

Returning Home to go to School? Emigration and Return Migration of Families with Children*

Panu Poutvaara, University of Helsinki and CEBR[♣]

Martin Junge, CEBR[♠]

Martin D. Munk, SFI[♥]

Svend T. Jespersen, CEBR[♣]

PRELIMINARY VERSION. We are waiting for access to data that would allow tracking migration of household members even when they do not migrate together, but we have not received this yet. Thus, we have not been able to complete the full analysis we intended to do.

Abstract

We examine emigration and eventual return migration of Danish families with children from 1980 to 2004, using a comprehensive register data set. We ask four interrelated research questions. First, do Danish families tend to return to Denmark before their children reach school-age? Second, how does the age of children affect their probability of emigration and their return propensities in subsequent years? Third, are there gender differences in emigration and return migration, and how are these related to destination countries? Fourth, to what extent differences in return migration relate to the quality of schools?

Keywords: International migration; Children; Education; Schools

JEL Codes: F22; J13; I21; J61; H53

1. Introduction

There is wide consensus in various disciplines that the years of early education have a profound influence on children's later life, including subsequent earnings, the risk of criminal behavior or substance abuse, and health outcomes. (See Cunha et al. (2006), Currie (2001, 2006), Esping-Andersen (2004a, 2004b), Heckman (2006), Heckman et al. (2006) and McIntosh and Munk (2007).) Given the importance of early education, it is reasonable to expect that considerations related to where children go to school could play an important role in migration decisions of parents. The direction is, *a priori*, unclear. On the one hand, parents may return to their home country, either because they think that the quality of schools there is better, or because they want their children to be immersed in their own culture, and grow up with relatives and compatriots. On the other hand, parents may wish to educate their children

* We are grateful for financial support from the Danish Social Science Research Council (FSE), without implicating the sponsor for the views expressed.

♣ Corresponding author. Address: Department of Economics, P.O. Box 17 (Arkadiankatu 7), FI-00014 University of Helsinki, Finland. Email: panu.poutvaara@helsinki.fi.

♠ Address: CEBR, Copenhagen Business School, Porcelaenshaven 16A, DK-2000 Frederiksberg, Denmark. Email: mj.cebr@cbs.dk.

♥ Address: SFI – The Danish National Centre for Social Research, Herluf Trolles Gade 11, DK-1052 Copenhagen, Denmark. Email: Mdm@sfi.dk.

♣ Address: CEBR, Copenhagen Business School, Porcelaenshaven 16A, DK-2000 Frederiksberg, Denmark. Email: stj.cebr@cbs.dk.

abroad if they consider schools there better than those at home, to improve language and cultural skills of their children, or to give their children a more cosmopolitan identity.

In this paper, we examine emigration and eventual return migration of Danish families with children from 1980 to 2004. We ask four interrelated research questions. First, do Danish families tend to return to Denmark before their children reach school-age? Second, how does the age of children affect the probability of emigration for parents, and their return propensities in subsequent years? Third, are there gender differences in emigration and return migration, and how are these related to destination countries? Fourth, to what extent differences in return migration relate to the quality of schools?

Our analysis is based on full population register of all residents who have lived in Denmark from 1980 to 2004. The key to allow us to collect this data is that Denmark has a comprehensive system of population registers, and all residents in Denmark obtain a social security number which then allows combining various registers. We obtain information on each household at the beginning of each year, household being defined as a group of people sharing same address. Information on emigration and return migration is available at individual level, allowing us to observe also if only some but not all family members emigrate or return, as well as other changes in household composition. Our data on parents allows us to control whether either of parents has immigrant background.

As evidenced in the reviews by Borjas (1994) and Chiswick (2005), a consensus view in the migration literature is that both economic and cultural forces play an important role in migration decisions. Already Mincer (1978) pointed out that it is rational for a family to migrate only if the net gain accruing to some family members exceeds the net loss of others. Despite this early insight, most of migration literature has focused on individual decisions. Our analysis differs from the bulk of migration literature in its explicit focus on families.

Denmark is unusually well suited for analyzing our research questions for several reasons. First and foremost, we have access to full population register from 1980 onwards, including data on household composition, family trees and individual-level emigration and return migration dates.

Our paper is organized as follows. In Section 2, we provide an overview of the Danish educational system and overall trends in migration of Danes, as well as report our data sources. Section 3 gives an overview of emigration and return migration of families with children. Section 4 tests the effects of children on emigration and return migration, using econometric models. We will analyze migration decisions separately for households with two or one parents at the time of emigration. In the analysis, we focus on children whose neither parent is an immigrant. When analyzing return migration, we will also control for the quality of schools, as measured by PISA studies. Section 5 concludes.

2. Background and Data Sources

2.1. The Danish comprehensive school system

According to the Danish law, each child must receive education for at least 9 years, starting the school at latest on the first of August in the year during which he or she reaches the age of 7. However, most parents choose to send their children to pre-school at the age of 6. Thus, 83

per cent of school starters (including pre-school starters) are 6 years old, 15 per cent are 7 years old and the rest are younger. This corresponds to the OECD average, as does the average school leaving age of 16. Education is free of charge in public schools, which were chosen by 86 percent of children in 2006. Private schools receive a certain public subsidy, but parents have to pay tuition to cover the rest.

The obligatory curriculum comprises Danish, mathematics and sports for 9 years, religion for 8 years, English and history for 7 years, as well as natural sciences, music, art and crafts for varying numbers of years. Additionally, students may study other subjects, including German and French.

In international comparison, the latest results from the PIRLS 2006 study indicate that the literacy skills of Danish primary school pupils are above the average for the participating countries and a little better than the literacy skills of pupils from UK and US schools. In the science skills, Danish pupils are ranked 18 out of 30 in OECD's PISA study, which is worse performance than that of UK pupils but slightly better than that of US pupils. The relative performance of Danish students has improved over time, as the first PIRLS study which was published in 1991 found that Danish pupils belonged to the bottom-third among participating countries. A PISA study in 2000 also found that Danish pupils performed below the OECD average in reading literacy and science literacy, but above the average in mathematical literacy.

2.2. Emigration and return migration of Danes

Figure 2.1 shows the number of emigrants with Danish citizenship in each year from 1980 to 2005. We find that the emigration flows have increased substantially in the late 1980s. Before that, the annual number of male and female emigrants fluctuated between 8,000 and 10,000. Since 1989, the annual number of female emigrants has been about 12,000 in almost each year. The number of male emigrants has fluctuated more, from somewhat below 11,000 up to 14,000. As a background, one can notice that Denmark was in a recession from 1980's to 1993 with a small recovery from 1984 to 1987. From 1993 onwards, there was a long boom with a small recession from 2000 to 2002.

