups, including economic factors such as regional unemployment, social benefit levels or eligibility rules or public goods provision if interregional differences exist. US studies have found contrasting evidence on this issue. Immigrants are found to be insensitive to local labour market conditions in Bartel (1989) whereas Jaeger (2000) finds that all visa categories of immigrants, except spouses of US citizens, are indeed sensitive to these conditions. Zavodny (1998) finds no significant evidence of welfare seeking influencing immigrants' settlement decision, while Borjas (1999) does.

Little research exists on the location choice of immigrants outside the US. The empirical study by Åslund (2001) on the initial and subsequent location of immigrants to Sweden during the 1980s is an important exception. Empirical findings of that study show that refugee immigrants are attracted to regions in which co-nationals and other immigrants live and tend to leave locations with high overall unemployment and move to municipalities with high immigrant employment rates and high average earnings. On the other hand, Åslund finds no evidence of direct welfare seeking.

Moreover, previous empirical micro-level studies on immigrants' location preferences (e.g. Bartel 1989, Jaeger 2000, Åslund 2001) have typically used a multinomial logit framework following McFadden (1973) to estimate pull factors, i.e. the set of negative and positive social or economic factors in potential areas of destination which pulls migrants towards them (Lee 1966). However, for dispersal policy purposes, investigation of push factors, i.e. the set of negative and positive social and economic factors in the area of origin which pushes migrants away (Lee 1966), is equally important. Little econometric evidence exists on push factors for placed refugees. The study by Hummelgaard et al. (1995) provides some evidence, though. Estimation results from a discrete choice model for refugees' (placed as well as non-placed) cross-municipal relocation in Denmark showed relatively high subsequent migration rates out of municipalities with a low share of fellow countrymen, a

low overall share of immigrants and few rental flats, controlling for a rich set of personal attributes. However, the focus of the empirical analysis was in fact the importance of personal attributes rather than of location characteristics for the relocation decision.

With better knowledge of pull and especially push factors influencing settlement patterns and migration decisions of refugees, future attempts to influence the settlement pattern of new refugee immigrants could be more successful both in achieving the governmental objective of a geographically dispersed settlement of refugee immigrants and in increasing the utility of individual refugees. Second, such knowledge will aid in predicting which locations can expect placed refugees to stay and which locations can expect to receive refugee immigrants in the future.

The objective of the present study is to estimate *push* factors for refugees subject to a dispersal policy. In general, unbiased estimation of the effects of potential push factors in migration decisions requires that location sorting is taken into account, which is present if location characteristics of the area of origin are correlated with unobserved characteristics of the individual that also influence the migration decision. This is likely to be the case, because in general individuals choose location of residence themselves, in a non-random way, based on a number of observed and unobserved determinants of migration. To give an example, location sorting of new immigrants is likely to take place in the following way: New immigrants who are not proficient in foreign languages settle in the existing enclaves of fellow countrymen in the host-country while new immigrants who are proficient in the foreign languages settle outside these enclaves. Foreign language proficiency of new immigrants is usually unobserved to the researcher. Under these circumstances, estimation of push factors based on immigrants' subsequent migration pattern gives rise to biased estimates to the extent that the migration decision is influenced by foreign language proficiency.

The present study circumvents the location sorting problem by estimating push factors for refugees subject to the Danish dispersal policy 1986-1998, which implied that new refugees were randomly distributed across locations in Denmark conditional on six refugee characteristics largely observable in Danish administrative registers for the population of refugee immigrants. Controlling for these refugee characteristics in the migration decision, the initial location can be regarded as exogenous in the subsequent migration decision. In this way the Danish dispersal policy can be regarded as a natural experiment. This paper takes advantage of the natural experiment to

estimate effects of location characteristics on placed refugees' migration decisions, which are not affected by initial location sorting. In contrast, estimated effects of demographic and socioeconomic characteristics of the individual on the migration decision are correlations. Hence, they should not be given a causal interpretation.

The data constitute another strength of the present study. The study uses micro data for the population of refugees which stem from a rich longitudinal administrative register data set for the immigrant population in Denmark available from 1984 until 2001 from Statistics Denmark. The macro level data source is time-series data for municipality characteristics, also from Statistics Denmark.

Most importantly, the micro data allows for reconstruction of the residential history of a refugee immigrant. However, the location preference analysis is restricted to the first migration investment because of the exogeneity of the initial location in contrast to the endogeneity of subsequent locations. The main geographical unit of location used in the study is a municipality, because the Danish dispersal policy aimed at an equal distribution of refugees, not only at the county level, but also at the municipality level. Hence, a move across the municipality border is regarded as a migration investment. However, for completeness I also present descriptive evidence on refugees' settlement and subsequent migration using the county as the geographical unit of location.

The main results from this study are as follows. First, placed refugees react to high regional unemployment by migrating to large municipalities, thereby increasing the existing concentration of immigrants there. Second, lack of an ethnic network is another important push factor; however, interestingly refugees are found to be only slightly more likely to migrate to large rather than medium-sized municipalities in search for fellow countrymen. This finding is understandable in view of the Dispersal Policy under which the larger refugee groups tended to be dispersed in big clusters of the same ethnic origin across counties and within these counties mainly across medium-sized municipalities. Third, lack of an immigrant network pushes refugees to large municipalities. Fourth, refugees react very strongly to placement in small municipalities mainly by migrating to medium-sized municipalities, possibly due to step-migration. Fifth, being employed the previous year is associated with a considerably higher probability of migration to a small or medium-sized municipality and a substantially lower probability of migration to a large municipality. Finally, the more years of Danish education the lower

is the probability of men migrating to medium-sized municipalities.

The outline of the paper is as follows. The next section briefly describes the Danish dispersal policy carried out from 1986 to 1998. Section 3 briefly reviews general theories of migration and findings of previous empirical studies on immigrants' location preferences. These reviews are the foundation of the hypotheses presented at the end of Section 3. The theoretical model and its econometric specification are presented in Section 4. Section 5 describes the data and presents descriptive evidence on placed refugees' subsequent migration pattern. The estimation results are reported and discussed in Section 6. Finally, Section 7 concludes.

2 The Danish Dispersal Policy 1986-1998

In the 1980s the majority of refugees granted asylum in Denmark wanted to settle in the metropolitan area or in one of the larger towns. The Danish Refugee Council (Dansk Flygtningehjælp), henceforth DRC, was responsible for helping new refugee immigrants search for permanent housing. However, in 1984 the number of refugees granted asylum in Denmark was relatively high. Therefore, DRC was no longer able to provide all refugees with housing in one of their preferred cities. Instead, DRC started providing some refugees with housing in medium-sized towns. As the number of refugees granted asylum continued to rise in 1985-1986, it became increasingly difficult to find permanent housing for refugees in the typically preferred cities, which led the government and politicians in general to urge DRC to disperse refugees over all 14 Danish counties and Frederiksberg and Copenhagen county municipalities. DRC reformed its dispersal policy according to the political wishes.

1986 marks the start of the first Danish dispersal policy which was in force until 1999 and was carried out by DRC. In 1986, 182 out of a total of 275 municipalities in Denmark received refugees who during an introductory period of 18 months participated in Danish language courses while receiving social benefits.[2]

After the reform in 1986, all refugees, apart from reunification immigrants, were subjected to the dispersal policy unless they could find a place

[2]In 1999, a stricter settlement policy came into force which aimed at promoting better integration of refugees by means of further geographical dispersal and an extended introduction programme supplied by the municipalities hosting the refugees (law no. 474 passed the 1st of July 1998).

of living themselves. During the period 1986-1994, approximately 91% of the refugees were provided with or assisted in finding permanent housing by DRC under the terms of the dispersal policy (Annual Reports of DRC 1986-95). Internal administrative statistics of DRC for 1995-1998 indicate that from 1995 to 1997 approximately 89 % of new refugees were provided with permanent housing by DRC or - as a new feature of the dispersal policy - by a local government if it had wished to take over the responsibility for new refugees in the municipality from DRC.

DRC's assignment policy aimed at promoting an equal distribution of refugees in proportion to the population in each county. At the county level, DRC aimed at the attainment of an equal distribution of refugees over a number of years among those municipalities, which had the necessary facilities for integration such as dwellings, educational institutions and employment opportunities and in which refugees had the opportunity of socializing with compatriots. When deciding to which county a refugee should be assigned, location wishes of the refugee, if any, should be taken into account. In practice, these dispersal criteria implied that new refugees were provided with permanent housing in the metropolitan area, larger cities and medium-sized towns and to a lesser extent rural districts (Ministry of Internal Affairs 1996).

The refugees were urged to stay in the assigned municipality during an entire introductory period of 18 months in which they participated in Danish language courses while receiving means-tested social benefits. However, there were no restrictions against relocating. Refugees could move away from their initial municipality any time, in so far as they could find housing elsewhere on their own. In addition to moving costs, such a relocation involved potential costs in form of having to wait before being admitted into a new language course and, in case of small children, waiting for their admittance into a new kindergarten. Receipt of means-tested social welfare was not conditional on residing in the assigned municipality.

In 1995, Denmark granted asylum to an unusually large number of refugees due to large inflows of refugees from Bosnia-Herzegovina. Due to acute housing problems and the temporary character of the permit to stay, a special introduction programme was developed for refugees from Bosnia-Herzegovina (see Ministry of Internal Affairs 1995). Contrary to the dispersal policy under the ordinary introduction programme, the special introduction programme included settlement in rural districts, thereby ignoring whether a municipality had suitable characteristics for reception or not. Instead, the availability of housing became the decisive factor.

Empirical evidence shows that the dispersal policy did, at least in the short run, influence the location patterns of refugees. By 1993, 71% of the non-western immigrants other than refugees lived in the metropolitan area whereas only 33% of refugee immigrants lived here. 24% of non-western immigrants other than refugees lived in towns outside the metropolitan area whereas the majority of refugee immigrants, 56%, lived here. Finally, only 5% of the non-western immigrants lived in rural districts against almost 12% of the refugee immigrants (Danish Refugee Council 1993).

The actual implementation of the dispersal policy was investigated in Damm (2003) to examine whether some refugees were more likely to realise their preferred settlement option than others. The analysis was carried out by interviewing two placement officers at DRC, by examining DRC's internal administrative statistics and by establishing descriptive and econometric evidence on the initial settlement of placed refugees based on the census of refugee immigrants from administrative registers. The study concluded that actual settlement may have been influenced by a person's characteristics with regard to family status (single or family), health (in need of special medical or psychological treatment), special educational needs, the location of close family and friends, nationality (due to dispersal in ethnic clusters) as well as year of immigration (it became increasingly difficult for DRC to find housing in larger and medium-sized towns). These governing factors suggest that a refugee with family and in need of special treatment or education, and refugees with close family in Denmark near whom they were determined to live and who arrived early in the observation period were most likely to realise their preferred settlement option.

3 Migration theory, immigrants' location preferences and hypotheses

3.1 Migration theory

3.1.1 The economic motive

Since Ravenstein's path breaking work on the determinants of migration more than a century ago (Ravenstein 1885, 1889), income has been the focus of economists' attempt to explain migration. Ravenstein formulated general laws of migration according to which migrants move from areas of low op-

portunity to areas of high opportunity, where the choice of destination is regulated by distance with migrants from rural areas often showing a tendency to move first towards nearby towns and then towards large cities. Subsequent migration theory has expanded on his basic laws but the features he suggested of the importance of the economic motive in the decision to migrate, the negative influence of distance and the role of step-migration have not been invalidated.

Lee's (1966) theory of migration, based on Ravenstein's work, argues that the social and economic factors that enter the decision to migrate are (1) factors associated with the area of origin, 2) factors associated with the potential areas of destination, 3) intervening obstacles and 4) personal factors. He further argues that each area of origin and of potential destination has a set of negative and positive factors which pulls migrants towards them or pushes them away. The greater the differences between these push and pull factors, the greater is the probability of migration (push-pull hypothesis). His theory emphasises macroeconomic factors as determinants of migration.

A dominant paradigm underlying much work on microlevel migration research is the *human capital model* according to which migration is viewed as an investment that is expected to pay off in the form of increased earnings or other kinds of pecuniary and non-pecuniary returns (Sjaastad 1962; Bowles 1970). Non-money returns include changes in "psychic benefits" as a result of location preferences. Similarly, costs include both money and non-money costs, such as costs of transport and psychic costs, respectively. Sjaastad assumes that in deciding to move, migrants tend to maximize their net real life-span income streams and that they have at least a rough idea of what their life-span income streams would be at the present place of residence as well as in the destination area and of the costs involved in migration. Modelling the migration decision in this way, he actually ignores the importance of non-pecuniary returns.

3.1.2 Other motives

Various motives for migration besides maximization of actual or expected economic return have been pointed out in the migration literature. The literature of sociologists emphasises social mobility and social status attainment as a motivation for migration and intraurban mobility (Sabagh et al. 1969). Changes in and disruptions of life-cycle patterns can be other motives for migration (Findley 1977) as well as motives for intraurban mobility due to

residential dissatisfaction (Rossi 1955). The satisfaction-dissatisfaction motive for migration led Wolpert to develop the concept 'place utility' defined as "a positive or negative quantity, expressing the individual's satisfaction or dissatisfaction, respectively, with respect to that place" (Wolpert 1965, p. 162). Affiliation with family and friends in the potential areas of destination may exert a significant influence on the decision to move and particularly on the decision where to move for two reasons suggested by Ritchey (1976): 1) through increasing the potential migrant's awareness of conditions and opportunities there (the information hypothesis), and 2) by increasing the migrant's potential for adjustment through the availability of aid to relocate there (the facilitating hypothesis). Similarly, maintenance of ties with family and friends in the place of origin may be an important deterrent to migration (the 'affinity' hypothesis) (Goldscheider 1971; Ritchey 1976). Finally, the geographer Zelinsky (1971) argued that the attainment of life-style preferences has emerged as an additional motive for migration in advanced societies. See for instance De Jong and Fawcett (1981) for a brief review of these theories.

3.2 Immigrants' location preferences

US studies on immigrants' location choice find the presence of fellow countrymen to be an important determinant of immigrants' location choice (see e.g. Bartel 1989; Jaeger 2000; Bauer et al. 2002b). Different theories have been put forward to explain why this is so. First, there is the ethnic network hypothesis according to which the presence of fellow countrymen constitutes an ethnic network which facilitates new immigrants' adjustment to the new society (Piore 1979; Kobrin and Speare 1983). Second, there is the ethnic goods theory proposed by Chiswick and Miller (2001) which emphasises that living in an ethnic enclave reduces costs of consumption of so-called ethnic goods. Such goods are defined as the consumption characteristics of an ethnic group not shared with the host population, broadly defined to include market and non-market goods and services, including social interactions for themselves and their children with people of the same origin. Finally, there is the informational cascades or herd effects theory suggested by Epstein (2002). Herd effects in location choice may exist if migrants have some private information about different locations and observe previous emigrants' decisions, but are imperfectly informed about the attributes of the alternative locations and about the information signal that was driving previous emigrants' decisions. An important implication of herd effects is that they

may result in inefficiences. Some empirical evidence in favour of each of these theories exists, see e.g. Bauer et al. (2002a) for supportive evidence of the ethnic network theory, Chiswick and Miller (2001) for empirical evidence of the ethnic goods theory and Bauer et al. (2002b) for empirical validation of the herd effects theory. Note however, that it is difficult to identify the effects of each of these three factors separately in econometric analysis.

US studies which have investigated the importance of economic determinants for immigrants' location choice empirically include Bartel (1989) and Jaeger (2000) who investigate whether the local labour market conditions are another important determinant of immigrants' location choice. The two studies find contrasting empirical evidence. Immigrants are found to be insensitive to local labour market conditions in Bartel's study whereas Jaeger finds that all visa categories of immigrants, except spouses of US citizens, are indeed sensitive to these conditions. Furthermore, the empirical studies by Zavodny (1997) and Borjas (1999) have investigated the importance of another potential economic determinant of immigrants' location choice, the local welfare system. They investigate the so-called welfare magnets hypothesis, according to which new US immigrants are attracted to US states with a relatively generous welfare system. Again contrasting evidence is found in the two studies. Using macro data, Zavodny (1997) finds no evidence of welfare seeking as a determinant of immigrants' location choice. In contrast, Borjas (1999) finds, using micro data, that immigrant welfare recipients are much more likely to be geographically clustered in high-benefit states, notably in California, than immigrants who do not receive social benefits, and that they are more clustered than natives. However, controlling for other factors which may potentially have influenced the location decision, Borjas (1999) finds only weak empirical evidence of welfare magnets in the sense of lack of statistical significance of the results.

Little research exists on the location choice of immigrants outside the US. The empirical analysis by Åslund (2001) of the initial and subsequent location of immigrant to Sweden during the 1980s helps filling this important gap. In addition, the study by Åslund (2001) emphasises that using data with exogenous initial location is important for estimating the effects of local characteristics on subseqent migration; endogenous location leads to underrating of their importance due to the initial sorting across locations. Based on administrative register data with exogenous initial location of refugees, Åslund (2001) finds that placed refugees in Sweden leave locations with small populations and are attracted to large regions. The presence of co-nationals

and immigrants in general is also important. By and large, these findings conform with the US results. In addition, refugees are affected by labour market prospects; refugees tend to leave locations with high overall unemployment and move to municipalities with high immigrant employment rates and high average earnings, given their other characteristics. On the other hand, Åslund finds no evidence of direct welfare seeking; however, refugees move to places with prevalent welfare receipiency and large local public sectors. Concerning the success of the dispersal policy, he finds that 38% of the refugee immigrants who were placed according to the Whole of Sweden Strategy during 1987-1989 had relocated to other municipalities within four years after the initial settlement.

Djuve and Kavli (2000) evaluate the Norwegian dispersal policy on new refugees. Administrative register data is linked to survey data, both of which cover the period 1994-1996. The latter primarily consist of refugee interviews and interviews of employees in 120 municipalities working in the area of integration of immigrants. The major weakness of the analysis is that it contains only descriptive evidence. The main findings are, first, that one third of the new refugees moved away from the municipality of assignment within five years, second, that refugees tended to move away from the thinly populated and cold northern part of the country and away from small, non-central municipalities in the rest of the country, and third, that closeness to family and employment opportunities appeared to be important pull factors. Finally, interviews with employees working in non-central municipalities indicated that refugees who had formerly lived in big cities were more likely to move away from such municipalities than refugees from rural areas.

Finally, using an extremely rich Danish administrative longitudinal register data set Hummelgaard et al. (1995) investigate the initial and subsequent location choice of immigrants in Denmark from 1984 to 1991. Descriptive findings show that non-refugee immigrants in Denmark are highly geographically clustered in the larger cities, in particular in the metropolitan area; in 1991 72 % lived in the metropolitan area. In addition, these immigrants are found to have very low migration rates. In contrast, refugee immigrants are found to be much more dispersed across locations which is to be expected since refugees who arrived later than 1985 were dispersed across locations, see the next section. However, estimation results from a discrete choice model for cross-municipal relocation showed relatively high subsequent migration rates away from municipalities with a low share of fellow countrymen, a low overall share of immigrants and few rental flats controlling for the rich set of

personal attributes.[3]

3.3 Hypotheses

In view of the general migration theory and previous findings on immigrants' location choice, I hypothesise that refugees who are subject to a dispersal policy may subseqently migrate to another region if it offers better economic prospects, especially employment prospects, if friends, family or more fellow countrymen as such live there, if it allows for attainment of life style preferences or if life-cycle changes take place such as marriage or divorce which may induce housing or location dissatisfaction. In addition, I expect institutions for vocational and higher education within reach to be an important factor for location satisfaction, because education has been found to be an important factor for immigrants' employment probability in Denmark, at least in part due to the high effective minimum wages (Husted et al. 2001). However, refugees may lack education because on average they are young at arrival to Denmark and may have been unable to finish their education in the home country or their education may not be transferable. In contrast, interregional differences in wage prospects are likely to play only a modest role in migration decisions of refugees in Demark, where wages are generally negotiated through collective bargaining. Similarly, direct welfare seeking is not likely to be a major motive for migration in Denmark, since in general the entitlement to and level of means-tested social benefits are decided upon by national law (Linderoth et al. 1996). However, interregional differences in the extent to which recipients of social benefits are required to participate in active labour market programmes may exist and may consequently affect the migration propensity of refugees according to individual preferences for participation versus non-participation.

I, furthermore, expect different groups of refugees to have different migration propensities due to differences in costs of migration and expected returns from migration. The costs of migration may, for instance, be higher

[3]Note that this study uses the municipality of residence as the geographical unit of location which is a much smaller geographical area than SMSAs typically used in US studies. This explains the latter finding that housing (adjustment) matters for subsequent location choice. Furthermore, note that in 1991 50% of refugees in Denmark lived in public housing compared to 15 percent of the overall population (Hummelgaard et al. 1995). The share of refugees in owner-occuppied dwellings constituted only 23% although 67% of the overall Danish population lived in such housing.

for couples than for singles and for individuals with children. Young and unemployed refugees may, for instance, be more sensitive to interregional differences in employment prospects than older and employed refugees due to higher expected returns from migration.

4 Theoretical and econometric model

4.1 A migration model based on the human capital investment approach

The immigrant faces a problem of finding an optimal location in the host country, i.e. he or she has to decide whether or not to move away from the initial location of placement and decide on the destination. In line with the human capital model I model the migration decision as if the potential migrant weighs the net expected pecuniary and mental benefits of moving against the expected pecuniary and mental costs of moving. If the former exceeds the latter migration will take place. The model presented is similar to the migration model by Nakosteen and Zimmer (1980).

Let U_j, $j = s, m, l$ denote the expected utility for individual i of moving to destination j, which is either a small (subscript s), medium-sized (subscript m) or large (subscript l) municipality. Similarly, let U_p denote the expected utility of individual i of staying in the municipality of placement (subscript p). C denotes the expected moving costs which are assumed to be the same across destinations but not across individuals.

An individual i stays in the municipality of placement if

$$U_j - U_p \leq C, \text{ for all } j \tag{1}$$

i.e. if the costs of moving exceed the expected net utility of migration for all destinations.

If, on the other hand,

$$U_j - U_p > C \text{ for at least one } j \tag{2}$$

then an individual i migrates to the destination j that yields the highest expected net utility, i.e. that maximizes $U_j - U_p$.

However, the expected utilities at the current location and in alternative destinations are not directly observed, nor are mobility costs. Assume instead

that all expected location utilities U_j, U_p and C are given by the following linear relations

$$U_j = X_j'\beta_j + \varepsilon_j \tag{3}$$

$$U_p = X_p'\beta_p + \varepsilon_p \tag{4}$$

$$C = Z'\gamma + \mu \tag{5}$$

where X_j and X_p are vectors of demographic and socioeconomic characteristics of individual i and characteristics of location j and p, respectively, Z is a vector of demographic characteristics of individual i and α, β and γ are parameters to be estimated. ε_j, ε_p and μ are stochastic errors.

Let M_j denote the net expected utility of migration to destination j net of costs of moving,

$$M_j = X_j'\beta_j - X_p'\beta_p - Z'\gamma + \varepsilon_j - \varepsilon_p - \mu \tag{6}$$

Furthermore, let M^* denote the maximum net expected utility of migration when maximising over the choice set of destinations

$$M^* = \max_j M_j \tag{7}$$

Then individual $i's$ probability of migration is given as

$$Pr(M^* > 0) \tag{8}$$

In addition, individual $i's$ probability of migration to location j is given by the joint probability

$$Pr(M_j = M^*, M^* > 0) = Pr(M_j = M^* | M^* > 0) * Pr(M^* > 0) \tag{9}$$

Section 6 describes the variables included in the vectors X_j, X_p and Z.

4.2 Econometric specification

4.2.1 The MPH model

Let the random variable T denote time until exit from the municipality of placement. Let x_t be the vector of time-varying observed covariates, specifically location characteristics and demographic and socioeconomic characteristics of the individual and let v be unobserved heterogeneity.

The key variable in duration models is the hazard rate which in continous time is defined as the transition rate out of the state of interest at time t, conditional on being in the state at least until t, i.e.

$$h\left(t\right) = \lim_{dt \to 0} \frac{P(t < T \leq t + dt | T > t)}{dt} \tag{10}$$

The hazard function for exit from the municipality of placement is specified as a mixed proportional hazard (MPH) model

$$h(t|x_t, v) = \lambda(t) \cdot \exp(x'\beta + v) \tag{11}$$

$\lambda(t)$ denotes the baseline hazard which captures duration dependence and $\exp(x'\beta + v)$ is a scale function which captures the effect of observed and unobserved individual-specific characteristics.[4]

The likelihood contribution of a completed residential spell is given by the density

$$f(t|x_t, v) = h(t|x_t, v) exp(-\int_0^t h(u|x_t, v) du) \tag{12}$$

while the likelihood of a right-censored residential spell is given by the probability of no exit until time t

$$S(t|x_t, v) = exp(-\int_0^t h(u|x_t, v) du) \tag{13}$$

where $S(t|x_t, v)$ is the survivor function.

Definition of a non-censoring indicator d that takes the value 1 if a residential spell is not right-censored and 0 otherwise then allows one to write the likelihood contribution of a residential spell as

[4] The main functional form implication of the proportional hazard model is that covariates are assumed to have a proportional effect on the baseline hazard.

$$L = h(t|x_t, v)^d \exp[-\int_0^t h(u|x_t, v)du] \tag{14}$$

The overall empirical hazard function for time until out-migration is shown in Figure 4.1.

I choose a flexible model for the unobserved covariates. Let G denote the cumulative distribution function for the unobserved covariate in the hazard rate, v. Then the total likelihood contribution from a residential spell of an individual is the product of the likelihood contribution of the residential spell integrated over the distribution of the unobserved covariates

$$L = \int_v L(t|x_t, v)dG(v) \tag{15}$$

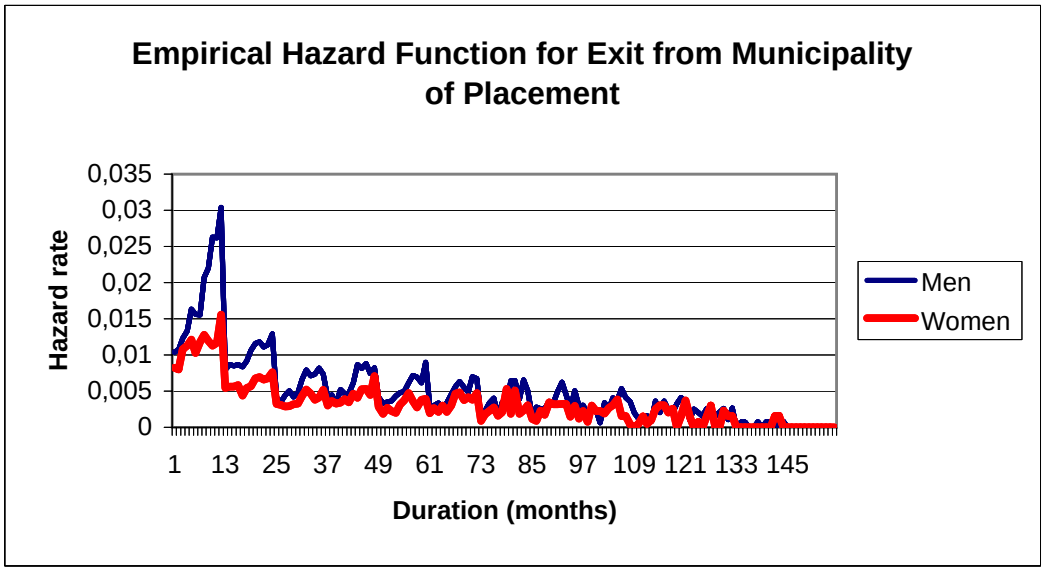
The intuition is that because an individual's type is not known, the likelihood function is a mixture over types weighted by their sample probabilities (Heckman and Singer 1984).

The marginal distribution of the unobserved term is specified as a discrete distribution with two unrestricted mass point locations. Let v^m, $m = 1, 2$ denote the two mass-points of v. Each combination is observed with probability p_i to be estimated, with $0 \leq p_i \leq 1$ for $i = 1, 2$ and $\sum_{i=1}^{2} p_i = 1$. We normalise the distribution of the unobserved term by letting $v^1 = 0$.

The baseline hazard function is assumed to be piecewise constant, i.e. $\lambda(t) = \exp(\alpha_k), k = 1, ..., K$, where K is the number of intervals of the baseline hazard function. The length of the baseline intervals is chosen by inspection of the empirical hazard function for exit from municipality of placement, see Figure 4.1.[5]

[5] The empirical hazard rate is seen to have spikes at multiples of 12 months. This is a statistical artifact stemming from the fact that the Immigrant Data Set only contain information on the *last* address change of an individual in each year. As a consequence, the later an address change takes place during the year, the more likely it is to be included in the Immigrant Data Set. Specifically, only 5% of the total number of address changes registered in the Refugee Data Set are registered to take place in January as opposed to as much as 12.7% in December.

Figure 4.1


Empirical Hazard Function for Exit from Municipality of Placement
Hazard rate
0,035
0,03
0,025
0,02
0,015
0,01
0,005
0
1 13 25 37 49 61 73 85 97 109 121 133 145
Duration (months)
Men
Women

4.2.2 The MPH competing risk model

According to the theoretical model specification in Section 4, time until exit from the municipality of placement, T, may end for three different reasons. Let the random variable T_j denote time until exit to destination j from the municipality of placement, where $j = s, m, l$. For each individual we observe only

$$\min_j \{T_j\}.$$

The destination-specific hazard functions, the hazard functions for exit to destination j from the municipality of placement, are specified as mixed proportional hazard (MPH) models

$$h_j(t_j|x_{t_j}, v_j) = \lambda_j(t_j) \cdot \exp(x'_{t_j}\beta_j + v_j) \tag{16}$$

where $\lambda_j(t_j)$ denotes the destination-specific baseline hazard which captures duration dependence of time until exit to destination j and $\exp(x'_{t_j}\beta_j + v_j)$ is the destination-specific scale function which captures the effect of observed and unobserved individual-specific characteristics on the destination-specific hazard rate. Hence, the overall hazard function for exit from municipality of placement is given as

$$h(t|x_t, v_s, v_m, v_l) = \sum_j h_j(t_j|x_{t_j}, v_j) \tag{17}$$

The likelihood contribution of a completed residential spell ending in an exit to destination j is given by the density

$$f(t_j|x_{t_j}, v_j) = h(t_j|x_{t_j}, v_j) exp(-\int_0^{t_j} h_j(u|x_{t_j}, v_j)du) \tag{18}$$

while the likelihood of a right-censored residential spell is given by the probability of no exit to destination j until time t_j

$$S(t_j|x_{t_j}, v_j) = exp(-\int_0^{t_j} h_j(u|x_{t_j}, v_j)du) \tag{19}$$

where $S(t_j|x_{t_j}, v_j)$ is the destination-specific survivor function.

Definition of a non-censoring indicator d_j that takes the value 1 if a destination-specific residential spell is not right-censored and 0 otherwise

then allows one to write the likelihood contribution of a destination-specific residential spell as

$$L_j = h_j(t_j|x_{t_j}, v_j)^{d_j} \exp[-\int_0^{t_j} h_j(u|x_{t_j}, v_j)du] \tag{20}$$

I choose a flexible model for the unobserved covariates. I allow for a separate unobserved covariate in each of the three destination-specific hazard rates denoted v_j and arbitrary correlation between them in order to obtain unbiased estimates of the effects of observed covariates on the hazard rates. Let H denote the joint cumulative distribution function for v_j.

The total likelihood contribution from a residential spell of an individual is the product of the likelihood contribution of each destination-specific residential spell integrated over the distribution of the unobserved covariates

$$L = \int_{v_j} \left\{ \prod_j L_j(t_j|x_{t_j}, v_j) \right\} dH(v_s, v_m, v_l) \tag{21}$$

Hence, the overall likelihood function is a mixture over types weighted by their sample probabilities (Heckman and Singer 1984).

The marginal distributions of the unobserved terms are specified as discrete distributions with two unrestricted mass point locations. Let v_j^m, $m = 1, 2$ denote the two mass-points of v_j. This provides maximum flexibility among computationally feasible specifications (Abbring et al. 2000). This gives rise to 2^3, i.e. 8, possible combinations of unobserved scalar heterogeneity across destination-specific residential spells. Each combination is observed with probability p_i to be estimated, with $0 \leq p_i \leq 1$ for i =1,...,8, and $\sum_{i=1}^{8} p_i = 1$.We normalise the distribution of the unobservables by letting $v_j^1 = 0$ for $j = s, m, l$.

The baseline hazard functions are assumed to be piecewise constant, i.e. $\lambda_j(t_j) = \exp(\alpha_{jk}), k = 1, ..., K_j, \ j = s, m, l$, where K_j is the number of intervals of the baseline hazard of residential spell of type j. The length of the baseline intervals is chosen by inspection of the empirical destination-specific hazard functions for exit from municipality of residence, see Figures 4.2, 4.3 and 4.4.

It is seen from Figures 4.2-4.4 that the exit rates are highest for exit to a medium-sized municipality.

Figure 4.2

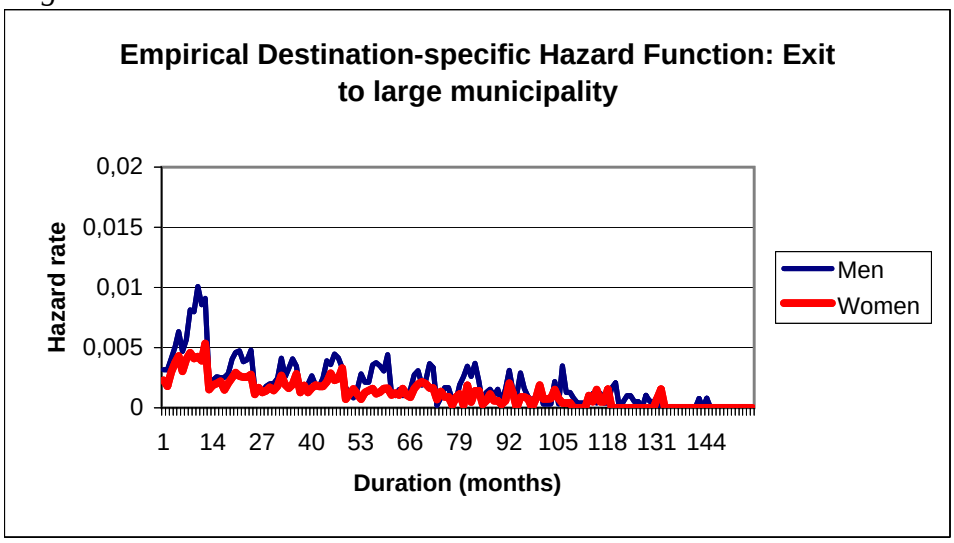


Figure 4.3

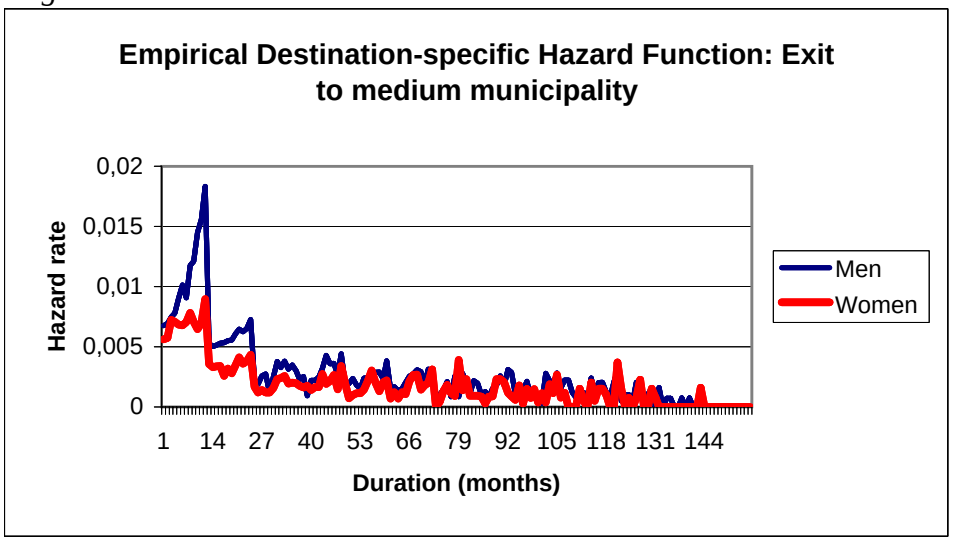
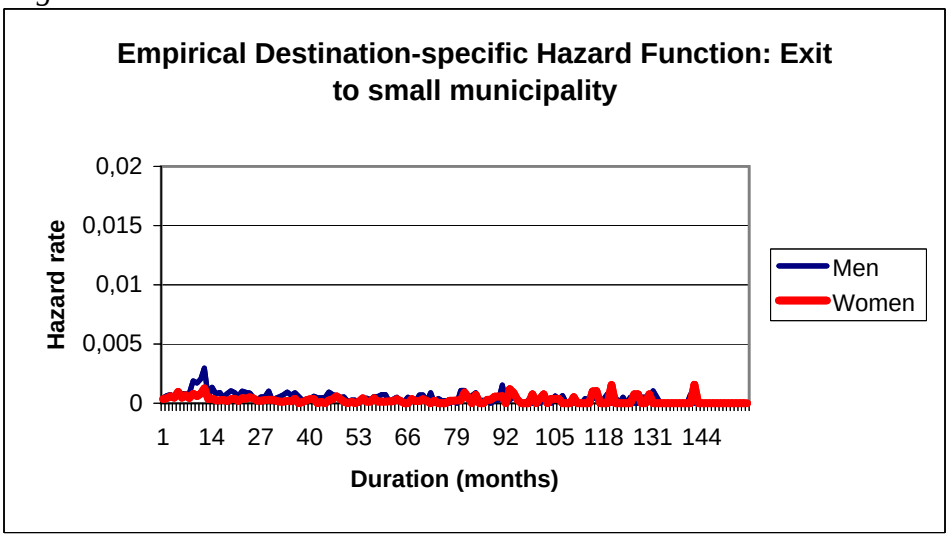


Figure 4.4



4.3 Model identification

Given normalisations of the mean of the unobserved covariates (finite means) and weak requirements for variation in the observed covariates, the MPH model with and without competing risks is identified non-parametrically if the observed covariates are independent of unobserved characteristics influencing the outcome of interest, i.e. the probability of out-migration to destination j (Elbers and Ridder 1982; Abbring and van den Berg 2000).