Figure 2.1: Number of Danish Emigrants, 1980 to 2005

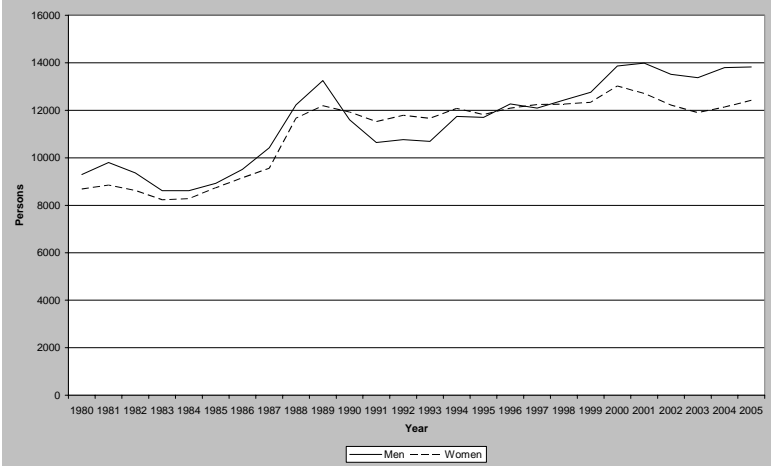


Figure 2.2 shows return migration of Danes from abroad in persons. If we compare Figures 2.1 and 2.2, we observe that there is, in most years, net emigration. The inflow increases in the same years as the outflow, capturing short-term migration and, possibly, an increase in the volume of emigration and immigration for other reasons than the business cycle.

Figure 2.2: Number of Danish Immigrants, 1980 to 2005

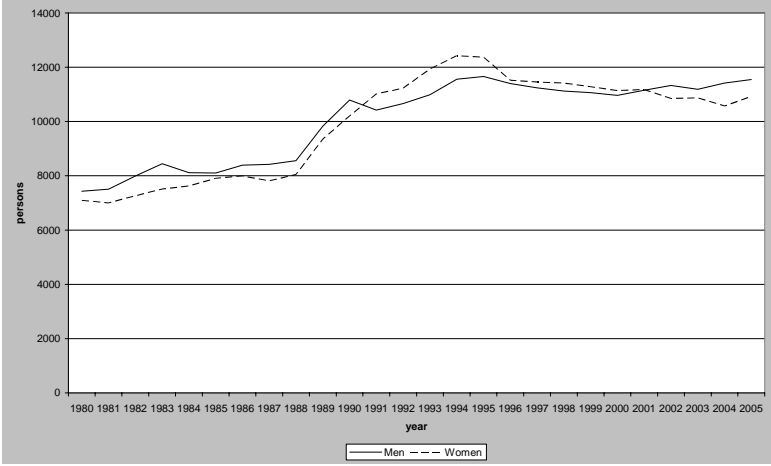
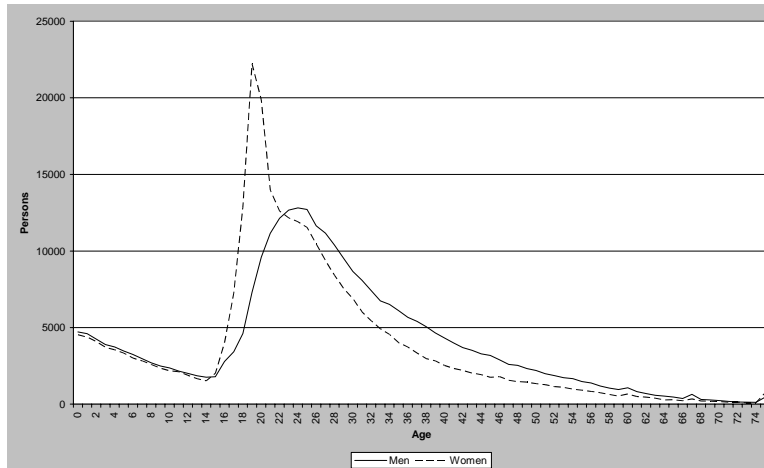


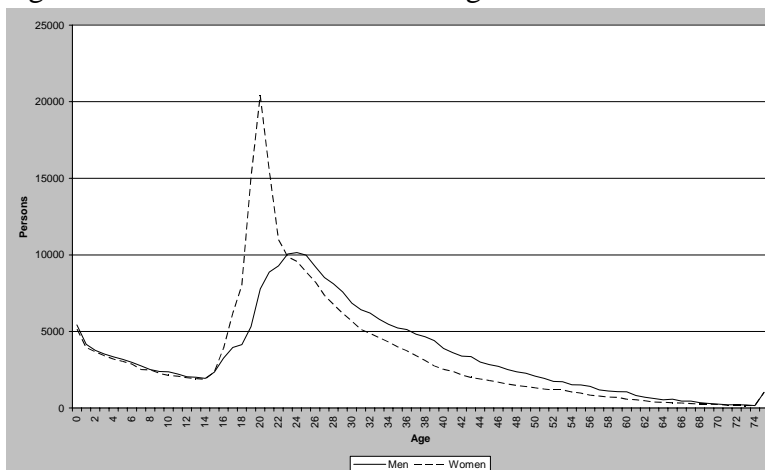
Figure 2.3 reports the number of emigrants by age and gender, over the whole time period. We observe that the number of under-age emigrants is about the same for boys and girls in each age. Thus, child’s gender does not appear to be systematically related to the probability of emigration of parents at the aggregate level. Aggregated over the period from 1980 to 2004 and according to the age in the year of emigration, the number of emigrants starts below 5,000 for boys and girls who are below one year at the time of emigration, then declining until the age of 16. At the age of 18, an enormous increase in girls’ emigration is taking place. These women are mainly emigrating for a job as ‘au pair’.

Figure 2.3: Number of Danish Emigrants



In Figure 2.4, a corresponding spike appears indicating that most of these women return again shortly after. We also observe that there is no systematic difference in return migration between boys and girls who are younger than 16.

Figure 2.4: Number of Danish Immigrants



2.3. Data

Our analysis is based on full population register of all residents who have lived in Denmark during the years 1980 to 2004. The main data sources are the population register, income tax register, and migration register. Data from various registers is combined using social security number (CPR number). By law, all residents in Denmark have to have a social security number which is also necessary in everyday life, including opening a bank account, receiving wages and salaries or social assistance, visiting doctor or being registered at school.

From the migration register, we have dates of migration and country of origin (for immigrants) and country of destination (for emigrants). Even though it is possible to migrate without registering, we expect that these numbers are small. First of all, it is mandatory to report migration. Second, tax laws are likely to induce individuals to register. However, some income transfers could have the opposite effect, as individuals are supposed to be available for a job in Denmark to be eligible.