In particular, the latter identification condition implies that initial settlement is independent of any *unobservable* individual-specific characteristic in the outcome equation. This requirement is satisfied if the refugee characteristics which have influenced the actual settlement are observable so that we can control for them in the model.

As mentioned in Section 2, the related study Damm (2003) concludes that the initial settlement of new refugees may have been influenced by family status, need of medical or psychological treatment, educational needs, location of close family and friends and nationality at the time of immigration as well as year of immigration. Three of these characteristics are observed in administrative register data (described below): family status as measured by marital status and number of children, nationality and year of immigration. In Damm (2003), it is argued that age and nationality may be decent proxies for educational needs and that nationality and size of the ethnic stock may be decent proxies for whether the individual had close family and friends in Denmark at the time of arrival. In contrast, no decent proxy for need of special medical or psychological treatment is present in the registers. Hence, the data at hand enables me to condition on five of the six variables which may have influenced the initial settlement of an individual. In consequence, the variables marital status, number of children, nationality, year of immigration, age and size of the ethnic stock are included as controls in the MPH models. Therefore, it seems reasonable to assume that initial settlement is fairly independent of unobserved characteristics. Consequently, the condition for model identification should be satisfied.

5 Data

5.1 Data sources

I use data from two data sources. First, the longitudinal administrative register data set of Statistics Denmark on all immigrants in Denmark from 1984-1998, henceforth the Immigrant Data Set. From that data set, observations on immigrants from refugee-sending countries from October 1985 to December 1996 are extracted. Sampled individuals are observed from the year following immigration, at the earliest 1986, until 1998. Hence, the maximum length of observation is 13 years.[6] Second, Statistics Denmark's website 'Statistik Banken' from which I have extracted yearly observations on municipalities from 1986 to 1998 mainly on local labour market, housing market and population characteristics.

The Immigrant Data Set contains information on a wide variety of individual characteristics, demographic, socioeconomic, housing and labour market states. Most importantly, the data set is informative about the individual's county and municipality of residence (at the end of the year in case the person have moved during the year) and the date of the last residential move of the individual (by the end of the year). Such information is available because in Denmark it is determined by law to report your residential move to the local municipality of destination within a fortnight after the move. These variables enable me to construct spells for municipality of residence for each individual. The duration of these spells is measured in months. Since the analysis concerns determinants of the first migration investment after placement, use is only made of the first residential spell after placement. But information on the number of inhabitants in the municipality of destination following the first cross-municipality move after placement is exploited as well.

However, the data set has some weaknesses for the analysis at hand. First, it does not include information on visa category necessary for straightforward extraction of refugees from the population of immigrants. Instead, an algorithm based on the country of origin and year of first immigration to Denmark of the individual was used to extract immigrants from refugee-sending countries (17 countries) in known periods during 1985-1996. The validity of the algorithm was investigated in Damm (2003) by comparison of the ethnic composition of the extracted sample by year of immigration, presented in

[6] The Institute of Local Government Studies, Copenhagen, has kindly put the data at my disposal.

Table A.1 in the Appendix, with the ethnic composition of refugees granted asylum for each year according to official statistics published by Statistics Denmark. The algorithm was found to be valid, since the ethnic composition of the sample is consistent with the official ethnic composition of the refugee group, except that a few refugee-sending countries from which only a small number of refugees originate are left out of the extracted sample.

Second, since the first year of observation for an individual is the year following the year of immigration, all information on the individuals is missing from the date of first immigration until January the following year.

Third, refugees on average spend 6-7 months in temporary housing, possibly in other municipalities of residence than the municipalities of placement. The data set does not contain exact information on the municipality of placement. Instead, use has been made of what we know about the beginning of a refugee's residential career after asylum as described in the previous section. In particular, the following algorithm was used to determine the municipality of placement. The first municipality of residence observed for an individual is treated as the municipality of placement in the following three cases: 1) if the individual got asylum during the first half of the year of first immigration, 2) if the individual got asylum during the second half of the year of first immigration and did not carry out a cross-municipal move during the first year of observation, and 3) if the individual got asylum during the second half of the year of first immigration, carried out a cross-municipal, intra-county move during the first year of observation. If, on the other hand, an individual got asylum during the second half of the year of first immigration and carried out a cross-county move during the first year of observation, I treat the first municipality of residence as the municipality in which the refugee had temporary housing. In that case, the residential spell of the municipality of placement begins in the month following the cross-county move of the individual. In the other three cases, the residential spell of the municipality of placement begins in January following the year of first immigration. Since we do not observe the date at which individuals move to the municipality of placement in cases 1-3, the residential spell of the municipality of placement may be left-censored for these individuals. However, I expect the degree of left-censoring to be small and therefore, do not take it into account in the econometric analysis. In contrast, the residential spell of municipality of placement begins at some time during the first year of observation for the 10% of the individuals who were found to live in temporary housing when first observed in the data.

Observations on individuals who immigrated to Denmark in 1997 have been excluded from the analysis, because we only observe these individuals in one year and consequently we are unable to determine their municipality of placement using the algorithm described earlier. Observations on individuals not observed in the first year following first immigration are also excluded from the analysis, because in that case information on the initial municipality of residence may be missing. Observations following the first residential spell, i.e. the spell of the municipality of placement, are dropped from the extracted data set due to the focus of the analysis, the *first* migration investment.

Male and female refugees may have different location preferences. To investigate whether this is the case, I carry out the empirical analysis separately for male and female refugees.

The data set for refugees, henceforth the Refugee Data Set, consists of 25,674 male and 22,228 female individuals.

5.2 Descriptive statistics

5.2.1 County level

Denmark is administered at three levels: the state, the county and the municipal level. Denmark has 14 counties, two county municipalities and 275 municipalities. Table 5.1 presents the distribution of the immigrant population across counties in the year in which the dispersal policy was implemented and at the end of the dispersal policy period as well as the initial geographical distribution of refugees in the Refugee Data Set. In both years, immigrants were overrepresented in three counties: Copenhagen and Frederiksberg county municipalities and Copenhagen county that constitute the Greater Copenhagen area and, in addition, a neighbouring county of Copenhagen county, Frederiksborg county. Turning to the initial geographical distribution of refugees, note the close correspondence between each county's share of refugees and the population share of the county with the exception of Copenhagen county. This confirms that the dispersal policy was successful in distributing new refugees equally across counties. See Table A.2 in the Appendix for the initial geographical distribution of refugees across counties for each ethnic group, separately.[7]

[7] To put the dispersal policy into perspective, note that refugees subject to the dispersal policy accounted for only around 42% of the total number of immigrants between October 1985 and September 1998. The immigrant population in DK increased from 164,045 in

Table 5.1 Geographic distribution of subgroups of the Danish population across counties. Per cent.

YEAR:	1986		1998		1986-97
Group of population	Total	Immigrant	Total	Immigrant	Refugee
COUNTY					Initial distr.
ZEALAND:					
Copenhagen &					
Frederiksberg mun.	10.96	28.40	10.91	25.15	12.00
Copenhagen	11.91	19.81	11.53	17.69	6.73
Frederiksborg	6.59	9.01	6.80	7.17	5.26
Roskilde	4.14	3.59	4.31	3.68	2.66
West Zealand	5.48	3.43	5.52	3.74	5.49
Storstrøm	5.03	2.56	4.88	2.87	5.59
OTHER ISLANDS:					
Bornholm	0.92	0.33	0.84	0.38	0.58
Funen	8.90	6.00	8.91	7.28	11.13
JUTLAND:					
Southern Jutland	4.88	5.03	4.79	4.07	4.28
Ribe	4.22	2.21	4.23	2.70	5.23
Vejle	6.40	3.53	6.51	4.52	7.73
Ringkoebing	5.18	2.04	5.14	2.78	4.84
Århus	11.44	8.78	11.93	11.05	13.20
Viborg	4.51	1.37	4.40	1.93	4.84
Northern Jutland	9.43	3.92	9.31	4.98	10.46
ALL	100.00	100.00	100.00	100.00	100.00
Frequencies	5,116,153	174,050	5,294,762	347,031	47,902

Source: The Immigrant Data Set and the Refugee Data Set.

Turning to the extent to which placed refugees migrated subsequently, Table 5.2 shows that by 1998 26% of the refugees in the Refugee Data Set had moved to another county subsequently. Interestingly, the share of migrants from a given county is, in general, close the county's share of placed refugees; this is seen by comparison with Table 5.1. Funen and Århus counties constitute two exceptions by having a smaller share of out-migrants than their share of placed refugees. This indicates that the fraction of out-migration

1985 to 347,131 in 1998 (the Immigrant Data Set). The total number of residence permits granted for asylum reasons between 1986 and 1998 was 76,209 (Statistical Yearbooks 1992, 1997, 2001).

of placed refugees is approximately equal, around 26%, across counties. In contrast, a clear pattern emerges concerning the choice of destination. The three most populated counties, Copenhagen and Frederiksberg county municipalities, Copenhagen county and Århus county which together account for 35% of the Danish population, were the choice of destination for 58% of the refugee migrants. The migrants mainly come from within the same region. In particular, migrants to the Greater Copenhagen area mainly come from another county within the Greater Copenhagen area and from nearby counties. Similarly, migrants to Århus tend to come from other counties in the region. Note that migration within the Greater Copenhagen area actually accounts for 30% of the total migration of placed refugees to the Greater Copenhagen area.

Table 5.3 reports the out- and in-migration rates of placed refugees relative to the number of refugees initially placed in the county. The out-migration rate is calculated as the share of refugees placed in the county during the observation period who move across the county. The in-migration rate is calculated as the number of first-time movers among placed refugees who move to the county out of the total number of refugees initially placed in the county. It becomes apparent that the migration pattern just described in terms of the initial distribution of refugees implies very high positive net in-migration rates for the two counties in the capital, Copenhagen county and Copenhagen and Frederiksberg county municipalites, and a more moderate positive net in-migration rate for the second largest municipality in Denmark, Århus. With one exception, all remaining counties have negative net in-migration rates of first-time movers among placed refugees.

Table 5.2 Migration pattern at the county level for first-time migrants among placed refugees.
Per cent of movers from and to each county. Part A.

Region	County of destination County of placement:	Copenhagen and Frederiksberg munic.	Copenhagen	Frederiksborg	Roskilde	West Zealand	Storstrøm	Bornholm
Zealand:	Copenhagen and Frederiksberg munic.	0	8.25	1.20	0.81	0.30	0.18	0.07
	Copenhagen	5.90	0	0.50	0.91	0.09	0.06	0.03
	Frederiksborg	3.5	1.68	0	0.41	0.19	0.06	0
	Roskilde	1.57	1.24	0.18	0	0.12	0.15	0
	West Zealand	2.60	1.48	0.46	0.71	0	0.24	0
	Storstrøm	2.29	1.39	0.62	0.47	0.64	0	0
Other islands:	Bornholm	0.05	0.02	0.02	0	0.06	0.02	0
	Funen	1.53	0.63	0.40	0.14	0.23	0.67	0
Jutland:	Southern Jutland	1.29	0.41	0.29	0.24	0.17	0.09	0.01
	Ribe	1.83	0.77	0.30	0.20	0.11	0.12	0
	Vejle	1.20	0.61	0.10	0.06	0.36	0.11	0
	Ringkøbing	0.80	0.27	0.11	0.08	0.24	0.07	0.01
	Århus	1.70	0.81	0.34	0.24	0.19	0.15	0
	Viborg	1.06	0.53	0.23	0.07	0.23	0.20	0.01
	Northern Jutland	2.24	0.96	0.36	0.27	0.23	0.25	0
% of all movers to destination		27.56	19.06	5.10	4.62	3.15	2.37	0.13

Source: The Refugee Data Set.
Note: Total number of first-time migrants among placed refugees: 12,301

Table 5.2 Migration pattern at the county level for first-time migrants among placed refugees.
Per cent of movers from and to each county. Part B.

Region	County of destination County of placement:	Funen	Southern Jutland	Ribe	Vejle	Ringkøbing	Århus	Viborg	Northern Jutland	% of all movers from destination
Zealand:	Copenhagen and Frederiksberg munic.	0.20	0.07	0.11	0.11	0.06	0.26	0.03	0.14	11.79
	Copenhagen	0.07	0.02	0.02	0.06	0.05	0.11	0.03	0.03	7.89
	Frederiksborg	0.12	0.02	0.04	0.06	0.07	0.20	0.01	0.12	6.48
	Roskilde	0.09	0.01	0.01	0.01	0	0.13	0.04	0.13	3.68
	West Zealand	0.34	0.11	0.21	0.25	0.24	0.61	0.14	0.17	7.56
	Storstrøm	0.38	0.14	0.15	0.18	0.18	0.59	0.04	0.28	7.34
Other islands:	Bornholm	0	0.07	0	0.03	0	0.03	0	0	0.30
	Funen	0	0.30	0.35	0.68	0.29	0.86	0.15	0.26	6.50
Jutland:	Southern Jutland	0.67	0	0.42	0.46	0.23	0.95	0.04	0.18	5.45
	Ribe	0.71	0.43	0	0.81	0.25	1.06	0.04	0.25	6.89
	Vejle	1.20	0.40	0.49	0	0.33	1.84	0.11	0.24	7.03
	Ringkøbing	0.23	0.20	0.75	0.36	0	0.54	0.22	0.15	4.02
	Århus	0.70	0.28	0.37	1.30	0.41	0	0.32	0.70	7.52
	Viborg	0.54	0.30	0.30	0.63	0.45	2.02	0	0.52	7.09
	Northern Jutland	0.90	0.61	0.53	0.59	0.60	2.50	0.42	0	10.46
All		6.15	2.95	3.75	5.53	3.16	11.70	1.60	3.17	100.00

Source: The Refugee Data Set.
Note: Total number of first-time migrants among placed refugees: 12,301

Table 5.3 In- and out-migration rates of first-time refugee migrants at the county level.

County	Refugees Freq. initially	Out-migration Rate	In-migration Rate	Net migration Rate
Zealand:				
Copenhagen & Frederiksberg munic.	5,738	0.25	0.59	0.34
Copenhagen	3,222	0.30	0.73	0.43
Frederiksborg	2,520	0.32	0.25	-0.07
Roskilde	1,273	0.36	0.45	0.09
West Zealand	2,630	0.35	0.15	-0.21
Storstrøm	2,676	0.34	0.11	-0.23
Other islands:				
Bornholm	280	0.13	0.06	-0.08
Funen	5,332	0.15	0.14	-0.01
Jutland:				
Southern Jutland	2,049	0.33	0.18	-0.15
Ribe	2,507	0.34	0.18	-0.15
Vejle	3,704	0.23	0.18	-0.05
Ringkøbing	2,321	0.21	0.17	-0.05
Århus	6,323	0.15	0.23	0.08
Viborg	2,318	0.38	0.08	-0.29
Northern Jutland	5,009	0.26	0.08	-0.18
All	47,902	0.26	0.26	0.00

Source: The Refugee Data Set.

5.2.2 Municipality level

To investigate the initial settlement of new refugees across municipalities, I divide the 275 Danish municipalities into three categories according to the number of inhabitants. A small municipality is defined as having less than 10,000 inhabitants; a medium-sized municipality has 10,000-100,000 inhabitants; a large municipality is defined as having more than 100,000 inhabitants. According to this definition, Denmark has four large municipalities: Copenhagen, Århus, Odense and Ålborg. Large and medium-sized municipalities are predominantly urban areas whereas small municipalities cover urban areas as well as rural districts. Table 5.4 shows the geographical dis-

tribution of the Danish population, the immigrant population and the initial geographical distribution of refugees in the Refugee Data Set across these three municipality size categories. The table shows that the refugees in the Refugee Data Set were slightly overrepresented in the large municipalities and slightly underrepresented in the medium-sized and small municipalities compared to the overall distribution of the Danish population. Furthermore, comparison with the geographical distribution of the total immigrant population across municipalities shows that due to the dispersal policy the percentage of refugees who initially lived in small municipalities was twice as large as the percentage of immigrants as such. In addition, a smaller share of refugees initially lived in a large municipality compared to the immigrant population as such.

Table 5.4 Geographical distribution of subgroups of the Danish population across municipality size categories: Per cent.

Year	1986		1998		1986-97	
Group of population	Total	Immigrant	Total	Immigrant	Refugee	Refugee
Municipality					Men	Women
Small	19.2	7.6	17.7	7.2	16	14
Medium	60.2	56.2	61.2	55.8	56	56
Large	20.6	36.2	21.1	37.0	28	30
All	100	100	100	100	100	100

Source: The Immigrant Data Set.

Note: The geographical distribution reported for refugees is their initial geographical distribution.

Table 5.5 shows the out-migration rates across municipality size categories for male and female refugees, separately. The out-migration rate is calculated as the share of placed refugees in the respective municipality size category that move across the municipality border during the observation period. Hence, the term 'migrant' now includes refugees who carry out an intra-county, but inter-municipal, move in addition to refugees who carry out an intercounty move. The overall out-migration rate during the period of observation was 39% for men and 27% for women. However, the share of movers is strongly, negatively correlated with the initial municipality size. The out-migration rate for refugees placed in small municipalities was as high as 50% for men and 36% for women. This suggests that small municipalities have characteristics which push refugees away, especially male refugees.

Furthermore, as one would expect it, the share of movers is strongly, negatively correlated with year of immigration, i.e. strongly, positively correlated with years *since* migration, see Table 5.6. As little as 36% of male refugees still live in the municipality of assignment 14 years after immigration. The pattern raises the question whether it is just a matter of, say, 20 years since immigration, before all placed refugees will have left their municipality of assignment.

Table 5.5 Out-migration rates for refugees across municipality size categories. Per cent.

Initial municipality	Out-migration rates Men	Women
Small	50	36
Medium	43	29
Large	29	17
All	39	27

Source: The Refugee Data Set.

Table 5.6 Percent movers among refugees across each year of immigration.

Year of immigration	Men	Women
1985	64	52
1986	58	46
1987	56	42
1988	56	38
1989	50	43
1990	48	33
1991	48	32
1992	40	28
1993	43	25
1994	31	20
1995	22	18
1996	15	11
All	39	27

Source: The Refugee Data Set.

Table 5.7 Average duration of stay in municipality of placement. Months.

	Men			Women		
Initial municipality	Movers	Stayers	All	Movers	Stayers	All
Small	17.1	42.1	29.9	18.0	42.3	33.3
Medium	24.8	57.8	43.7	25.9	55.9	47.3
Large	27.7	65.5	55.4	25.0	61.6	55.1
All	23.9	58.3	44.8	24.2	56.2	47.7

Source: The Refugee Data Set.

Table 5.7 reveals that on average movers make the first migration investment two years after settlement in the municipality of placement. But migrants from small municipalities tend to migrate already after one and a half year. However, recall from Section 2 that placement in small municipalities mainly occurred during the second half of the dispersal policy period. Hence, the censoring of the data implies that duration in a small municipality is bound to be relatively short for movers.

Table 5.8 Moving patterns of male refugee movers. Per cent.

Destination municipality Initial municipality	Small	Medium	Large	Total moves out of
Small	2	12	5	19
Medium	5	31	26	62
Large	1	12	6	19
Total moves into	8	55	37	100

Source: The Refugee Data Set.

Table 5.9 Moving patterns of female refugee movers. Percent.

Destination municipality Initial municipality	Small	Medium	Large	Total moves out of
Small	2	14	4	20
Medium	4	30	27	60
Large	1	13	6	20
Total moves into	6	57	37	100

Source: The Refugee Data Set.

Tables 5.8 and 5.9 show that more than 92% of the movers migrated to medium-sized or large municipalities. However, turning to the net inflow rates calculated as the net inflow relative to the sum of refugee migrants,

we see that only large municipalities experienced a positive net inflow of refugees, of around 0.18. In contrast, small and medium municipalities experienced a negative net inflow, i.e. a positive net outflow, of around 0.12 and 0.05 respectively. To put these net inflow rates for refugees into perspective, note the following statistical fact for the Danish population as such. Between 1981 and 1996 small municipalities experienced a net population decrease of 2%, while medium-sized and large municipalities experienced a net population increase of 3.5% (Statistical Yearbook, 1997, Table 43). Hence, the net outflow rates for small municipalities are much higher for refugees than for the total Danish population.

Figures 5.1-5.4 are used to examine the consequences of the positive net inflow to the larger municipalities. The figures illustrate the mean ethnic concentration of the different ethnic refugee groups across the larger municipalities during the period of observation. Note that the change in concentrations from one year to another are a result of the dispersal of new arrivals of refugees as well as internal migration of earlier arrivals. The figures indicate that not all ethnic refugee groups have become more concentrated in the larger municipalities. Towards the end of the observation period, refugees from Iraq, Iran, Somalia, Chile and refugees without citizenship have become more concentrated in the larger municipalities, whereas refugees from Poland, Rumania, Afghanistan and Ethiopia have become less concentrated in those municipalities. The remaining ethnic groups, i.e. refugees from Sri Lanka, Vietnam and the Former Yugoslavia, have had fairly constant rates of ethnic concentration in the larger municipalities over the years. There are many possible explanations for these differences in ethnic concentration in the larger municipalities, including differences in preference for larger municipalities between ethnic groups depending on whether or not the refugees originate from large urban areas in the home country, ethnic differences in cultural distance between the respective ethnic group and the majority population and the initial distribution of the ethnic group across Denmark.

Figure 5.1

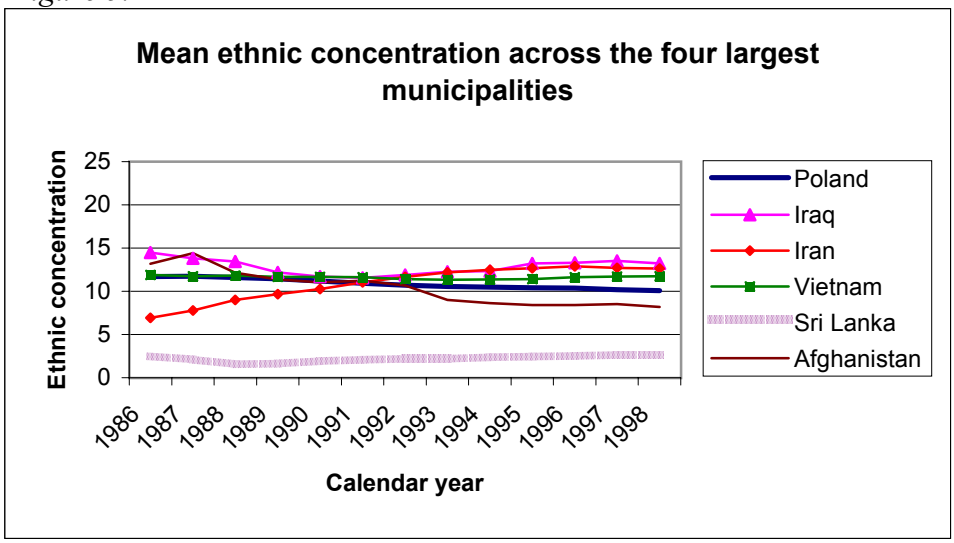


Figure 5.2

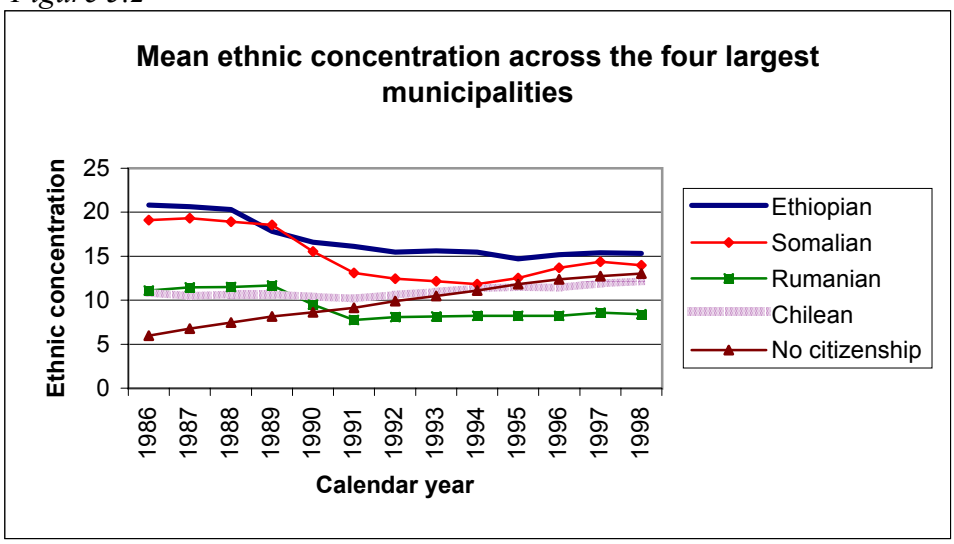


Figure 5.3

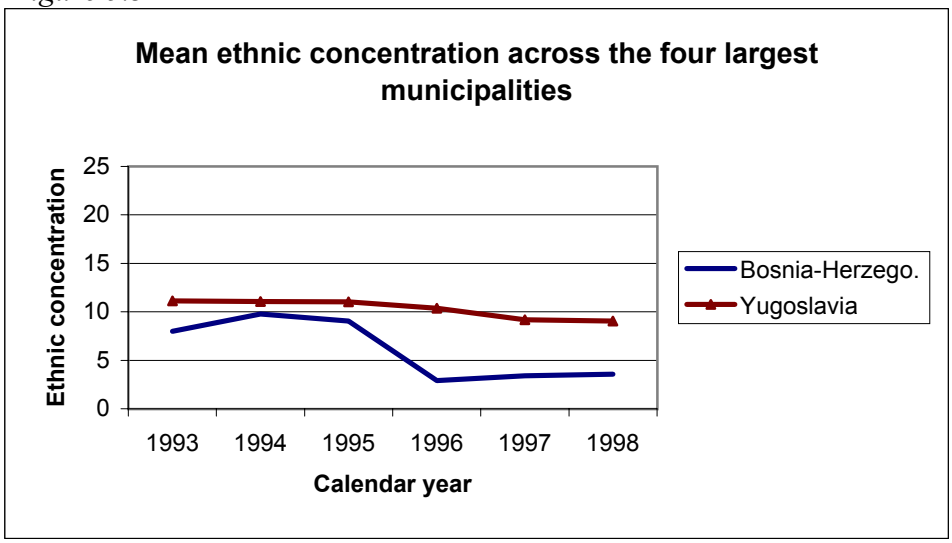
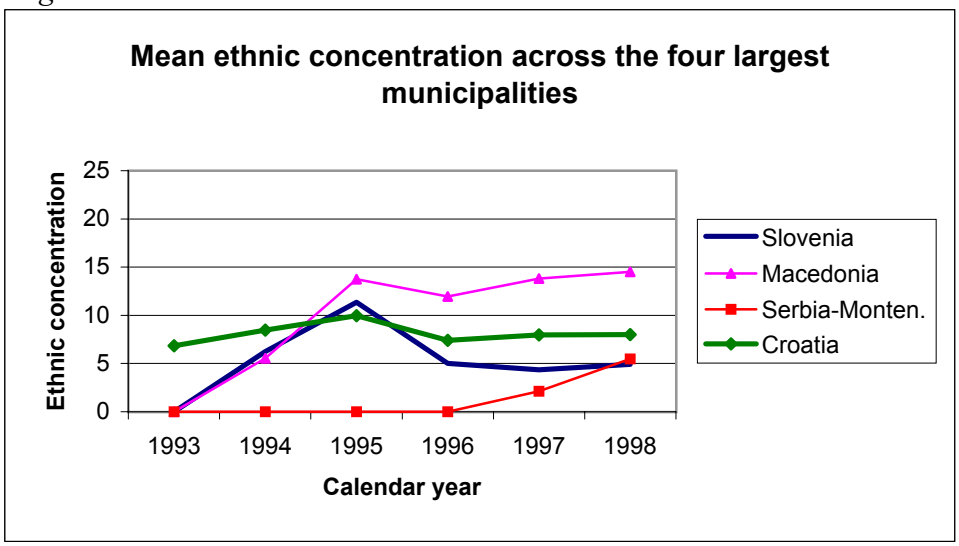


Figure 5.4



Overall, however, the descriptive evidence presented in this subsection indicates that refugees' place utility is increasing in the number of inhabitants. Movers were overrepresented among refugees placed in small municipalities and migration occurred towards the larger, urban areas. Therefore, the dispersal policy did not achieve an equal distribution of refugees across small, medium and larger municipalities in the *medium run*.

However, the municipality size is likely to be correlated with numerous other factors which potentially influence refugees' migration decision. To examine this, I have calculated the means of the labour market, housing market and population composition characteristics across small, medium and large municipalities, separately. The results for 1993 are presented in Table 5.10.

The variation in municipality characteristics is substantial across the three size categories of municipalities. Large municipalities are, on average, characterised by a much larger immigrant population, higher concentrations of immigrants from refugee-sending countries, a slightly higher regional unemployment rate, a much higher number of institutions for vocational and higher education, a much higher share of public housing and a much lower share of right-wing votes at the latest municipal election than the average medium-sized or small municipality.

Not surprisingly, there is even more variation in municipality characteristics across *all* municipalities. In 1993, the municipality with the highest percentage of immigrants, Copenhagen, had 18.3% immigrants while the municipality with the smallest percentage, Thyholm, only had 0.5%. There is also substantial variation in the ethnic concentration across municipalities. 20.9% of all immigrants from Iraq, for instance, resided in Copenhagen while 157 municipalites had no Iraqi immigrants. In 1993, the regional unemployment rate varied from 23.1 to 8.6%, for Læsø and Billund municipalities, respectively. In addition, there is considerable variation in municipality characteristics across calendar years, especially in the regional unemployment which ranges from 3.6% for Grindsted in 1998 to 24.2% for Læsø in 1994.

Table 5.10 Municipality characteristics in 1993. Means (std. dev.).
By municipality size categories

Municipality size category	**Small**	**Medium**	**Large**
Characteristics	Mean	Mean	Mean
Inhabitants	6,960.42	23,769.17	268,867.50
	(1,696.40)	(15,882.71)	(140,389.87)
Reg. unempl. rate	13.18	12.59	14.14
	(2.17)	(2.03)	(1.84)
% of county jobs	2.06	7.42	54.86
	(1.82)	(6.80)	(23.43)
# educ. voc. institutions	0.14	1.74	21.25
	(0.39)	(2.22)	(7.80)
% public housing	6.76	17.29	24.67
	(3.80)	(12.47)	(4.71)
% right-wing votes	53.27	50.40	37.48
	(15.22)	(13.01)	(6.35)
% immigrants	1.80	3.77	7.34
	(0.85)	(2.84)	(3.49)
Polish concentration	0.06	0.38	10.55
	(0.06)	(0.54)	(9.61)
Iraqi conc.	0.03	0.36	12.24
	(0.08)	(0.68)	(8.24)
Iranian conc.	0.01	0.37	12.17
	(0.03)	(0.58)	(5.82)
Vietnamese conc.	0.01	0.40	11.34
	(0.03)	(0.83)	(6.29)
Tamil conc.	0.11	0.58	2.18
	(0.21)	(1.14)	(0.76)
No citizenship conc.	0.03	0.41	10.47
	(0.05)	(0.60)	(5.00)
Ethiopian conc.	0.01	0.27	15.61
	(0.05)	(1.28)	(17.78)
Afghanistan conc.	0.02	0.46	9.02
	(0.16)	(1.51)	(9.42)
Somalian conc.	0.04	0.35	12.17
	(0.21)	(0.94)	(6.65)
Rumanian conc.	0.04	0.47	8.16
	(0.11)	(0.97)	(6.04)
Chilean conc.	0.02	0.40	10.96
	(0.05)	(1.31)	(11.97)
Bosnian-Herz. conc.	0.03	0.48	8.00
	(0.34)	(2.42)	(7.30)
Serbia-Monte. conc.	0	0	0
	(0)	(0)	(0)
Croatian conc.	0.03	0.52	6.85
	(0.18)	(3.85)	(12.10)
Macedonian conc.	0	0	0
	(0)	(0)	(0)
Slovenian conc.	0	0.76	0
	(0)	(8.70)	(0)
Yugoslavian conc.	0.02	0.40	11.14
	(0.07)	(1.11)	(20.02)
No. of municipalities	139	132	4

Source: Time-series municipality data from Statistics Denmark and the Immigrant Data Set.

5.3 Determinants of subsequent migration

The descriptive evidence presented indicates a potentially important push factor for placed refugees: lack of a large urban area. In order to test the importance of that and other potential push factors in refugees' migration decision according to the hypotheses presented in Section 3, I include a whole range of characteristics of the municipality of assignment and demographic and lagged socioeconomic characteristics of the individual as explanatory variables in the model to be estimated.

Location characteristics of the municipality of placement include the regional unemployment rate and the share of jobs in the county situated in the municipality of placement.[8] As a proxy for the extent to which the local government requires social benefit recipients among refugees to participate in Active Labour Market participation, I include the share of right-wing votes at the latest local election, defined as the votes for the Conservative Party and the Liberal Party in per cent of the total votes for the Conservative Party, Liberal Party, Social Democratic Party and Socialist Peoples Party in the belief that Active Labour Market participation is more prevalent in right-wing dominated locations. These three variables are meant to capture the most important regional economic factors in the migration decision.