We combine migration and household data by merging on (anonymous) CPR numbers. Household relations are derived from the registers primo calendar year. This creates some

particular problems, as households might split. In Table 2.1 the number of household member's primo calendar year is crossed with number of individuals migrating on the same day within the household. For households of size 1 primo calendar year and with an emigration later that year, we see 100 percent. Households with two members primo calendar year, only one-third are observed emigrating together. In two third of the cases, only one leaves the country or both leave the country but at different dates. The most typical pattern is that just one person leaves the household or all members leave at the same day. A noticeable thing is that the third most common pattern is that for households of size N, N-1 of household members travel together.

Table 2.1 Breaking up Danish households on emigration, percent

Individuals in household travelling on the same day	Size of household primo calendar year					
	1	2	3	4	5	6+
1	100.00	66.25	54.12	51.91	53.91	58.85
2	0.00	33.75	14.14	2.75	2.42	3.60
3	0.00	0.00	31.74	12.42	3.15	2.36
4	0.00	0.00	0.00	32.93	11.47	3.09
5	0.00	0.00	0.00	0.00	29.04	8.83
6+	0.00	0.00	0.00	0.00	0.00	23.27

Therefore, it is not unusual that the family split (this argument also holds for those who return). In the analysis, we limit the number of possible decisions and restrict our analysis of emigrants on households migrating on the same day for emigrants. This corresponds to the diagonal in Table 2.1. Since singles might migrate abroad to live with a partner, we report most results for couples and singles separately in the rest of the paper.

Further, we focus on Danish parents¹ to increase attachment to Danish schooling system. We include children born between January 1st and date of migration in the calendar year.

As Danish schooling system is used in Greenland and Faroe Islands, migration flows between Denmark and these autonomous territories is not included.

The final sample size for studying emigration is 563,555 families with 1,007,062 children. Of these 11,669 families with 21,392 children emigrates for 1980 to 2004.²

3. Emigration and return migration of Danish families with children

In this section, we report stylized facts on emigration and return migration of our sample of Danish families with children. We are mainly interested in the effect of children's age on migration, but also how the number of children, destination country and the gender of children interact. In the regression analysis, we will also add parental characteristics.

¹ In the data we can see whether individuals with Danish citizenship have migration background. We control for this in the analysis. Note, Danish citizenship is given by blood. If either mother or father is Danish then the child gets Danish citizenship by living in Denmark for at least one year before the age of 21. If the mother is not Danish, then the father has to be married with her for this to hold. In general, Denmark only allows individuals to hold a single citizenship. Therefore, one citizenship is in registers.

² Sample of emigrants is full population, whereas control group is a 5 percent random sample of families.

School starts typically during the year a child turns seven. However, there is some discretionary element in the school start as parents are allowed to decide, sometimes together with the authorities, that their child should either start earlier or later.

The school year starts in primo August and ends in mid June. A tabulation of families with children in school age and families with children less than school age shows that emigration and return migration and children in school age are interrelated. Families with school-age children are clearly more likely to time their migration during the summer break (School ends June 18-22nd and begins August 5-10th.).

Table 3.1: Months of migration, percent

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
(a) Families with only school age children												
Emigration	9.64	6.30	6.17	6.64	7.10	9.74	12.04	14.39	9.16	7.33	6.04	5.43
Return migration	7.95	5.16	5.93	6.11	6.66	10.62	15.70	14.20	8.22	6.70	5.82	6.91
(b) Families with only preschool age children												
Emigration	10.16	7.82	7.47	7.60	7.71	8.21	9.51	12.41	9.28	7.88	6.63	5.31
Return migration	8.49	6.49	7.71	7.23	8.21	9.33	10.79	11.63	8.74	7.10	6.28	7.99
(c') Families with children												
Emigration	9.80	6.99	6.77	7.10	7.38	8.84	11.03	13.73	9.17	7.53	6.28	5.39
Return migration	8.01	5.81	6.86	6.58	7.36	10.47	13.51	13.05	8.36	6.72	5.90	7.38
(d) Families without children												
Emigration	10.95	7.00	6.48	6.39	5.99	7.32	9.36	14.33	13.22	8.38	5.63	4.95
Return migration	7.45	5.58	5.94	6.71	7.31	9.57	12.49	13.26	8.88	7.45	6.59	8.77

3.1 Emigration behavior

As discussed above we will distinguish between children of singles and couples. The number of singles and partners³ in the population and among emigrants is given in Table 3.1 across all years. There is a very high fraction of singles migrating with children. One potential reason is that these migrants may have a partner who is already located in the destination country. We cannot be sure about that but, as witnessed in Table 2.1, many families split.

Figure 3.1: Emigration probabilities for children with cohabiting and single parents

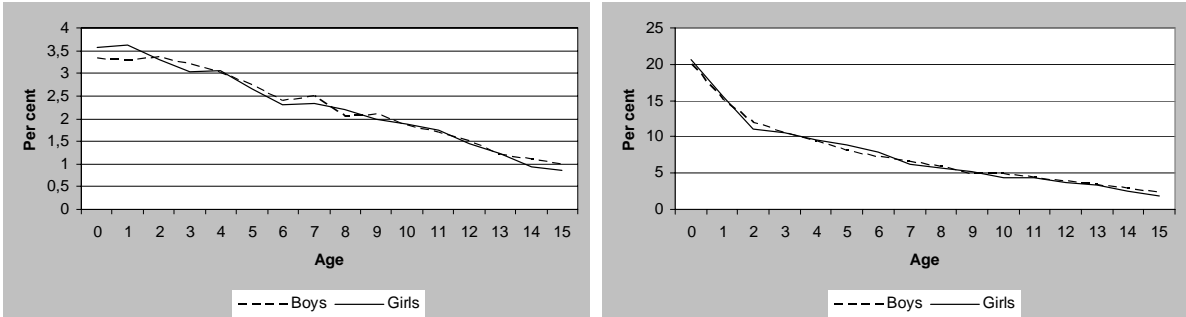


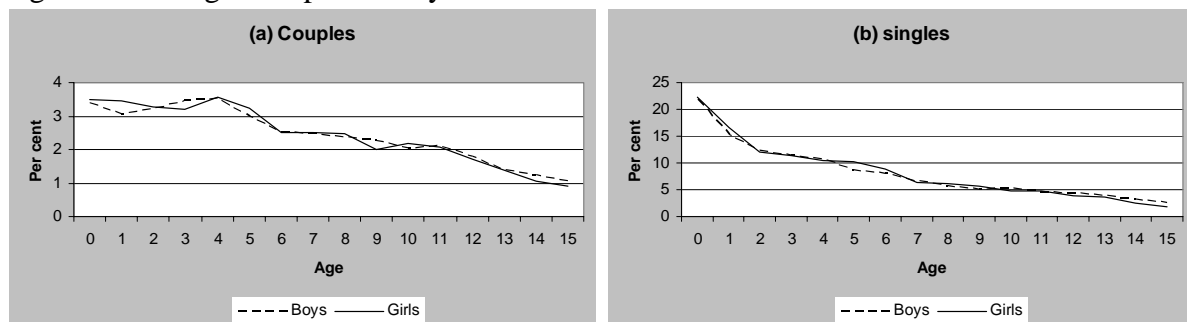
Figure 3.1 shows clearly that the probability of emigration decreases with age for both genders. Gender differences are very small. This is very much the pattern we saw in figure 2.3. In the Figure 3.1 (a) we see that emigration is very low for households with two parents living