To capture the potential importance of living near friends, family and fellow countrymen and of living near other immigrants due to ethnic network effects and/or preferences for ethnic goods, I include the percentage of the total group of fellow countrymen in Denmark that lives in the municipality of placement, henceforth ethnic concentration, and the number of local immigrants in percentage of the local population.[9] In addition, the size category of the municipality of placement, small, medium or large, is included for two reasons. First, to allow for attainment of rural versus urban life style preferences as a migration motive. Second, to capture the mechanics of geographical size. The fact that I consider cross-municipal moves only

[8] The 'share of local county jobs' variable has missing values for 1986-1992. I have replaced the missing values by the 1993 values.

[9] Note that this measure of ethnic concentration has the weakness that it is invariant to the 'size' of the ethnic group, i.e. the ethnic concentration is equal to 100% both for an individual without fellow countrymen in the host country and for individuals of large ethnic groups who all live in the same municipality. Since the smaller ethnic groups are excluded from the analysis and refugees included in the analysis arrived in the same year as other individuals from that refugee-sending country, this should not be a problem in the econometric estimations.

and disregard intra-municipal housing mobility may imply a higher share of movers among refugees placed in small municipalities rather than medium-sized and notably larger municipalities, because more short-distance moves may be included in moves out of small municipalities than moves out of medium-sized or large municipalities.

I, furthermore, include the number of vocational and higher educational institutions in the municipality of placement to test the importance of closeness to institutions which offer a vocational or higher education.

The final characteristic of the municipality of placement is the number of public housing flats in per cent of the total housing stock, since refugees have the easiest access to this type of housing in Denmark. Lack of local public housing may trigger migration of refugees with housing dissatisfaction.

The demographic characteristics of the refugees consist of sex, age, marital status, number of infants, number of children (aged 3-18), country of origin, total stock of fellow countrymen in Denmark and year of immigration. These variables control for differences in the initial settlement pattern and differences in costs of and returns to migration across demographic groups of refugees. One year lags of socioeconomic characteristics measured by years of education obtained in Denmark, the employment status (employed or not) and the annual taxable income level are used to control for differences in costs and returns to migration across socioeconomic groups.[10] The socioeconomic variables are lagged to help ensure their exogeneity in the migration decision.

Finally, to capture a potentially important aspect of life cycle disruptions for housing or location dissatisfaction an indicator for whether or not the marital status has changed during the year is included.

Initial mean values of the variables are given in Tables A.3 and A.4 in the Appendix, for all refugees and for movers and stayers separately.

[10] Unfortunately, the Immigrant Data Set lacks information on highest completed level of education *prior* to immigration for the main part of immigrants. Furthermore, the information registered for the remaining part of immigrants is uncertain. As a consequence, no information on the highest educational level obtained prior to immigration is included in the subsequent empirical estimations.

6 Estimation results and simulation

6.1 Estimation results

The determinants of time until exit from the municipality of placement for refugees in Denmark subject to the dispersal policy in place from 1986 to 1998 are analysed using the MPH model specification described in Section 4.2.1. In addition, for the same group of individuals the determinants of time until exit from the municipality of placement to a small, medium-sized and large municipality are analysed using the MPH competing risk model presented in Section 4.2.2. The models are estimated separately for men and women.

6.1.1 The MPH model

The estimation results of the MPH model are reported in Table 6.1.

Table 6.1.A MPH model estimates for men and women, separately. Dependent variable: overall hazard rate of move out of placement municipality.

	Men		Women	
Covariates	Estimate	Std.err.	Estimate	Std.err.
Age/100	-0.924	0.764	-0.818	0.904
Age/100 squared	-0.867	0.984	-0.485	1.149
Married	-0.075***	0.028	-0.214***	0.037
Marital status change	0.328***	0.044	0.702***	0.063
# children 0-2 /10	-1.185***	0.238	-0.815***	0.259
# children 3-17 /10	-1.073***	0.108	-0.773***	0.120
Poland	-0.171**	0.082	-0.684***	0.067
Iraq	-0.060	0.053	0.057	0.072
Vietnam	-0.898***	0.063	-0.860***	0.072
Sri Lanka	-0.807***	0.048	-1.440***	0.071
No citizenship	-0.039	0.036	-0.038	0.050
Ethiopia	-0.065	0.124	-0.419	0.181
Afghanistan	-0.285***	0.102	-0.167	0.131
Somalia	0.142**	0.064	0.113	0.081
Rumania	-0.933***	0.127	-0.610***	0.127
Chile	-0.387*	0.205	-0.703***	0.273
Bosnia-Herzegovina	-0.630***	0.069	-0.398***	0.081
Ex-Yugoslavia	-0.611*	0.086	-0.536***	0.106
Ethnic stock/10^5	-0.442***	0.061	-0.344***	0.079
Years educ. lag/10	0.253	0.316	-0.222	0.479
Job lagged	0.008	0.040	0.084	0.062
log(income) lag/10	-0.228***	0.035	-0.273***	0.043
Immigrat. year: 1985	-0.183***	0.072	0.210**	0.104
Immigrat. year: 1986	-0.160***	0.060	0.225***	0.075
Immigrat. year: 1987	-0.164***	0.062	0.150**	0.073
Immigrat. year: 1988	-0.059	0.063	0.088	0.075
Immigrat. year: 1989	-0.035	0.060	0.289***	0.071
Immigrat. year: 1991	-0.043	0.064	0.055	0.073
Immigrat. year: 1992	-0.210***	0.066	0.022	0.078
Immigrat. year: 1993	-0.107	0.071	-0.067	0.086
Immigrat. year: 1994	-0.222***	0.080	-0.194**	0.093

Table 6.1.B MPH model estimates for men and women, separately. Dependent variable: overall hazard rate of move out of placement municipality.

	Men		Women	
Covariate	Estimate	Std.err.	Estimate	Std.err.
Immigrat. year: 1995	-0.028	0.078	-0.036	0.093
Immigrat. year: 1996	-0.401***	0.084	-0.262**	0.105
Greater Copenhagen	0.880***	0.047	0.727***	0.061
Medium municipality	0.284***	0.066	0.501***	0.091
Small municipality	0.769***	0.079	0.925***	0.108
% immigrants/10	-0.369***	0.068	-0.444***	0.089
Ethnic conc./10	-0.308***	0.030	-0.354***	0.038
Reg. unemp. rate/10	0.112**	0.056	0.288***	0.074
% of county jobs/100	0.191	0.225	0.475	0.297
# educ. institut./100	-1.849***	0.685	-0.314	0.906
% public housing/100	-2.236***	0.141	-3.138***	0.195
% right-wing votes/100	0.181*	0.105	0.327**	0.151
Baseline haz. funct.:				
h1	-2.617***	0.436	-2.455***	0.655
h2	-1.955***	0.436	-2.117***	0.655
h3	-2.413***	0.430	-2.363***	0.644
h4	-2.045***	0.431	-2.096***	0.644
h5	-2.549***	0.432	-2.473***	0.647
h6	-2.744***	0.439	-2.722***	0.655
Mixing distribution:				
v^2	-1.016***	0.049	-1.235***	0.057
$p_1 = \Pr(v = v^1)$	0.156***	0.003	0.156***	0.003
$p_2 = \Pr(v = v^2)$	0.844***	0.167	0.844***	0.176
Number of movers	10,095		5,913	
Number of observations	25,674		22,228	
Number of cases	100,717		91,320	
Log Likelihood	-52,939.4		-33,740.0	

Note: The asterisks, *, ** and ***, denote that the estimate is significantly different from zero at a 10%, 5% and 1% significance level, respectively.

Reference groups: 1. Nationality: Iran, 2. Year of immigration: 1990, 3. Municipality size: large. Also controlled for missing values of the variables 'years educ. lag', 'job lagged', 'log(income) lag' and 'ethnic conc.'. The latter variable had missing values for only 0.3% of the cases.

The estimated hazard functions for men and women are plotted in Figures 6.1-6.2. The shape shows the duration dependence pattern. Interestingly, the estimated piecewise constant baseline hazard function exhibits first positive and then negative duration dependence. Hence, the hazard rate of out-migration from the municipality of placement increases during the first years after arrival to Denmark and declines thereafter. Note the similarity to the Jovanovich (1979) matching model. Following that analogy, refugees spend some months collecting information about the location of placement and learning about the 'match quality', and then move away if the location is unsatisfactory. In addition, the housing offer arrival rate is likely to be very low initially due to lack of knowledge of the host-country housing market, to lack of savings and to lack of a personal network needed for access to housing outside the public housing sector. However, note that the peaks of the baseline hazard function in the intervals 7-12 and 19-24 are at least in part a statistical artifact arising from the fact that the Immigrant Data Set only contain information about the last change of address in each year for each individual, see footnote in Section 4.2.1. In addition, the peaks may in part be due to refugees waiting to move until the end of the introduction programme which in general lasted for 18 months.

Figure 6.1

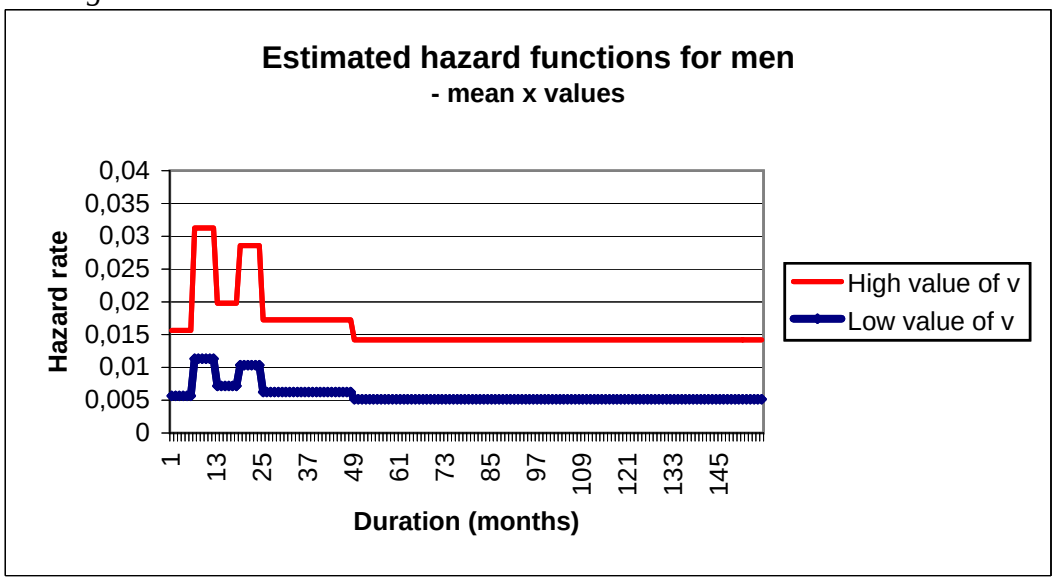
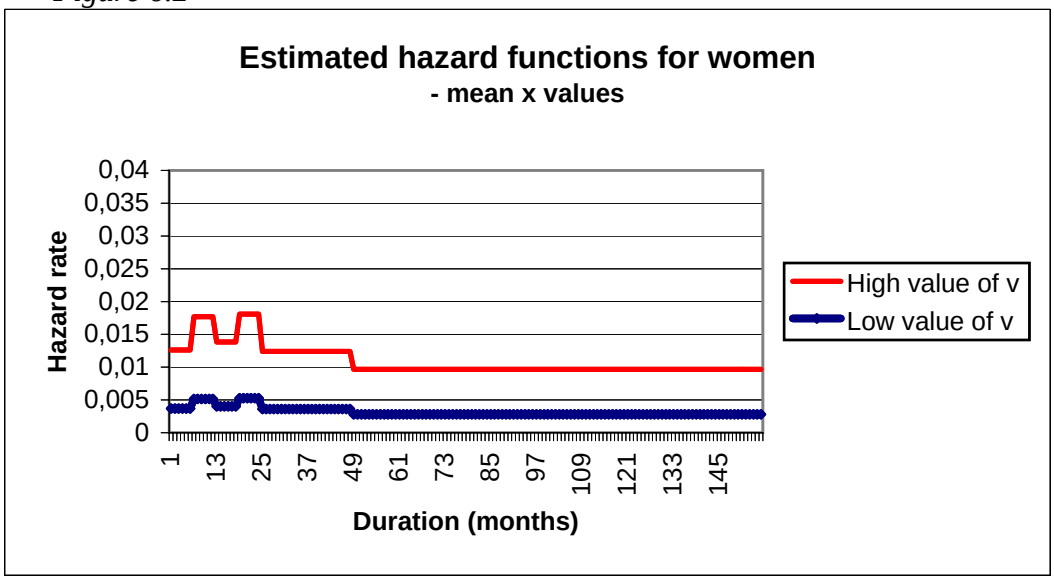


Figure 6.2



The parameter estimates are interpreted as follows. The effect of a change in a given characteristic of the individual of size Δ on the hazard rate of migration is given by the multiplicative effect

$$Exp(\beta * \text{covariate scale factor} * \Delta X) \tag{22}$$

Table 6.2 The multiplicative effect of selected characteristics on the overall hazard rate of migration.

	Men	*Women*
Location characteristics:		
Greater Copenhagen area	2.41	2.07
Medium municipality	1.33	1.65
Small municipality	2.16	2.52
% immigrants: 1% point decrease	1.04	1.04
Ethnic conc.: 1% point decrease	1.03	1.04
Reg. unempl. rate: 1% point increase	1.01	1.03
% of county jobs: 1% point increase	1	1
# educ. institutions: Decrease by 1	1.02	1
% public housing: 1% point decrease	1.02	1.03
% right-wing votes: 1% point increase	1.002	1.003
Socioeconomic characteristics:		
Years educ. lag: Increase of 1	1	1
Job lagged	1	1
Log(tax. income): 1% point decrease	1.02	1.03
Life cycle disruption:		
Change in marital status	1.39	2.02

Note: A variable which was found to have an insignificant effect in Table 6.1 has a multiplicative effect on the hazard rate of 1, i.e. the hazard rate does not change in spite of a change in the covariate.

The multiplicative effects of small changes in location characteristics and in socio-economic characteristics of the individual are presented in Table 6.2. In contrast, the multiplicative effects of demographic characteritics of the individual are not presented. The reason is that one should be careful when interpreting their estimated coefficients because they may result from differences in the extent to which refugees were able to influence their initial

location rather than from differences in location preferences and/or costs of moving between groups. The table shows that settlement in the Greater Copenhagen area versus outside that area implies around twice as large exit rate from the municipality of placement. The covariate probably captures the high rates of relocation *within* the Greater Copenhagen area evident from Table 5.2. The exit rate is significantly increasing in the size of municipality of placement. Initial settlement in a small municipality rather than a large municipality (the reference group) increases the exit rate by 116% for men and 152% for women, while initial settlement in a medium municipality versus a large municipality increases the exit rate by 33% for men and 65% for women. Hence, municipality size appears to be an important push factor in placed refugees migration decision. This finding confirms that attainment of urban lifestyle preferences is a possible migration motive of placed refugees.

The population composition is seen to be another significant determinant in the migration decision. For men and women alike, a percentage point decrease in the percentage of immigrants in the local population implies 4% increase of the exit rate. Similarly, a percentage point decrease in ethnic concentration in the municipality of placement increases the exit rate by 3% for men and 4% for women. These results confirm that immigrant and ethnic networks are important determinants of refugees' place utility. These findings conform with all previous studies on immigrants' location preferences.

Turning to the economic migration motives, a high regional unemployment rate significantly increases the exit rate. In particular, a percentage point increase in the unemployment rate increases the exit rate by 1% for men and 3% women. Hence, female refugees surprisingly appear to be more sensitive to differences in regional unemployment than male refugees. In a related study on determinants of employment of male refugees, Damm and Rosholm (2003) estimate that an percentage point increase in the regional unemployment rate corresponds to a 2.6% decrease in the exit rate from non-employment to employment. It is therefore fortunate that refugees react to high regional unemployment by moving away. The results support the US findings in Jaeger (2000) and Swedish findings in Åslund (2001) that immigrants' location choice is sensitive to regional differences in unemployment rates.

In contrast, residence in a municipality with a low share of the overall number of jobs in the county is estimated to have an insignificant effect the hazard rate of migration. This could be interpreted as evidence against the hypothesis that unfavourable local employment prospects tend to push

refugees out of the municipality of placement. Alternatively, a municipality's share of the overall number of jobs in the county may be an unimportant factor in refugees' internal migration decision, because residence outside a municipality with a large share of county jobs can be compensated for by commuting.

The share of right-wing votes at the latest local election has a small, but significant effect on the hazard rates. A percentage point increase in the percentage of right-wing votes increases the exit rate by 0.2% and 0.3% for men and women, respectively. This may indicate that some refugees flee municipalities which require social benefits recipients among refugees to participate relatively more in Active Labour Market training than other municipalities. However, other interpretations are certainly possible.

For male refugees only, living near vocational and higher educational institutions is seen to be another important determinant of migration. Specifically, one less local institution implies a 2% increase in the hazard rate of migration for men.

Finally, the significant effect of the percentage of public housing provides evidence that some migration away from the municipality of placement is carried out for housing dissatisfaction reasons. Specifically, a percentage point decrease in the percentage of public housing in the local housing stock implies a 2-3% increase in the hazard rate of migration both for men and women. This finding confirms that access to public housing is important for the ability of refugees to adjust their housing consumption.

Turning to the effects of lagged socio-economic factors, the only important factor in the migration decision is seen to be the annual taxable income. The effect of a percentage point decrease in log annual taxable income[11] corresponds to an increase in the hazard rate of migration by 2-3%. A likely explanation is that adjustment of housing consumption in order to obtain a lower rent which may involve a move to the adjacent municipality is another motive for moving away from the municipality of placement. A likely reason for which educational level was found to have an insignificant effect on the hazard rate of migration is that the statistical estimations only included information on education obtained in Denmark and no information on education obtained prior to immigration to Denmark.

Note also the sizable effect of a change in marital status. A change in

[11] For instance, an increase from DKK 108,000 to DKK 121,300 or from USD 16,564 to USD 18,661.

marital status increases the hazard rate of migration by 39% for men and 102% for women. The migration motive may in part be due to housing consumption adjustment and in part to a change in life style preferences.

Finally, the estimated mixing distribution confirms that placed refugees' decision of whether or not to move away from the municipality of placement is also influenced by *unobserved* characteristics of the individuals. For both men and women the estimates show significant evidence of unobservable characteristics of individuals which are correlated with individuals' migration propensity. The estimates of the probability distribution of the combinations of unobserved heterogeneity across destinations show that 15.6% of male and female refugees alike have unobservable characteristics that imply a relatively high migration propensity relative to the remaining 84.4% of the refugees. Furthermore, due to differences in unobserved characteristics, the hazard rate of migration of the latter group of refugees is estimated to amount to only 36.2% of that of the former group of refugees. Examples of unobserved characteristics of potential importance for the migration propensity include abilities of the individual, education from the country of origin and whether or not the individual is placed within commuting distance of close family and friends in the host country. Failure to take unobserved heterogeneity into account would have resulted in a downward biased estimate of duration dependence, due to increasing selection over time as individuals with a low migration propensity due to unobservable characteristics constitute an increasingly high share of the risk set (Lancaster 1990).

6.1.2 The MPH competing risks model

The estimation results of the MPH competing risks model are reported for men and women separately in Tables 6.3 and Tables 6.4, respectively.

Table 6.3.A MPH competing risks model estimates for men. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Destination	Small		Medium		Large	
Covariates	Estimate	Std.err.	Estimate	Std.err.	Estimate	Std.err.
Age/100	-1.142	2.799	0.177	1.013	-0.207	1.280
Age/100 squared	-0.481	3.724	-1.608	1.298	-2.774*	1.663
Married	-0.344***	0.097	-0.084**	0.038	-0.043	0.044
Marital status change	0.227	0.164	0.386***	0.059	0.256***	0.068
# children 0-2 /10	-1.142	0.899	-0.707**	0.330	-1.661***	0.387
# children 3-17 /10	-0.566	0.424	-0.490***	0.142	-2.124***	0.185
Poland	0.957***	0.260	-0.159	0.113	-0.477***	0.147
Iraq	-0.800***	0.283	-0.097	0.073	0.119	0.087
Vietnam	-0.596**	0.275	-0.623***	0.087	-1.107***	0.101
Sri Lanka	0.592***	0.180	-0.431***	0.063	-2.529***	0.122
No citizenship	0.124	0.158	0.003	0.050	-0.108**	0.055
Ethiopia	-0.218	0.560	-0.131	0.170	-0.077	0.207
Afghanistan	-0.410	0.575	-0.160	0.133	-0.112	0.177
Somalia	0.545**	0.267	-0.056	0.092	0.424***	0.103
Rumania	-0.356	0.482	-0.555***	0.162	-1.458***	0.249
Chile	-0.105	0.886	-0.368	0.258	-0.454	0.442
Bosnia-Herzegovina	-0.437	0.275	-0.111	0.096	-1.614***	0.120
Ex-Yugoslavia	-0.111	0.303	-0.191*	0.113	-1.451***	0.178
Ethnic stock/10^5	-0.499*	0.291	-0.470***	0.082	-0.298***	0.105
Years educ. lag/10	-0.676	1.845	0.956**	0.432	0.226	0.498
Job lagged	0.441***	0.131	0.190***	0.057	-0.336***	0.066
log(income) lag/10	-0.253*	0.133	-0.374***	0.048	-0.021	0.057
Immigrat. year: 1985	0.599*	0.355	-0.050	0.100	-0.231**	0.114
Immigrat. year: 1986	0.645**	0.316	-0.079	0.082	-0.163*	0.093
Immigrat. year: 1987	0.206	0.327	-0.080	0.084	-0.125	0.094
Immigrat. year: 1988	0.451	0.339	0.032	0.085	-0.112	0.094
Immigrat. year: 1989	0.559*	0.323	-0.019	0.083	-0.024	0.089
Immigrat. year: 1991	-0.440	0.394	0.026	0.087	-0.050	0.095

Table 6.3.B MPH competing risks model estimates for men. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Destination	Small		Medium		Large	
Covariate	Estimate	Std.err.	Estimate	Std.err.	Estimate	Std.err.
Immigrat. year: 1992	0.107	0.356	-0.199**	0.092	-0.222**	0.098
Immigrat. year: 1993	-0.063	0.394	-0.090	0.099	-0.120	0.104
Immigrat. year: 1994	0.709*	0.372	-0.319***	0.118	-0.168	0.125
Immigrat. year: 1995	0.967***	0.356	-0.151	0.107	0.109	0.125
Immigrat. year: 1996	0.773**	0.389	-0.557***	0.115	-0.288**	0.144
Greater Copenhagen	-0.067	0.271	0.877***	0.070	0.614***	0.073
Medium municipality	0.141	0.270	0.156	0.098	0.114	0.100
Small municipality	0.522*	0.306	0.711***	0.116	0.327***	0.124
% immigrants/10	-0.304	0.317	0.002	0.097	-0.655***	0.108
Ethnic conc./10	-0.218*	0.129	-0.183***	0.036	-0.736***	0.084
Reg. unemp. rate/10	0.221	0.223	-0.172**	0.077	0.682***	0.092
% of county jobs/100	-0.692	0.946	1.647***	0.316	-1.048***	0.383
# educ. institut./100	1.122	2.721	-5.163***	0.970	-1.439	1.123
% public housing/100	-3.903***	0.600	-3.854***	0.200	0.301	0.240
% right-wing votes/100	-0.763**	0.341	0.472***	0.151	0.531***	0.184
Baseline haz. funct.:						
h1	-4.746**	2.230	-4.247***	0.602	-4.968***	0.696
h2	-3.828*	2.257	-3.619***	0.601	-4.216***	0.694
h3	-4.275*	2.211	-3.996***	0.593	-4.674***	0.687
h4	-4.122*	2.217	-3.740***	0.594	-4.050***	0.683
h5	-4.483**	2.226	-4.414***	0.596	-4.410***	0.685
h6	-5.072**	2.244	-4.699***	0.606	-4.489***	0.698

Table 6.3.C MPH competing risks model estimates for men. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Mixing distribution:	Mean	Std. error
v_s^2	-1.973	2.837
v_m^2	-1.198***	0.058
v_l^2	-0.934***	0.099
$p_1 = \Pr(v_s^1, v_m^1, v_l^1)$	0.148	0.108
$p_2 = \Pr(v_s^2, v_m^1, v_l^1)$	0.045	0.908
$p_3 = \Pr(v_s^1, v_m^2, v_l^1)$	0.072	0.765
$p_4 = \Pr(v_s^1, v_m^1, v_l^2)$	0.115	0.481
$p_5 = \Pr(v_s^2, v_m^2, v_l^1)$	0.124	0.212
$p_6 = \Pr(v_s^2, v_m^1, v_l^2)$	0.069	0.300
$p_7 = \Pr(v_s^1, v_m^2, v_l^2)$	0.269**	0.122
$p_8 = \Pr(v_s^2, v_m^2, v_l^2)$	0.158	0.249
Number of observations	25,674	
Number of cases	100,717	
Log Likelihood	-60,485.19	

Note: The asterisks, *, ** and ***, denote that the estimate is significantly different from zero at a 10%, 5% and 1% significance level, respectively.

Number of movers to each destination: small: 781, medium-sized: 5,574 and large: 3,740.

Reference groups: 1. Nationality: Iran, 2. Year of immigration: 1990, 3. Municipality size: large. Also controlled for missing values of the variables 'years educ. lag', 'job lagged', 'log(income) lag' and 'ethnic conc.'. The latter variable had missing values for only 0.36% of the cases.

Table 6.4.A MPH competing risks model estimates for women. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Destination	Small		Medium		Large	
Covariates	Estimate	Std.err.	Estimate	Std.err.	Estimate	Std.err.
Age/100	-1.137	4.233	-0.368	1.195	-2.561*	1.495
Age/100 squared	-0.206	5.436	-0.466	1.519	0.826	1.899
Married	-0.167	0.170	-0.243***	0.049	-0.143**	0.061
Marital status change	0.823**	0.261	0.814***	0.083	0.487***	0.107
# children 0-2 /10	-1.562	1.127	-0.263	0.356	-1.451***	0.409
# children 3-17 /10	0.095	0.515	-0.295*	0.165	-1.504***	0.196
Poland	0.428	0.278	-0.530***	0.091	-1.231***	0.129
Iraq	-0.505	0.486	0.186*	0.100	0.286**	0.121
Vietnam	-0.463	0.372	-0.482***	0.099	-1.103***	0.115
Sri Lanka	-0.114	0.299	-0.829***	0.091	-2.881***	0.175
No citizenship	0.209	0.251	-0.041	0.071	-0.161**	0.078
Ethiopia	-1.381	1.146	-0.009	0.233	-0.356	0.292
Afghanistan	-0.172	0.813	0.469***	0.170	-0.478*	0.267
Somalia	0.382	0.441	0.118	0.114	0.485***	0.133
Rumania	-0.026	0.619	-0.117	0.166	-0.857***	0.233
Chile	-0.325	1.221	-0.545	0.380	0.085	0.436
Bosnia-Herzegovina	0.331	0.416	0.142	0.112	-1.649***	0.137
Ex-Yugoslavia	-0.360	0.525	0.135	0.136	-1.488***	0.223
Ethnic stock/10^5	-1.482	4.045	-1.733*	1.059	-0.407	1.451
Years educ. lag/10	-1.586	2.969	-0.061	0.602	0.800	1.028
Job lagged	0.466**	0.210	0.327***	0.080	-0.414***	0.116
log(income) lag/10	-0.152	0.187	-0.384***	0.061	-0.157**	0.069
Immigrat. year: 1985	-0.139	0.560	0.458***	0.140	0.140	0.165
Immigrat. year: 1986	0.649*	0.350	0.380***	0.103	0.143	0.121
Immigrat. year:: 1987	0.585*	0.344	0.195*	0.100	0.149	0.116
Immigrat. year:: 1988	0.630*	0.347	0.241**	0.103	-0.167	0.119
Immigrat. year: 1989	0.424	0.350	0.388***	0.097	0.159	0.105
Immigrat. year: 1991	-0.081	0.391	0.071	0.104	0.004	0.104

Table 6.4.B MPH competing risks model estimates for women. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Destination	Small		Medium		Large	
Covariate	Estimate	Std.err.	Estimate	Std.err.	Estimate	Std.err.
Immigrat. year: 1992	0.046	0.374	0.082	0.108	-0.163	0.112
Immigrat. year: 1993	-0.510	0.493	-0.080	0.121	-0.156	0.125
Immigrat. year: 1994	-0.378	0.533	-0.500***	0.134	-0.073	0.138
Immigrat. year: 1995	0.100	0.451	-0.257**	0.130	-0.015	0.146
Immigrat. year: 1996	0.181	0.491	-0.612***	0.144	-0.265	0.173
Greater Copenhagen	0.425	0.297	0.875***	0.088	0.246***	0.092
Medium municipality	0.336	0.400	0.326**	0.136	0.117	0.136
Small municipality	0.618	0.465	0.906***	0.158	0.114	0.173
% immigrants/10	-0.781*	0.406	-0.180	0.124	-0.600***	0.141
Ethnic conc./10	-0.266	0.205	-0.244***	0.045	-0.858***	0.110
Reg. unemp. rate/10	0.467	0.317	0.016	0.098	0.741***	0.124
% of county jobs/100	-1.163	1.302	2.105***	0.414	-1.026**	0.485
# educ. institut/100	2.383	3.751	-4.300***	1.285	0.072	1.399
% public housing/100	-2.929***	0.868	-4.908***	0.272	-0.420	0.336
% right-wing votes/100	-0.153	0.650	0.439**	0.204	0.579**	0.253
Baseline haz. funct.:						
h1	-4.019	3.749	-3.200***	0.854	-5.348***	1.293
h2	-3.567	3.743	-2.939***	0.853	-4.908***	1.292
h3	-4.792	3.707	-3.179***	0.835	-5.057***	1.282
h4	-4.503	3.714	-3.005***	0.834	-4.656***	1.283
h5	-4.900	3.705	-3.577***	0.838	-4.872***	1.285
h6	-5.097	3.735	-3.822***	0.849	-5.253***	1.298

Table 6.4.C MPH competing risks model estimates for women. Dependent variable: destination-specific hazard rate of move out of placement municipality.

Mixing distribution:	Mean	Std. error
v_s^2	-2.688	4.829
v_m^2	-1.435***	0.062
v_l^2	-1.492***	0.725
$p_1 = \Pr(v_s^1, v_m^1, v_l^1)$	0.133	0.126
$p_2 = \Pr(v_s^2, v_m^1, v_l^1)$	0.038	0.352
$p_3 = \Pr(v_s^1, v_m^2, v_l^1)$	0.085	0.352
$p_4 = \Pr(v_s^1, v_m^1, v_l^2)$	0.036	0.252
$p_5 = \Pr(v_s^2, v_m^2, v_l^1)$	0.401***	0.126
$p_6 = \Pr(v_s^2, v_m^1, v_l^2)$	0.028	0.319
$p_7 = \Pr(v_s^1, v_m^2, v_l^2)$	0.163	0.135
$p_8 = \Pr(v_s^2, v_m^2, v_l^2)$	0.116	0.179
Number of observations	22,228	
Number of cases	91,320	
Log Likelihood	-37,936.34	

Note: The asterisks, *, ** and ***, denote that the estimate is significantly different from zero at a 10%, 5% and 1% significance level, respectively.

Number of movers to each destination: small: 369, medium-sized: 3,363 and large: 2,181.

Reference groups: 1. Nationality: Iran, 2. Year of immigration: 1990, 3. Municipality size: large. Also controlled for missing values of the variables 'years educ. lag', 'job lagged', 'log(income) lag' and 'ethnic conc.'. The latter variable had missing values for only 0.24% of the cases.

The estimated destination-specific hazard functions are plotted in Figures 6.3-6.4. The duration dependence pattern of the overall hazard rate of migration carries over to the destination-specific hazard functions. They exhibit first positive, then negative duration dependence. Hence, the probability to migrate out the municipality of placement to any of the three types of destination increases during the first years after arrival to Denmark and declines thereafter, although not significantly.

Figure 6.3

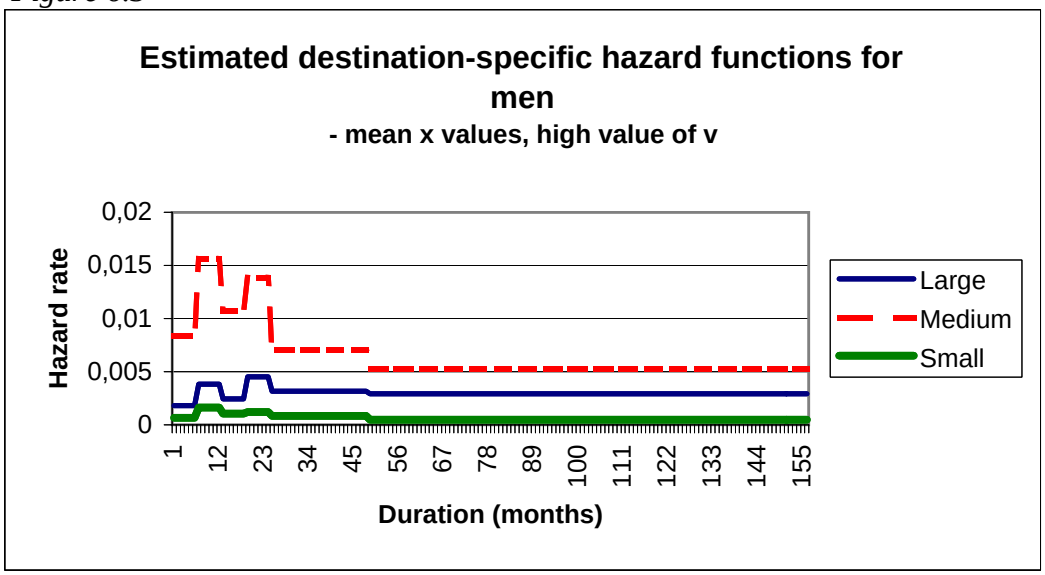


Figure 6.4

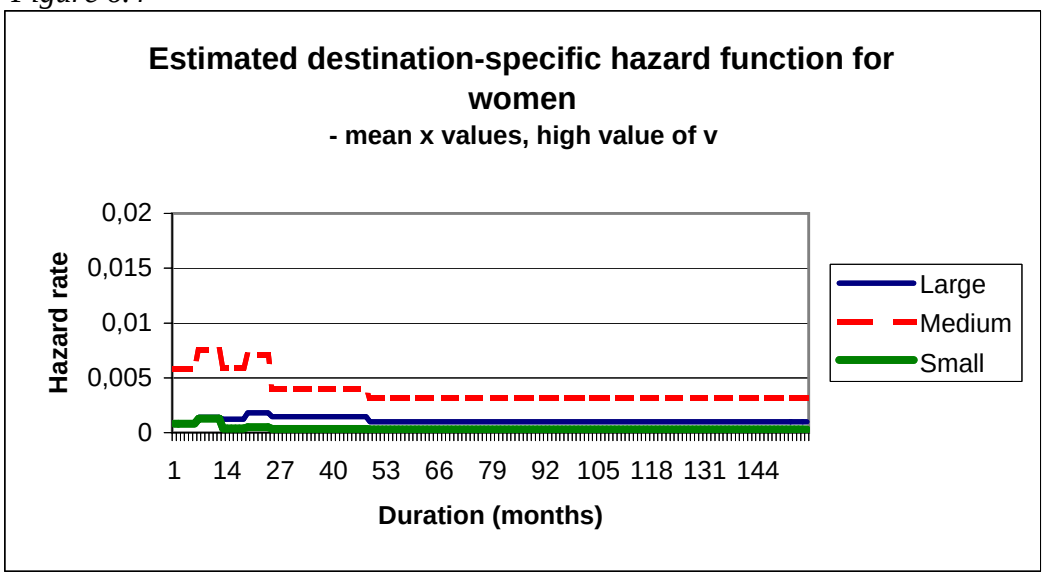


Table 6.5 The multiplicative effect of selected characteristics on the destination-specific hazard rates.