³ In Denmark, household formation many times happen without partners are getting married. We define a couple as two adults living together. The fraction of these that are actually married is 0.77.

together.⁴ This relates to the restriction that the family should emigrate on the same day. Conversely for households headed by a single parent, emigration is very high.⁵ Here it is again important to keep in mind how households are defined in our data set. Some of those classified as singles with children could be actually be joining a partner who has emigrated in an earlier year, or has always lived abroad.

Emigration probabilities in Figure 3.1, panel (a) and (b), are monotonically decreasing over the child's age. It is hard to see any evidence of the effect of the school start around 7. However, the picture does not account for household composition. For example, it might be easier to migrate with one child or conflicting objectives are present in case of multiple child households.

Figure 3.2: Emigration probability for the oldest child in the household



We show in the following Figure 3.2 the migration pattern for the oldest child in the family for household headed by two parents, panel (a) and one parent, panel (b), respectively. This is to circumvent some of the problems with multiple children. The oldest child reaches school age first, obviously and we should therefore see evidence of school start for the oldest child. First, up to age 4, the probability of emigrating for the oldest child is quite stable with two parents. Actually, the probability of emigrating is highest at age 4 for the oldest child. Second, at age 5 and 6 a more pronounced drop in the probability of emigration can be seen. Hence some evidence of a fall in emigration around the age of school start.

For singles the pattern is still dominated by a very large drop for the very youngest. But otherwise panel (b) changes are similar to panel (a). A small but distinctive drop is present around 7. In Figure 3.3 the overall pattern of monotonically decreasing in age emigration rates are present for the youngest child. No distinctive drop around school start is present.

⁴ The y-axis says that emigration probabilities is in the range of 1 to 3.5 percent for children age 0 to 15; but recall that the control group is 5 percent of the non-migrating population. Hence the emigration probability is more likely in the range 0.05 to 0.175 percent. These are very small numbers but is explained by all household members should emigrate on the same day.

⁵ One again the y-axis says that emigration probabilities are between 2 to 20 percent for single headed households. This is more likely to be 0.1 to 1 percent. The numbers are likely to be higher for single headed households because: i/ Emigration on the same days is more likely to be fulfilled. ii/ Emigration to a partner abroad is a probable event, which we saw indirect evidence on in Table 2.1 Moreover, we cannot account for partners abroad, which has not previously been in Denmark.

Figure 3.3: Emigration probabilities for the youngest child

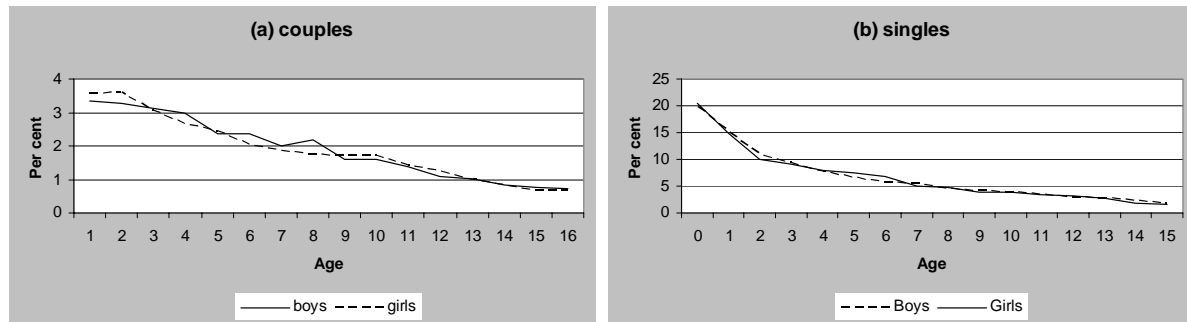
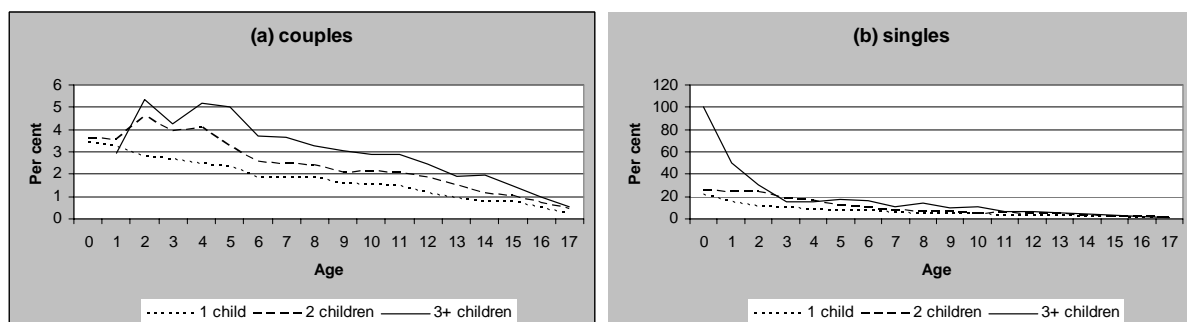


Figure 3.4 shows the emigration probabilities conditional on the number of children. Again, we focus on emigration as a function of oldest child's age. We draw for one child, two children and three or more children and do not make a difference of gender, which we have not found to be of importance up to now. Families with one child are beneficial in this study as parent's objective on behalf of their children can be more clearly seen. But we do not see whether additional children are born abroad and we want to study families with more than one child. Therefore analysis of families with two and more children is warranted. Moreover the whole issue of fertility and migration has not been discussed. In the analysis so forth the only decision(s) are on behalf of children currently alive, but how does fertility enter this discussion.

Lone children have a very similar pattern to all children in Figure 3.1. The curve in figure 3.4 is steeper than for all children. The reason is that for families with two and three children the probability of emigrating is higher. The drop in probability at age 5 and 6 from Figure 3.2, panel (a), is mainly driven by families with 2 and 3+ children. Despite this drop, the families with multiple children continue to have higher emigration probabilities than families with one child.

Figure 3.4: Emigration probabilities for the oldest child in families with different number of children.



This is an interesting picture. On the one hand, most emigrants are singles without children (something we know from other studies). On the other hand, families might decide to have two or three children before they emigrate. It could also be that families with two or three children continuously are looking for larger housing and therefore having many children increases mobility (also across borders). Finally, the value of house-keeping increases with more children, and emigration can be associated with one parent out of labor force.

The same pattern can be seen in Figure 3.4, panel (b), which is somewhat blurred by the emigration of a single family with three children, where the oldest child is age 0.

Danish families with children are mainly migrating to Western Europe, North Europe and North America.⁶ This is seen in Table 3.1. The distribution across boys and girls are not that different in terms of destination country. A test of independence shows that destination country is completely independent of children sex. Latin America and Eastern Europe are very low on the list of destinations.

Table 3.2: Emigration to World regions, per cent

	Children age 0 to 4	Children age 5 and up
North Europe	20,5	18,3
Western Europe	30,9	26,3
South Europe	8,1	7,4
East europe	1,2	1,4
Afrika	7,9	9,7
Asia	9,2	10,6
Latin America	2,6	2,5
North America	12,3	14,8
Australia and new zealand	4,0	5,9
Unknown	3,4	3,3
Total	100	100

In the Table 3.2 differences across age groups and destination can also be seen. Here we find still that young and old children migrate mainly to North Europe, Western Europe and North America. But emigrations to other regions are more common among children of age 5 and up. A test of independence shows very clearly that age and destination country are related.

3.2 Return migration

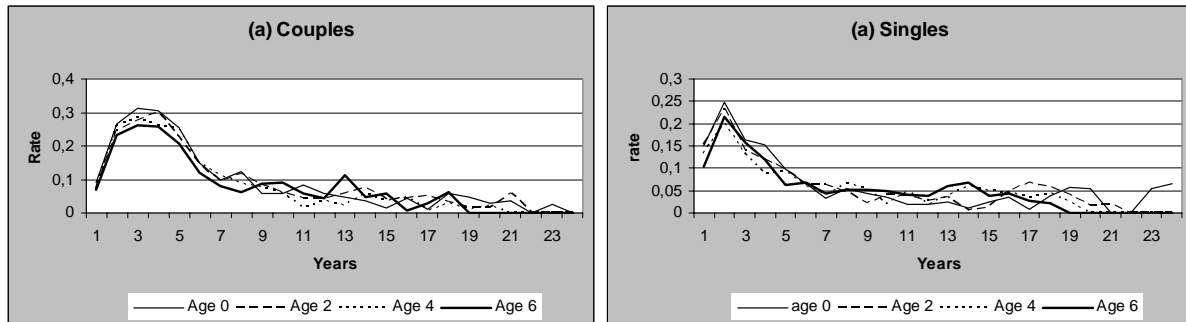
We turn to the question of return migration. One problem with describing return migration is that we do not observe children born abroad. We can get a flavor of the dynamics of fertility while abroad by comparing the composition of families before and after they return from abroad. A special problem arises from children who gain independence during the stay abroad. Also for children born abroad, Danish citizenship is gained by living a year in Denmark before age 21.

The return hazard by age for children emigrating at age 0, 2, 4 or 6 can be seen in figure 3.6, panel (a) holds couples and panel (b) singles, respectively. Here we focus on children of less than school age (7) at emigration. Given the clear dependence of age on emigration, the picture is reversed in Figure 3.6. Duration abroad seems to be more or less uncorrelated with initial age of children conditional on emigrating. There is slight evidence of families leaving with younger children returning faster. Moreover, there is no evidence of a larger return probability around school age (6-7 years old). For those leaving at age 0 we should then see a spike at duration 6 to 7 years.

Comparing panel (a) and (b), single headed households return slightly faster the first year, but later the return rate is smaller than for couples.

⁶ We have compared destination country with origin country for those who are return migrants and found that approximately 90 percent return from the destination country.

Figure 3.6: Return rate for children of age 0,2,4 and 6 at emigration



In Figure 3.6 we used all children and compositional effects of siblings are missing. Instead we focus on the oldest child's return hazard in Figure 3.7. Still there is very little evidence of an independent (initial) age effect.

Figure 3.7: Return rate of the oldest child

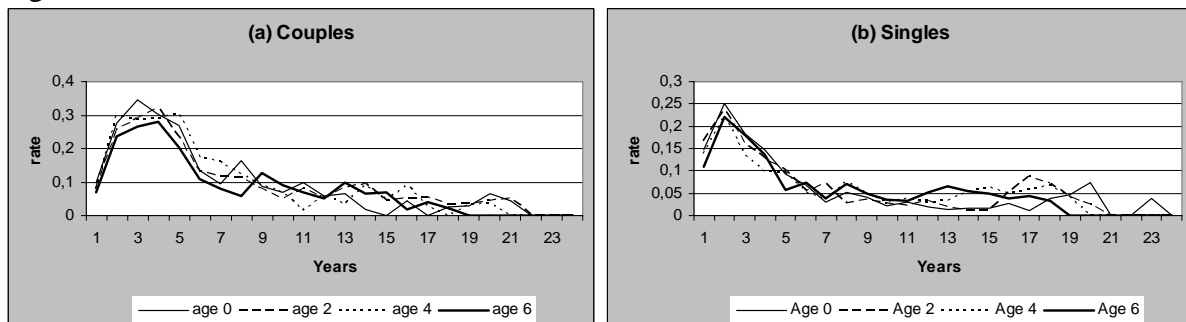
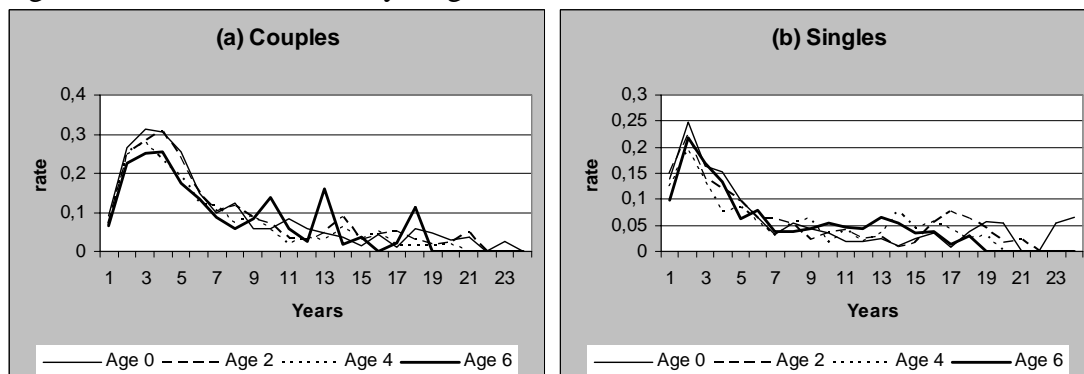


Figure 3.8: Return rate of the youngest child.