	Men			*Women*		
Destination	*Small*	*Medium*	*Large*	*Small*	*Medium*	*Large*
Location characteristics:						
Greater Copenhagen area	1	2.40	1.85	1	2.40	1.27
Medium municipality	1	1	1	1	1.38	1
Small municipality	1.69	2.04	1.39	1	2.47	1
% immigrants:						
1% point decrease	1	1	1.07	1.08	1	1.06
Ethnic conc.:						
1% point decrease	1.02	1.02	1.08	1	1.02	1.09
Regional unempl. rate:						
1% point increase	1	0.98	1.07	1	1	1.08
% of county jobs:						
1% point increase	1	0.98	1.01	1	0.98	1.01
# educ. institutions:						
Decrease by 1	1	1.05	1	1	1.04	1
% public housing:						
1% point decrease	1.04	1.04	1	1.03	1.05	1
% right-wing votes:						
1% point increase	0.99	1.01	1.01	1	1.01	1.01
Soc.-econ. characteristics:						
Years of education lagged:						
Increase of 1	1	1.10	1	1	1	1
Job lagged	1.55	1.21	0.71	1.59	1.39	0.66
Log of taxable income:						
1% point decrease	1.02	1.04	1	1	1.04	1.02
Life cycle disruption:						
Change in marital status	1	1.47	1.29	2.28	2.26	1.63

Note: A variable which was found to have an insignificant effect in Table 6.3 or 6.4 has a multiplicative effect on the destination-specific hazard rate of 1, i.e. the hazard rate does not change in spite of a change in the covariate.

The multiplicative effects of small changes in location characteristics and in socio-economic characteristics of the individual are presented in Table 6.5.

Interestingly, most of these characteristics are found to affect the *choice* of destination, given that a move is carried out. Furthermore, the estimated effects are largely the same for men and women.

The table shows that settlement in the Greater Copenhagen area versus outside that area implies around twice as large exit rates to medium and large municipalities. The covariate probably captures the high rates of relocation *within* the Greater Copenhagen area evident from Table 5.2. Initial settlement in a small municipality versus a large (the reference group) significantly increases the exit rate to a medium municipality, by 104% for men and 147% for women. For men, initial settlement in a small municipality also significantly increases the exit rate to a large or another small municipality, but the effects are much smaller. Initial settlement in a medium versus a large municipality has an insignificant effect except for exit to another medium municipality for women. These findings show that medium rather than large municipalities are especially able to attract refugees from small municipalities. This migration pattern may be a realisation of the phenomenon of step-migration noted by Ravenstein (1885, 1889). Furthermore, judging from Table 5.2 medium-sized municipalities which exert a pull effect on refugees from small municipalities tend to be situated in the Greater Copenhagen area. Therefore, the findings do not contradict the hypothesis that refugees are attracted to large, urban areas.

The population composition is seen to be another significant determinant of the choice of destination in the migration decision. For men and women alike, a percentage point decrease in the percentage of immigrants in the local population implies 6-7% increase of the exit rate to large municipalities where other immigrants tend to live. Somewhat surprisingly, for women it also increases the exit rate to small municipalities. Lack of presence of fellow contrymen significantly increases the exit rate to *any* destination for men and to medium and large municipalities for women. This finding is understandable in view of the Dispersal Policy under which the larger refugee groups tended to be dispersed in big clusters of the same ethnic origin across counties and within these counties mainly across medium-sized municipalities. Specifically, a percentage point decrease in ethnic concentration in the municipality of placement increases the exit rate to a medium municipality by 2% and to a large municipality by 7-8% for both men and women.

Turning to the economic migration motives, a high regional unemployment rate significantly increases the exit rate to *large* municipalities while for men it also decreases the exit rate to medium municipalities. In particular, a

percentage point increase in the unemployment rate increases the former exit rate by 7% for men and women alike and decreases the latter exit rate by 2%. From a labour market integration perspective this finding is unfortunate since the larger municipalities in Denmark were characterised by relatively high regional unemployment rates in the period of observation, see for instance Table 5.10. Turning to the effect of residence in a municipality with a low share of the overall number of jobs in the county, recall that it had an insignificant effect on the overall hazard rate. In contrast, such residence characteristic significantly increases the exit rate to large municipalities for men and decreases the exit rate to medium-sized municipalites. Hence, these findings show that unfavourable economic factors tend to trigger migration to the larger municipalities and reduce the exit rate to medium-sized municipalities.

The share of right-wing votes at the latest local election has a small, but significant effect on the destination-specific hazard rates. A percentage point increase in the percentage of right-wing votes increases the exit rates to medium and large municipalities by 1%. These choices of destination seem rational since medium-sized and especially large municipalities were characterised by a relatively low share of right-wing votes in the period of observation, see for instance Table 5.10.

Recall that lack of local vocational and higher educational institutions was found to affect the overall hazard rate of migration for men only. In contrast, the competing risks results show that lack of such local educational institutions affects the hazard rate of migration towards medium-sized municipalities for men and women alike. Specifically, one less local institution implies a 4-5% increase of the hazard rate to medium-sized municipalities both for men and women. Hence, attainment of educational needs appear to be another motive among placed refugees for moving to medium-sized municipalities.

Finally, the significant estimate of the effect of the percentage of public housing on the hazard rate of migration to small and medium-sized municipalities provides empirical evidence that migration towards these destinations of placed refugees occur partly for housing dissatisfaction reasons. The effects are large; a percentage point decrease in the percentage of public housing in the local housing stock implies a 3-5% increase in the exit rates to small and medium municipalities both for men and women.

Turning to the effects of lagged socio-economic factors, the competing risk model gives us further insights relative to the single risk model for which

only the log annual taxable income was found to affect the hazard rate of migration significantly. In the competing risk model the effect of a percentage point decrease in log annual taxable income corresponds to an increase in the exit rate to a small or medium-sized municipality by 2-4% for men and an increase in the exit rate to a medium-sized or large municipality of similar magnitude for women. However, whether or not an individual was employed in November of the previous year is seen to be a more important socioeconomic factor with respect to choice of destination in the migration decision. Employment significantly reduces the exit rate to large municipalities, by 29% for men and 34% for women. In contrast, being employed increases the exit rate to small municipalities by around 55-59% for both men and women and to medium-sized municipalities by 21% for men and 39% for women. A likely interpretation is that having a job reduces the returns to immigrant and ethnic networks to be found in the larger urban areas. An additional year of Danish education increases the exit rate to medium-sized municipalities by 10% for men. This result is similar to the result found by Bartel (1989) that higher educated immigrants in the US have higher rates of migration away from the large SMSAs than lower educated immigrants. However, recall that the statistical estimations in the present study does not take education obtained prior to immigration into account due to lack of availability of high quality data on this issue in the Immigrant Data Set.

Finally, note the sizable effect of a change in marital status which increases the hazard of exit to all destinations except to small municipalities for men. The migration motive may in part be due to housing consumption adjustment and in part to a change in life style preferences.

The estimated mixing distribution confirms that some of the observed migration pattern is 'explained' by *unobserved* characteristics of the individuals. For both men and women the estimates show significant evidence of unobservable characteristics of individuals which are correlated with individuals' migration propensity to medium-sized and large municipalities. In contrast, no unobserved heterogeneity correlated with the migration propensity to small municipalities is detected, probably due to the relatively small number of relocations to small municipalities observed in the data. The estimates of the probability distribution of the combinations of unobserved heterogeneity across destinations show that 27% of male refugees have unobservable characteristics that imply a relatively high migration propensity to small municipalities and a relatively low migration propensity to medium and large municipalities. The remaining seven probabilities were insignif-

icant. Similarly, 40% of female refugees were found to have unobservable characteristics which implied a relatively low migration propensity to small and medium municipalities, but a relatively high migration propensity to large municipalities. Again, the remaining seven probabilities were insignificant. Examples of unobserved characteristics of potential importance for the migration propensity and choice of destination include abilities of the individual, education from the country of origin, life-style preferences of the individual (i.e. urban or rural life-style, religious convictions) and finally the location of close family and friends in the host country.

6.2 Model simulation

The estimated MPH model of the hazard rate of migration implies the following in terms of the predicted mean duration of the municipality of placement spell. The predicted mean duration for a person with observed characteristics x and unobserved characteristics v is given by

$$\begin{aligned} E(T|x,v) &= \int_0^\infty \hat{S}(t|x,v)dt \\ &= \int_0^\infty (\exp(-\int_0^t h(s|x,v)ds)dt \end{aligned} \tag{23}$$

The discrete time version of expression (23) is

$$E(T|x,v) = \sum_{t=1}^{\infty}(\exp(-\sum_{s=1}^{t}\hat{h}(s|x,v)) \tag{24}$$

where '∞' is replaced by a suitable large finite number. In the calculations below, '∞' is replaced by 600 months, i.e. 50 years. The predicted hazard rate is assumed to be constant from month 156 and onwards (out-of sample prediction).

Table 6.6 illustrates the effect of changes in selected location and socioeconomic characteristics on the predicted mean duration until migration for a male refugee with mean characteristics who has favourable unobserved characteristics with sample probability $\hat{p_1} = 0.156$ and unfavourable unobserved characteristics with sample probability $\hat{p_2} = 0.844$. This reference person is an artificial construct but the person approximately has the following observed characteristics. He is 34 years old, married, has no children, originates

from Lebanon but has no citizenship, has 9,700 fellow countrymen in Denmark, immigrated in 1986, has missing value for years of Danish education, was employed with probability one to five in November the previous year, had an annual income before taxes of DKK 51,000 (approx. USD 7,850) the previous year. The reference person is placed in a municipality with the following characteristics: medium-sized, situated outside the Greater Copenhagen area, immigrants constitute 5.8% of the local population, 5.8% of his ethnic group in Denmark lives here, the regional unemployment rate is 9.6%, 27% of the county jobs are situated here, it has 10 vocational or higher educational institutions, public housing constitutes 22% of the housing stock, and finally 41% of the votes at the latest local election went to right-wing political parties. Such a reference person has a predicted mean duration until migration of 150.1 months. Hence, the model predicts that this individual will stay 12.5 years in the municipality of placement.

The interpretation of the model simulation results presented in Table 6.6 is as follows. The first row of simulation results shows that had this average individual instead started his residential career *within* the Greater Copenhagen area or in a small rather than a medium municipality, he would have moved to another municipality much sooner, in fact 92.1 or 84.2 months earlier. In contrast, the predicted mean duration until migration for this individual is not very sensitive to marginal changes in any other location characteristic.A rather large percentage point change in the other location characteristic is required for the change to induce a fast move. For instance, a four percentage points decrease in the percentage of immigrants only reduces the predicted mean duration until migration for this individual by 20.3 months. Hence, especially the location of the municipality of placement relative to Copenhagen and the number of inhabitants are seen to have a large impact on the predicted mean duration in the municipality of placement.

Table 6.6 Size of selected effects in terms of change in predicted mean duration (months) until migration. Reference person: A male refugee with mean values of observed characteristics and average type of unobserved characteristics.

	Change in predicted mean duration
Change in a single location characteristic:	
Greater Copenhagen = 1	-92.1
Small = 1	-84.2
% immigrants: 4% points decrease	-20.3
% ethnic conc: 4% points decrease	-17.1
% reg. unemploym.: 3% points increase	-4.8
% public housing: 15% points decrease	-43.3
# of educ. institutions: Decrease by 9	-22.8
Change in several location characteristics:	
Small = 1, % immigrants: -4% points	
% ethnic conc.: -4% points,	
% reg. unemploym.: +3% points,	
# educ. institut.: -9,	
% public housing: -15% points	-124.4

Note: Predicted mean duration until migration for reference person with favourable and unfavourable unobserved characteristics, respectively: 55.5 and 167.6 months. Predicted mean duration until migration for reference person with average type of unobserved characteristics: 0.156*55.5 months+0.844*167.6 months = 150.1 months.

7 Conclusion

This study presents descriptive evidence that the Danish Dispersal Policy on refugees who immigrated between October 1985 and December 1996 gave rise to a fairly equal initial geographical distribution of refugees at the county level relative to the number of inhabitants in the county. At the end of 1998, only 26% of the refugees had subsequently migrated to another county. The migration flows mainly went in the direction of the Greater Copenhagen area and the second most populated county in Denmark, Århus.

The Danish Dispersal Policy also aimed at an equal distribution of refugees across municipalities relative to the number of inhabitants in the municipal-

ity. The descriptive evidence indicates that the Danish Dispersal Policy was fairly successful in the short run but less so in the medium run. The out-migration rates measured at the municipality level were 39% for male refugees and 27% for female refugees. But out-migration rates for small municipalities were much higher: 50% and 36% for male and female refugees, respectively. On average, relocations were carried out 2 years after initial settlement, but on average relocations out of small municipalities took place already after 18 months. Around 93% of the migration flows went in the direction of medium-sized or large municipalities. However, only large municipalities received at net inflow of placed refugees, thereby increasing the existing ethnic concentrations in the large cities.

To analyse refugees' location preferences in depth, I first investigated the importance of potential push factors in placed refugees' first migration decision, i.e. their decision about whether or not to move away from the municipality of placement. To this end I estimated determinants of placed refugees' hazard rate of exit from the municipality of placement, using the Mixed Proportional Hazard (MPH) functional form. I then proceeded to investigation of the importance of potential push factors for migrants' choice of destination: small, medium-sized or large municipalities. In particular, I estimated the determinants of the three destination-specific hazard rates, placed refugees hazard rate of exit to a small, medium-sized or large municipality, again using the MPH functional form assumption. The estimates of both MPH models, with and without competing risks, are unlikely to suffer much from bias, because my examination of the implementation of the Danish Dispersal Policy showed that around 90% of refugees were randomly distributed across locations based on six individual characteristics of which five were included as controls in the model estimations. In addition, unobserved heterogeneity of the individuals is taken into account in both types of models estimated.

The estimation results show that the higher the concentration of fellow countrymen in the municipality of placement, the lower is the exit rate to any of the three mutually exclusive types of destinations. A percentage point decrease in the ethnic concentration increases the exit rate to large municipalities by 8-9% and increases the exit rate to small or medium-sized municipalities by 2%. Lack of an immigrant network and high regional unemployment increase the hazard of exit to large municipalities. In particular, a percentage point increase in the regional unemployment rate corresponds to a 7% increase in the exit rate to a large municipality for men and women alike.

Initial settlement in a small municipality more than doubles the exit rate to medium municipalities for both men and women; the effect on the hazard rate to small or large municipalities are considerably lower. Lack of local public housing increases the exit rate to small and medium municipalities.

Turning to estimated correlation between socioeconomic characteristcs of the individual and the exit rate from municipality of assignment, the results show that the employment status of the individual is a really important factor for the destination of migration. Individuals who were employed at the end of the previous year were, ceteris paribus, much less likely to migrate to a large municipality than those who were not and much more likely to migrate to especially a small municipality. Moreover, being employed last year is associated with an increase in the overall hazard rate of migration for a male refugee with mean observed characteristics. Similarly, better educated male refugees were more likely to migrate to medium-sized municipalities. These correlations suggest that male stayers among placed refugees have unfavourable labour market characteristics relative to male movers.

Turning to the duration aspects of the migrations, I find very interesting duration dependence results: Positive duration dependence during the first two years after placement and thereafter negative duration dependence. This is likely to be an analog of the Jovanovich (1979) labour market matching model in which workers and firms learn about the match quality over time. In the present context, refugees spend a couple of years learning about the match quality of the municipality of placement and themselves and then they move if the match quality is low.

What do the findings imply about the usefulness of dispersal policy for avoiding an increased concentration of immigrants in already immigrant-dense larger cities? On the one hand, the findings leave little hope that dispersal policy is a useful instrument for increasing immigrant concentration in small urban and rural districts. Except for a regional unemployment rate which on average was relatively low, small urban and rural districts typically do not have the location characteristics which induce placed refugees to remain settled. On the other hand, the findings leave some hope that dispersal policy can be used to increase geographical distribution of immigrants across regions in the country. Especially regions with a large urban area, e.g. Århus and Funen, were seen to be relatively able to induce placed refugees to stay in the region. If policy makers decide on a dispersal policy for new refugees in order to increase the geographical distribution of immigrants, the dispersal ought to meet the following criteria. Refugees should be

distributed in big clusters of individuals of the same ethnic origin and they should be dispersed across urban areas which offer favourable employment opportunities, vocational and higher educations and suitable housing.

However, two important questions concerning dispersal policies remain unanswered. First, are the secondary migration pattern of placed refugees described in this study realisations of step-migration towards the larger urban areas? Second, do dispersal policies in fact facilitate the labour market integration process of refugee immigrants due to increased interaction with the majority population. Theoretical and empirical investigations of these two questions are left to future research.

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Appendix

Construction of variables

The following variables were constructed based on information from the longitudinal administrative registers of Statistics Denmark on the immigrant population in Denmark 1984-2001.

Years of education. This variable refers to total number of years of education obtained in Denmark. The variable was constructed using information about an individual's highest completed education obtained in Denmark from the registers which have extremely detailed education information; for educations lasting more than a year information is given both on the education and the highest year of the education completed. Furthermore, the level of the education can be inferred from the education code, because in general the educational level is increasing in the code value. The codes therefore allow us to construct a variable of years of education completed which takes values 0.5 years (for pre-school class) to 17 years (for masters degrees).

log(income). This income variable refers to annual gross income of the individual, i.e. the sum of all taxable income of the individual, including income transfers.

Ethnic stock. The total number of immigrants from each of the 17 refugee countries was obtained for every year 1986-1997. The 'ethnic stock' variable denotes the total number of immigrants from the refugee's country of origin.

Ethnic concentration. This variable is constructed as a refugees' number of fellow countrymen in the municipality of residence in per cent of the total number of immigrants from that country of origin.

% immigrants. The variable is calculated as the total number of immigrants residing in the municipality in per cent of the total number of municipality inhabitants.