In Figure 3.9 return hazards are presented for households differing in the number of children. Duration is only influenced very little based on initial size; larger households return slightly faster, which is reversed after six years abroad.

Figure 3.9: Return rates of households with different numbers of child.

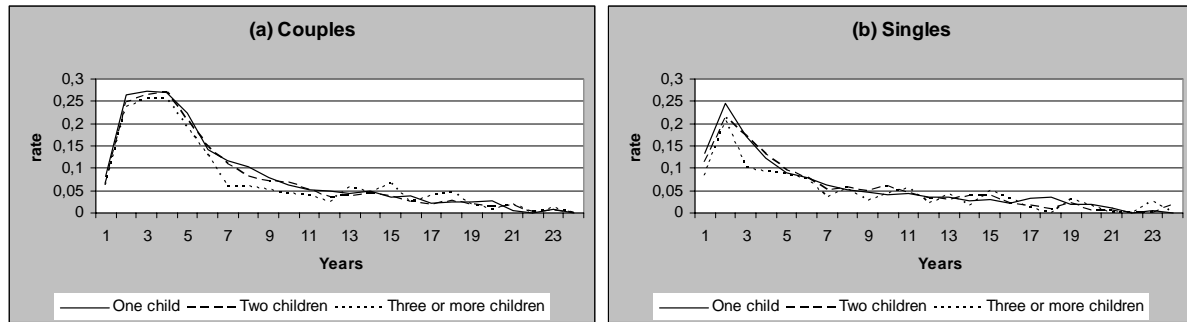


Table 3.5 Returning home to go to school before school age, per cent

	Boys	Girls
North Europe	57,2	56,3
Western Europe	54,2	53,8
South Europe	60,3	59,6
East europe	58,7	61,5
Africa	70,4	69,1
Asia	62,7	63,5
Latin America	72,0	76,6
North America	66,4	63,1
Australia and new zealand	54,5	54,1
Unknown	59,1	59,1
Total	58,9	58,4

Note: Emigration before age 5

In Table 3.5 we can see the number of children, who emigrated before age of 5, split on those who return before school age (6 year) and those who stay. Again a simple test of independence on children sex on for example whether non migrants are differently distributed across countries, show that there is no difference here. However, the destination country seems to be quire important for return probabilities. Again a simple test show that returns probabilities differs across countries.

Figure 3.10: Probability of returning before school age and PISA test scores

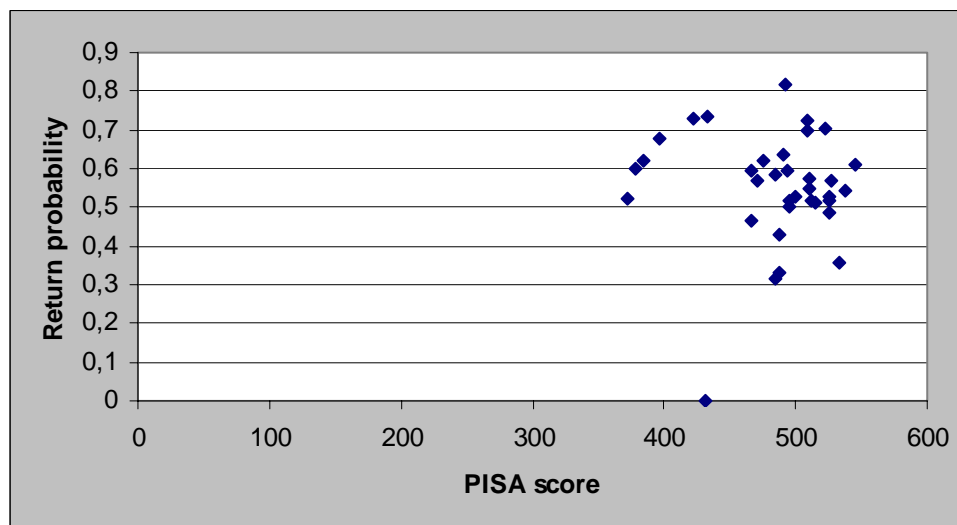


Figure 3.10 show that return probabilities are not related to PISA scores at first sight.

4. Econometric analysis

4.1. Emigration

Our basic regression is for emigration probabilities for children in families with two adults and one child.⁷ We find that the probability of emigration is monotonically decreasing in the age of the child from 0 to 15, and that the child's gender does not have any effect on the probability of emigration (see Table 4.1). We have included a limited number of parental controls. Parent 1 is the mother, or in household with two men or two women, parent 1 is the younger.

Table 4.1: Estimates for couples/singles with one child

Parameter	Couples			Singles			
	Estimate	Chi-Square	Pr > ChiSq	Estimate	Chi-Square	Pr > ChiSq	
Intercept	-6,54	7264,66	<.0001	-4,23	2299,30	<.0001	
Girl	0,03	0,76	0.3832	0,01	0,16	0.6873	
Age of child	1 year	-0,08	2,61	0.1065	-0,39	58,82	<.0001
	2 year	-0,23	19,47	<.0001	-0,78	203,19	<.0001
	3 year	-0,28	20,28	<.0001	-0,98	285,22	<.0001
	4 year	-0,39	28,27	<.0001	-1,19	372,96	<.0001
	5 year	-0,42	27,46	<.0001	-1,29	399,43	<.0001
	6 year	-0,69	52,50	<.0001	-1,39	423,71	<.0001
	7 year	-0,70	52,25	<.0001	-1,74	516,45	<.0001
	8 year	-0,69	50,68	<.0001	-1,89	530,13	<.0001
	9 year	-0,82	65,74	<.0001	-2,02	535,98	<.0001
	10 year	-0,90	78,42	<.0001	-2,00	530,53	<.0001
	11 year	-0,90	86,48	<.0001	-2,16	559,33	<.0001
	12 year	-1,16	132,51	<.0001	-2,28	603,99	<.0001
	13 year	-1,37	187,86	<.0001	-2,34	633,08	<.0001
	14 year	-1,58	252,96	<.0001	-2,69	715,61	<.0001
	15 year	-1,60	296,20	<.0001	-2,83	783,35	<.0001
[0 year]	-	-	-	-	-	-	
Age of (oldest) parent	age < 26	-0,77	60,82	<.0001	-0,83	102,99	<.0001
	25 < age < 36	0,14	5,15	0.0233	0,04	0,33	0.5673
	35 < age < 46	0,16	8,32	0.0039	0,03	0,15	0.6944
	[age > 45]	-	-	-	-	-	-
Parent 1	OLF	0,51	169,56	<.0001	1,02	1213,40	<.0001
Parent 2	OLF	-0,07	1,53	0.2156			
Mother		-	-	-	-0,37	41,71	<.0001
Year of Emigration							
- 1980		0,00	5,17	0.0230	-0,01	30,21	<.0001

When we include parental controls (age of the oldest parent and the labor market status of the parents)⁸, we find that the child's age monotonically decreases the probability of emigration,

⁷ In this section the group of control families (non-migration) is only a random sample of 5 percent of the complete control group of all families who do not emigrate (see also footnote xx). In the regressions we adjust the estimates with weights as suggested by Manski and Lerman (1977). We are later going to revise the paper to use full population register]

⁸ Parental education has also been included without changes to the main parameters of interest. However, we run into convergence problems unless we restrict the education categories to very few groups. Another reason to exclude education background is that education is missing for a substantial part of our sample (approximately 10 percent).

with the sole exception that the probability of emigration is slightly lower at the age of 6 than at the age of 7 and 8. Children with parent 1 out of labor force are more likely to migrate in households with couples. First, OLF includes students, which have a higher propensity to emigrate, but this can also be driven by an arrangement in which wife stays at home to take care of children. Emigration probabilities are smallest for the youngest parents and highest for parents between 26 and 45. [We plan to study this age pattern later more carefully]

In Table 4.1 we are also analyzing emigration probabilities for children of single parents. The picture of Section 3.1 repeats itself, the effect of children's age decreases monotonically with age.

We have also made regression for households with two adults and two children. First, oldest child age influences emigration very much like lone children.

Table 4.2: Estimates for Couples/singles with two children, oldest child

Parameter	Couples			Singles		
	Estimate	Chi-Square	Pr > ChiSq	Estimate	Chi-Square	Pr > ChiSq
Intercept	-6,21	918,08	<.0001	-2,84	104,39	<.0001
Girl	0,02	0,17	0.6766	0,00	0,01	0.9321
Age of child						
1 year	-0,09	0,19	0.6624	-0,55	4,22	0.0400
2 year	0,17	0,83	0.3618	-0,50	4,11	0.0426
3 year	0,04	0,05	0.8321	-0,90	13,58	0.0002
4 year	0,08	0,17	0.6760	-1,10	20,72	<.0001
5 year	-0,17	0,84	0.3588	-1,48	37,07	<.0001
6 year	-0,43	4,99	0.0255	-1,79	53,76	<.0001
7 year	-0,48	6,25	0.0124	-2,12	74,27	<.0001
8 year	-0,53	7,70	0.0055	-2,31	86,68	<.0001
9 year	-0,73	14,07	0.0002	-2,46	97,40	<.0001
10 year	-0,71	13,32	0.0003	-2,75	119,32	<.0001
11 year	-0,76	15,30	<.0001	-2,58	107,23	<.0001
12 year	-0,90	21,25	<.0001	-2,81	123,69	<.0001
13 year	-1,10	31,05	<.0001	-2,93	133,22	<.0001
14 year	-1,40	49,31	<.0001	-3,19	155,20	<.0001
15 year	-1,50	56,40	<.0001	-3,66	193,25	<.0001
[0 year]	-	-	-	-	-	-
One boy, one girl	0,08	23,55	0.1249	0,03	0,15	0.6968
Two girls	0,03	0,54	0.4631	0,06	1,04	0.3089
Twins	-0,07	0,91	0.3395	-0,64	43,69	<.0001
Age of oldest parent						
age < 26	-0,81	28,72	<.0001	-2,05	197,09	<.0001
25 < age < 36	-0,18	9,20	0.0024	-0,73	40,05	<.0001
35 < age 46	0,11	3,57	0.0587	-0,30	7,14	0.0075
[age > 45]	-	-	-	-	-	-
Parent 1 OLF	0,54	241,08	<.0001	1,04	609,17	<.0001
Parent 2 OLF	-0,26	19,07	<.0001	-	-	-
Mother	-	-	-	-0,31	9,44	0.0021
Year of Emigration – 1980	0,00	17,62	0.1844	-0,01	21,98	<.0001

Table 4.3: Emigration for couples/singles with two children, youngest child

Parameter	Couples			Singles		
	Estimate	Chi-Square	Pr > ChiSq	Estimate	Chi-Square	Pr > ChiSq
Intercept	-6,51	5761,86	<.0001	-4,29	786,39	<.0001
Girl	-0,01	0,16	0.6887	0,04	0,44	0.5064
Age of child						
1 year	0,06	1,69	0.1935	-0,26	11,87	0.0006
2 year	-0,01	0,05	0.8238	-0,60	58,48	<.0001
3 year	-0,18	11,54	0.0007	-0,88	109,12	<.0001
4 year	-0,39	45,77	<.0001	-1,13	159,74	<.0001
5 year	-0,47	59,68	<.0001	-1,25	178,76	<.0001
6 year	-0,58	81,33	<.0001	-1,37	203,00	<.0001
7 year	-0,52	64,70	<.0001	-1,44	203,87	<.0001
8 year	-0,67	94,48	<.0001	-1,54	216,25	<.0001
9 year	-0,69	95,28	<.0001	-1,79	232,23	<.0001
10 year	-0,88	128,71	<.0001	-1,75	206,96	<.0001
11 year	-1,18	160,95	<.0001	-1,86	199,38	<.0001
12 year	-1,25	131,97	<.0001	-2,03	173,74	<.0001
13 year	-1,19	67,68	<.0001	-2,13	124,79	<.0001
14 year	-0,97	21,92	<.0001	-2,40	64,13	<.0001
15 year	-2,07	16,68	<.0001	-3,25	20,58	<.0001
[0 year]	-	-	-	-	-	-
One boy, one girl	0,05	0,93	0.3342	0,10	1,43	0.2312
Two girls	0,01	0,12	0.7281	0,08	1,96	0.1619
Twins	0,23	11,85	0.0006	0,25	8,19	0.0042
Age of oldest parent						
age < 26	-0,53	12,22	0.0005	-1,46	101,31	<.0001
25 < age < 36	-0,02	0,11	0.7458	-0,51	18,83	<.0001
35 < age < 46	0,15	6,99	0.0082	-0,32	7,85	0.0051
[age > 45]	-	-	-	-	-	-
Parent 1 OLF	0,55	254,27	<.0001	1,02	575,80	<.0001
Parent 2 OLF	-0,25	16,85	<.0001	-	-	-
Mother	-	-	-	-0,15	2,12	0.1450
Year of Emigration – 1980	0,00	0,42	0.5153	-0,01	7,37	0.0066

4.2 Return migration

After this, we are going to perform a similar analysis for return migration. We model duration abroad in an accelerated failure time model (see Lancaster (1990)). A positive parameter indicates a positive impact on duration and a negative parameter indicates a negative impact on duration. All variable entered in the model are pre-emigration parameters.