Greater Copenhagen. This indicator variable takes the value 1 if a refugee lives in Copenhagen and Frederiksberg county municipalities or in Copenhagen county and 0 otherwise.

The following variables have been constructed using the annual time-series data on municipality characteristics from Statistics Denmark's website.

Small municipality. This indicator variable takes the value 1 if a refugee lives in a municipality with less than or equal to 10,000 inhabitants, of which there were approximately 139 out of the total of 275 Danish municipalities.

Medium municipality. This indicator variable takes the value 1 if a refugee lives in a municipality with more than 10,000 and less than or equal to 100,000 inhabitants. This includes approximately 132 Danish municipalities.

Large municipality. This indicator variable takes the value 1 if a refugee lives in a municipality with more than 100,000 inhabitants. Only four Danish municipalities fall into this category: Copenhagen, Århus, Odense and Ålborg.

% of county jobs. The variable gives the number of individuals employed in the municipality of residence in per cent the total number of individuals employed in the county. Administratively and politically, Denmark is divided into14 counties and two so-called county municipalities.

 # educational institutions. This variable includes 40 different types of institutions for vocational and higher education and denotes the number of such institutions in the municipality of residence.

% public housing. The variable denotes the number of public housing dwellings for all-year residence in the municipality of residence in per cent of the total number of dwellings for all-year residence in the municipality of residence.

% right-wing votes. This variable is constructed as the sum of votes for the Liberal Party and the Conservative People's Party in per cent of the sum of votes for the Liberal Party, the Conservative People's Party, the Socialdemocratic Party and the Socialist People's Party at the latest local election. The two former parties are traditional right-wing parties whereas the latter two are traditional left-wing parties. Local elections take place every four years.

Regional unemployment rate. This variable has been constructed by the Institute of Local Government Studies based on information from the Ministry of Transport on the costs of transportation from the largest post office in each municipality to each of the other 274 largest post offices in the other municipalities. The regional unemployment rate used in the present study gives the unemployment rate in a radius of DKK 60 of transport around the largest post office in the municipality of residence. DKK 60 correspond to approximately USD 9.20. The information on unemployment stems from Statistics Denmark's 10% administrative register sample of the Danish population 1984-2001.

Table A.1 Year of immigration and country of origin of individuals extracted from the Immigrant Data Set to the Refugee Data Set (individuals aged 18-66).

Citizenship↓ Year⟶	1985*	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total
Europe:	128	455	524	544	252	127	0	0	0	243	10,792	2,877	15,942
Poland	113	425	487	505	0	0	0	0	0	0	0	0	1530
Rumania	15	30	37	39	252	127	0	0	0	0	0	0	500
Bosnia-Herzegovina	0	0	0	0	0	0	0	0	0	28	9,952	1,487	11,467
Serbia-Montenegro	0	0	0	0	0	0	0	0	0	0	0	32	32
Croatia	0	0	0	0	0	0	0	0	0	14	148	26	188
Macedonia	0	0	0	0	0	0	0	0	0	51	106	112	269
Slovenia	0	0	0	0	0	0	0	0	0	7	12	6	28
Yugoslavia	0	0	0	0	0	0	0	0	0	143	574	1,214	1,931
Africa:	17	93	70	32	199	158	436	490	871	763	854	1,280	5,263
Ethiopia	17	93	70	32	42	32	30	29	33	62	21	42	503
Somalia	0	0	0	0	157	126	406	461	838	701	833	1,238	4,760
Uganda													
America:	10	21	29	27	0	0	0	0	0	0	0	0	87
Chile	10	21	29	27	0	0	0	0	0	0	0	0	87
Asia:	815	3,345	1,554	1,400	1,498	1,409	1,640	1,975	1,572	1,116	1,318	1,509	19,154
Afghanistan	13	36	16	20	34	44	101	71	89	109	128	174	835
Iraq	125	281	173	313	311	279	327	730	672	429	613	683	4,936
Iran	530	865	751	719	519	521	570	379	280	196	165	292	5,787
Sri Lanka	112	1,998	497	106	234	162	232	294	269	237	309	190	4,640
Vietnam	35	165	117	242	400	403	410	501	262	145	103	170	2,953
No citizenship:	286	1,487	945	814	1,158	789	883	837	385	194	140	178	7,456
Total:	1,256	5,401	3,122	2,708	2,917	2,356	2,833	3,214	2,823	2,312	13,104	5,856	47,902

* From October 1985-December 1985

Table A.2 Initial distribution of refugees placed 1986-1997 across counties. Percent of ethnic group. Part A.

County	Copenhagen & Frederiksberg munic.	Copenhagen	Frederiksborg	Roskilde	West Zealand	Storstrøm	Bornholm	Funen
% of population	11%	12%	7%	4%	6%	5%	1%	9%
Country of origin:								
Poland	22.16	9.87	6.41	5.49	3.53	8.17	0.39	8.69
Iraq	20.64	10.51	5.96	5.19	4.01	5.92	0.00	6.06
Iran	13.08	6.91	6.50	3.28	4.91	4.72	0.00	9.42
Vietnam	5.86	4.84	0.51	1.46	1.63	0.17	0.00	27.40
Sri Lanka	2.41	1.38	3.41	0.63	6.44	4.91	0.00	11.96
No citizenship	9.55	4.37	10.26	6.02	10.31	5.90	0.05	8.57
Ethiopia	43.74	10.74	2.39	0.60	0.40	0.00	0.00	4.77
Afghanistan	30.06	21.92	10.54	2.99	9.10	0.60	0.00	0.84
Somalia	14.03	7.48	4.16	0.27	5.44	4.20	0.00	12.00
Rumania	19.00	12.20	2.40	2.00	0.60	1.00	0.00	0.40
Chile	49.43	8.05	8.05	4.60	0.00	2.30	0.00	9.20
Bosnian-Herz.	7.89	6.50	2.91	1.09	3.99	7.48	1.88	12.97
Serbia-Monte.	9.38	6.25	9.38	0.00	0.00	0.00	0.00	9.38
Croatia	20.21	11.70	7.45	2.66	4.26	8.51	2.13	12.23
Macedonia	56.88	22.68	2.60	1.86	0.37	1.86	0.00	2.60
Slovenia	10.71	25.00	0.00	3.57	0.00	7.14	3.57	17.86
Yugoslavia	11.76	6.27	7.20	1.61	8.86	11.39	2.54	11.13
% of all placed refugees	12.00	6.73	5.26	2.66	5.49	5.59	0.58	11.13

Source: The Refugee Data Set.

Table A.2 Initial distribution of refugees placed 1986-97 across counties. Percent of ethnic group. Part B.

County	Southern Jutland	Ribe	Vejle	Ringkøbing	Århus	Viborg	Northern Jutland	All (freq.)
% of population	5%	4%	6%	5%	12%	4%	9%	100%
Country of origin:								
Poland	2.22	5.56	2.16	2.55	14.64	1.44	6.73	100 (1,530)
Iraq	3.14	5.25	5.35	0.83	13.09	3.12	10.94	100 (4,936)
Iran	2.73	5.11	10.11	2.44	14.96	7.21	7.62	100 (5,787)
Vietnam	2.37	4.74	10.67	1.02	18.22	3.12	18.02	100 (2,953)
Sri Lanka	5.58	5.97	10.32	19.83	10.99	5.71	10.45	100 (4,640)
No citizenship	7.18	3.06	4.97	3.26	11.78	4.39	10.64	100 (7,456)
Ethiopia	11.13	1.19	1.19	0.99	19.09	0.20	3.58	100 (503)
Afghanistan	0.00	0.00	5.75	0.60	12.57	0.24	4.79	100 (835)
Somalia	2.06	7.39	5.57	0.38	19.85	3.53	13.21	100 (4,760)
Rumania	5.80	15.20	1.60	0.60	9.60	14.80	14.80	100 (500)
Chile	0.00	6.90	1.15	0.00	8.05	1.15	1.15	100 (87)
Bosnian-Herz.	4.40	6.32	8.85	6.90	11.46	6.37	10.98	100 (11,467)
Serbia-Monte.	12.50	0.00	0.00	0.00	18.75	3.13	31.25	100 (32)
Croatia	3.19	5.32	4.79	2.66	7.45	2.13	5.32	100 (188)
Macedonia	0.37	1.49	3.35	0.37	2.97	0.74	1.86	100 (269)
Slovenia	0.00	14.29	0.00	0.00	10.71	3.57	3.57	100 (28)
Yugoslavia	7.25	2.02	13.52	4.09	5.96	2.90	3.52	100 (1,931)
% of all placed refugees	4.28	5.23	7.73	4.84	13.20	4.84	10.46	100 (47,902)

Source: The Refugee Data Set.

Table A.3 Summary statistics for different subgroups (initial values). Men. Part A.

Subgroup	All	Stayers	Movers
Variables	Mean (std. dev.)	Mean (std. dev.)	Mean (std. dev.)
Age	31.65 (10.78)	33.46 (11.47)	28.85 (8.94)
Married	0.56 (0.50)	0.62 (0.48)	0.45 (0.50)
Marital status change	0.04 (0.19)	0.03 (0.18)	0.05 (0.21)
# children 0-2 years	0.19 (0.46)	0.20 (0.47)	0.18 (0.45)
# children 3-17 years	0.64 (1.18)	0.72 (1.22)	0.50 (1.10)
Origin:			
Poland	0.02 (0.13)	0.02 (0.13)	0.02 (0.13)
Iraq	0.12 (0.33)	0.11 (0.31)	0.14 (0.35)
Iran	0.13 (0.34)	0.10 (0.30)	0.17 (0.38)
Vietnam	0.05 (0.22)	0.06 (0.23)	0.04 (0.18)
Sri Lanka	0.10 (0.30)	0.08 (0.28)	0.12 (0.33)
No citizenship	0.17 (0.37)	0.12 (0.33)	0.23 (0.42)
Ethiopia	0.01 (0.11)	0.01 (0.10)	0.01 (0.10)
Afghanistan	0.02 (0.13)	0.02 (0.13)	0.02 (0.13)
Somalia	0.10 (0.30)	0.09 (0.29)	0.11 (0.31)
Rumania	0.01 (0.10)	0.01 (0.10)	0.01 (0.10)
Chile	0.002 (0.04)	0.001 (0.04)	0.002 (0.05)
Bosnia	0.23 (0.42)	0.31 (0.46)	0.11 (0.31)
Serbia	0.001 (0.03)	0.001 (0.03)	0.0001 (0.01)
Croatia	0.004 (0.06)	0.004 (0.07)	0.002 (0.05)
Macedonia	0.004 (0.07)	0.006 (0.08)	0.001 (0.04)
Slovenia	0.001 (0.02)	0.0008 (0.03)	0.0001 (0.01)
Former Yugoslavia	0.04 (0.20)	0.06 (0.23)	0.018 (0.13)
Ethnic stock	8,519 (5,396)	9,783 (5,494)	6,568 (4,605)
Year of immigration:			
Immigr. year 1985	0.03 (0.18)	0.02 (0.14)	0.06 (0.23)
Immigr. year 1986	0.16 (0.36)	0.11 (0.31)	0.23 (0.42)
Immigr. year 1987	0.07 (0.25)	0.05 (0.21)	0.09 (0.29)

Table A.3 Summary statistics for different subgroups (initial values). Men. Part B.

Subgroup	All	Stayers	Movers
Variables	Mean (std. dev.)	Mean (std. dev.)	Mean (std. dev.)
Immigr. year 1988	0.06 (0.23)	0.04 (0.20)	0.08 (0.27)
Immigr. year 1989	0.06 (0.24)	0.05 (0.22)	0.08 (0.27)
Immigr. year 1990	0.04 (0.20)	0.04 (0.19)	0.05 (0.22)
Immigr. year 1991	0.05 (0.23)	0.05 (0.21)	0.07 (0.25)
Immigr. year 1992	0.06 (0.24)	0.06 (0.24)	0.06 (0.24)
Immigr. year 1993	0.05 (0.22)	0.05 (0.21)	0.06 (0.23)
Immigr. year 1994	0.04 (0.20)	0.05 (0.21)	0.03 (0.18)
Immigr. year 1995	0.26 (0.44)	0.34 (0.47)	0.15 (0.35)
Immigr. year 1996	0.11 (0.31)	0.15 (0.36)	0.04 (0.20)
Municipality of residence:			
Greater Copenhagen area	0.18 (0.38)	0.18 (0.38)	0.17 (0.38)
Medium-sized	0.56 (0.50)	0.53 (0.50)	0.62 (0.49)
Small	0.16 (0.36)	0.13 (0.34)	0.20 (0.40)
% immigrants	5.22 (3.59)	5.78 (3.76)	4.36 (3.11)
% fellow countrymen	0.39 (0.46)	0.44 (0.46)	0.31 (0.44)
Ethnic concentration	4.89 (7.65)	5.69 (8.20)	3.66 (6.52)
Regional unemploym. rate	9.53 (2.29)	9.55 (2.24)	9.51 (2.37)
% of county jobs	24.71 (26.46)	27.96 (27.11)	19.70 (24.59)
# educ. institutions	8.63 (10.20)	9.96 (10.52)	6.58 (9.34)
% public housing	20.01 (10.77)	21.44 (10.60)	17.81 (10.66)
% right-wing votes	42.53 (13.29)	41.74 (12.82)	43.74 (13.91)
Number of observations	25,674	15,579	10,095

Note: Standard deviations are reported in parentheses.

Table A.4 Summary statistics for different subgroups (initial values). Women. Part A.

Subgroup	All	Stayers	Movers
Variables	Mean (std. dev.)	Mean (std. dev.)	Mean (std. dev.)
Age	32.19 (11.73)	32.87 (12.07)	30.32 (10.49)
Married	0.81 (0.39)	0.82 (0.38)	0.79 (0.41)
Marital status change	0.02 (0.15)	0.02 (0.14)	0.04 (0.20)
# children 0-2 years	0.35 (0.55)	0.34 (0.55)	0.37 (0.57)
# children 3-17 years	0.88 (1.30)	0.87 (1.28)	0.90 (1.34)
Origin:			
Poland	0.05 (0.22)	0.04 (0.20)	0.07 (0.25)
Iraq	0.08 (0.27)	0.08 (0.27)	0.10 (0.30)
Iran	0.11 (0.31)	0.09 (0.29)	0.17 (0.38)
Vietnam	0.08 (0.27)	0.08 (0.28)	0.05 (0.23)
Sri Lanka	0.09 (0.10)	0.10 (0.31)	0.07 (0.28)
No citizenship	0.14 (0.35)	0.12 (0.33)	0.20 (0.40)
Ethiopia	0.01 (0.10)	0.01 (0.10)	0.01 (0.09)
Afghanistan	0.02 (0.13)	0.02 (0.13)	0.02 (0.13)
Somalia	0.10 (0.30)	0.10 (0.30)	0.10 (0.31)
Rumania	0.01 (0.11)	0.01 (0.10)	0.02 (0.13)
Chile	0.001 (0.04)	0.002 (0.04)	0.002 (0.05)
Bosnia	0.25 (0.43)	0.28 (0.45)	0.18 (0.36)
Serbia	0.001 (0.025)	0.001 (0.03)	0.0002 (0.01)
Croatia	0.004 (0.07)	0.005 (0.07)	0.003 (0.05)
Macedonia	0.007 (0.08)	0.009 (0.09)	0.002 (0.04)
Slovenia	0.001 (0.025)	0.0009 (0.03)	0 (0.00)
Yugoslavia	0.04 (0.19)	0.05 (0.21)	0.02 (0.14)
Ethnic stock	9,594 (5,062)	10,116 (5,075)	8,161 (4,738)
Year of immigration:			
Immigr. year 1985	0.02 (0.13)	0.01 (0.10)	0.03 (0.17)
Immigr. year 1986	0.06 (0.24)	0.05 (0.21)	0.11 (0.31)
Immigr. year 1987	0.07 (0.25)	0.05 (0.22)	0.10 (0.30)

Table A.4 Summary statistics for different subgroups (initial values). Women. Part B.

Subgroup	All	Stayers	Movers
Variables	Mean (std. dev.)	Mean (std. dev.)	Mean (std. dev.)
Immigr. year 1988	0.06 (0.23)	0.05 (0.22)	0.08 (0.27)
Immigr. year 1989	0.06 (0.23)	0.04 (0.21)	0.09 (0.29)
Immigr. year 1990	0.06 (0.23)	0.05 (0.22)	0.07 (0.26)
Immigr. year 1991	0.07 (0.25)	0.06 (0.24)	0.08 (0.27)
Immigr. year 1992	0.07 (0.26)	0.07 (0.26)	0.08 (0.27)
Immigr. year 1993	0.07 (0.25)	0.07 (0.25)	0.06 (0.24)
Immigr. year 1994	0.06 (0.23)	0.06 (0.24)	0.04 (0.20)
Immigr. year 1995	0.29 (0.45)	0.32 (0.47)	0.19 (0.39)
Immigr. year 1996	0.14 (0.34)	0.17 (0.37)	0.06 (0.23)
Municipality of residence:			
Greater Copenhagen area	0.20 (0.40)	0.20 (0.40)	0.20 (0.40)
Medium-sized	0.56 (0.50)	0.54 (0.50)	0.60 (0.49)
Small	0.14 (0.35)	0.12 (0.33)	0.20. (0.49)
% immigrants	5.69 (3.71)	6.04 (3.80)	4.74 (3.27)
% fellow countrymen	0.45 (0.47)	0.47 (0.46)	0.38 (0.50)
Ethnic concentration	5.30 (7.83)	5.83 (8.09)	3.82 (6.85)
Regional unemploym. rate	9.76 (2.32)	9.76 (2.30)	9.77 (2.35)
% of county jobs	26.00 (27.22)	27.90 (27.29)	20.73 (26.34)
# educ. institutions	9.15 (10.51)	9.93 (10.59)	6.98 (9.98)
% public housing	20.85 (11.04)	27.90 (27.29)	17.85 (10.95)
% right-wing votes	42.23 (13.24)	41.57 (12.73)	44.07 (14.38)
Number of observations	22,228	16,315	5,913

Note: Standard deviations are reported in parentheses.

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