Table 4.4: Return migration, one child at emigration

Parameter	Couples			Singles			
	Estimate	Chi-Square	Pr > ChiSq	Estimate	Chi-Square	Pr > ChiSq	
Intercept	1,23	53,48	<.0001	0,58	3,90	0.0483	
Age of child							
0	0,19	3,49	0.0616	0,69	19,00	<.0001	
1	0,27	7,16	0.0074	0,58	13,40	0.0003	
2	0,24	5,49	0.0191	0,77	22,49	<.0001	
3	0,38	12,76	0.0004	0,82	25,37	<.0001	
4	0,16	2,07	0.1501	0,85	26,34	<.0001	
5	0,32	7,68	0.0056	0,86	26,30	<.0001	
6	0,37	8,48	0.0036	0,69	16,77	<.0001	
7	0,63	24,65	<.0001	0,76	18,68	<.0001	
8	0,40	10,23	0.0014	0,85	21,91	<.0001	
9	0,46	12,88	0.0003	0,31	2,83	0.0923	
10	0,48	14,15	0.0002	0,60	10,69	0.0011	
11	0,23	3,51	0.0609	0,49	6,80	0.0091	
12	0,27	4,79	0.0286	0,61	10,70	0.0011	
13	0,24	3,85	0.0498	0,31	2,87	0.0905	
14	0,13	1,16	0.2813	0,32	2,90	0.0888	
[15]	-	-	-	-	-	-	
Boy	0,03	0,74	0.3890	0,01	0,02	0.8823	
Age of (oldest) parent							
age < 26	-0,40	12,97	0.0003	-0,45	12,29	0.0005	
25 < age < 36	-0,20	9,68	0.0019	-0,19	2,90	0.0885	
35 < age < 46	0,03	0,30	0.5867	-0,06	0,27	0.6058	
[age > 45]	-	-	-	-	-	-	
Parent 1	OLF	0,03	0,58	0,4472	0,36	54,93	<.0001
Parent 2	OLF	0,10	2,13	0.1447	-	-	-
Father	-	-	-	0,07	0,57	0.4511	
Year of emi- gration - 1980	-0,02	44,59	<.0001	-0,02	25,76	<.0001	

Note: World region added as dummy variables

We have also studied how the quality of schooling, measured by PISA test scores, is related to return migration. As shown in Table 4, we do find an effect for couples, but no effect for singles.

Table 4.5: Return migration, one child at emigration

Parameter	Couples			Singles		
	Estimate	Chi-Square	Pr > ChiSq	Estimate	Chi-Square	Pr > ChiSq
Intercept	-1.62	2.71	0.0998	0.02	0.00	0.9874
Age of child						
0	0.05	0.13	0.7139	0.74	15.52	<.0001
1	0.15	1.37	0.2410	0.52	7.51	0.0062
2	0.15	1.40	0.2369	0.80	17.05	<.0001
3	0.30	4.76	0.0291	0.87	20.38	<.0001
4	0.03	0.05	0.8273	0.93	22.49	<.0001
5	0.17	1.28	0.2588	0.86	19.29	<.0001
6	0.38	5.09	0.0241	0.62	9.78	0.0018
7	0.61	14.68	0.0001	0.81	15.47	<.0001
8	0.35	4.72	0.0298	0.82	14.47	0.0001
9	0.42	6.61	0.0101	0.31	2.18	0.1401

	10	0.47	8.41	0.0037	0.67	9.49	0.0021
	11	0.12	0.61	0.4363	0.47	4.58	0.0323
	12	0.13	0.66	0.4155	0.39	3.15	0.0757
	13	0.22	2.10	0.1472	0.33	2.27	0.1322
	14	0.15	0.92	0.3376	0.27	1.41	0.2354
	[15]	0.00	.	.	0.00	.	.
Boy		0.01	0.04	0.8461	0.00	0.01	0.9360
Age of (oldest) parent	age < 26	-0.45	12.45	0.0004	-0.46	8.76	0.0031
	25 < age < 36	-0.15	3.57	0.0588	-0.13	0.86	0.3534
	35 < age < 46	0.11	2.51	0.1129	0.00	0.00	0.9988
	[age > 45]	-	-	-	-	-	-
Parent 1	OLF	0.02	0.17	0.6845	0.37	41.13	<.0001
Parent 2	OLF	0.12	1.93	0.1648	-	-	-
Father		-	-	-	0.14	1.54	0.2148
Year of emigration - 1980		-0.02	49.04	<.0001	-0.02	30.51	<.0001
PISA score		0.00	8.43	0.0037	0.00	1.15	0.2832

Note: (destination) World region included

5. Conclusion

In this paper, we have analyzed migration behavior of Danish families. Our starting hypothesis was that Danish families would tend to return to Denmark before their children start school. Empirical investigation suggested that the effects of schools do not show much through return decisions. The probability of returning depends much more how long a family has been abroad than on the children's age. Instead, we found that the probability that a Danish family emigrates is decreasing in children's age. We did not find evidence that migration decisions would depend on the gender of children.

The findings reported above are preliminary, and we are still in the process of deriving further results.

References

(Note: literature review still to be completed)

Borjas, George J. 1994, The Economics of Immigration, *Journal of Economic Literature* 32: 1667-1717.

Chiswick, Barry 2005, High Skilled Immigration in the International Arena, IZA DP 1782.

Cunha, F., Heckman, J. J., Lochner, L. & Masterov, D. (2006). Interpreting the Evidence of Life Cycle Skill Formation, In *Handbook of Economics of Education*, redigeret af E. A. Hanushek & F. Welch, Amsterdam: North Holland.

Currie, J. (2001). Early Childhood Education Programs, *Journal of Economic Perspectives* 15, 213-238.

Currie, J. (2006). *The Invisible Safety Net*, Princeton: Princeton University Press.

Esping-Andersen, G. (2004a). Untying the gordian knot of social heritage. *Research in Social Stratification and Mobility* 21: 115-138.

Esping-Andersen, Gøsta (2004b): Unequal opportunities and the mechanisms of social inheritance, in: Miles Corak 2004: *Generational Income Mobility in North America and Europe*, Cambridge University Press, 289-314

Heckman, J. (2006): Skill Formation and the Economics of Investing in Disadvantaged Children, *Science*, Vol. 312(5782): 1900-1902 (June, 2006).

Heckman, J., J. Stixrud and S. Urzua (2006): The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior, *Journal of Labor Economics*, 24(3): 411-482.

Lancaster, Tony (1990): "The Econometric Analysis of duration data",

Manski, CF and SR Lerman (1977): The Estimation of Choice Probabilities from Choice Based Samples, *Econometrica*, Vol. 45, No. 8, pp. 1977-1988, Nov. 1977

McIntosh, James and Munk, Martin D. 2007: Family Background and Educational Choices: Changes Over Five Danish Cohorts, SFI-Working Paper 18:2007