Children and return migration

Christian Dustmann

Department of Economics, University College London, Gower Street, London WC1E, UK
(Fax: +44-20-7916-2775; e-mail: c.dustmann@ucl.ac.uk)

Abstract. We explore reasons for return migrations which are motivated by immigrants' concerns about their children. We develop a simple model, where parents have paternalistic preferences. We show that parental concerns about the child may lead to an increase, or to a decrease in the tendency to return to the home country. Our model suggests that return plans of the parent may respond differently to the presence of daughters than to the presence of sons. The empirical test of our models relies on the exogeneity of children's gender. We use a survey panel data set, containing information on both return realisations over 14 years, and intended return plans. Our results lend support to the hypothesis that children influence return plans of their parents.

1. Introduction

To view migrations as life long decisions may be a convenient simplification for economic modelling, but it is hardly compatible with evidence. Many migrations are either intended as temporary, or develop into temporary migrations, even in the absence of restrictions on the duration of stay in the host country. Recent research has established a link between immigrant performance and social as well as economic adaptation, and (intended) duration of residence in the host country (see Dustmann 2000 for an

overview). As return decisions are inherently linked to life cycle consider-
ations, modelling these requires dynamic analysis, and a number of existing
papers study various motives for returning.[1]

However, it is likely that not only considerations about the immigrant's
own future welfare, but also concerns about the future welfare of her children
have an important influence on migration and re-migration decisions. To
understand the processes that link migration and re-migration decisions to
the benefit of immigrants' children is not only of academic interest, but very
important for migration policies. In a world that is increasingly characterised
by global competition for labour, the weight a worker from abroad attaches
to the welfare of his (future) children when making migration decisions is an
important factor for the design of recruitment policies.

Not much work exists that analyses the dynastic aspects of migration and
re-migration decisions.[2] To our knowledge, the present paper is the first that
investigates aspects beyond the immigrant's own life span that may affect
return behaviour. It analyses the way children affect the decision of the parent
migrant to return to the home country.

To structure ideas, and to embed the present analysis into existing models of
return migration, we commence by developing a simple model, where parents
have altruistic preferences. We show that the welfare of the offspring, as per-
ceived by the parent, may lead to a decrease in the likelihood to return if child's
career prospects are perceived as better in the host economy, and if this is the
only parental concern. On the other side, it may lead to an increase in the
likelihood to return if there is the perception on the side of the parent that a more
appropriate environment for the offspring is provided in the country of origin.
We argue that concerns about detrimental, or beneficial effects of remaining in
the host country on the child's future welfare may differ according to whether
the child is a boy or a girl. While concerns about preserving traditions may be
important for female offsprings, concerns about future economic career and
prosperity may be dominant for male offsprings. If this is the case, then sons
should affect return plans differently from daughters.

A testable implications of our model is that children are significantly
associated with return plans. However, in straightforward estimations a
number of identification problem occur. First, unobserved factors that are
related to fertility may at the same time affect return plans. Second, return
plans and fertility decisions may be made simultaneously. If this is the case, a
simple estimation coefficient confounds the effect of fertility decisions on
return plans with the possible effect of return plans on fertility decisions. We
address both these problems. As one measure for return plans, we use return
intentions, on which we have repeated information. There is considerable
variation in this variable over time. If we assume that unobserved factors that
affect return plans and fertility decisions are time constant, estimation in
differences will solve the problem of unobserved and time constant hetero-
geneity. It will solve the simultaneity problem only under strong assumptions.

Our second strategy addresses the perhaps more serious problem of
simultaneity. Our approach is based on the exogeneity of child's gender. Our
test is similar in spirit to work by Angrist (1998) and Iacovou (1996) in that it
relies on the randomness of the child's gender. Assume that any association
between return plans and children is solely due to return plans affecting
fertility decisions, and that there is no effect of children on return plans. As
the gender of the child is random, and observed only after the fertility

decision has been taken, it is not affected by return plans, and the estimated association between return plans and children should be the same for boys and girls. A significantly different coefficient for boys and girls however is not consistent with such a model. It is compatible with a model where children do affect return decisions, and where these effects differ according to whether the child is a boy or a girl.

We test the predictions of our model, using a survey panel data set on immigrants over a 14 years period. This data set provides us with unique information on both intended (survey-based) return plans, and return realisations over 13 years. Our results lend support to the hypothesis that children influence return plans. We find evidence that suggests that there are differences in the effects of female and male offsprings. Also, these differences are more pronounced for immigrants from countries where we would expect that parents perceive the difference in benefits of residence in either of the two locations as larger for boys than for girls.

One immediate consequence of our work is that policies which aim at assimilating immigrants to the host country economy need to look well beyond the individual's own life cycle span, and take account of dynastic considerations on the side of the migrant.

2. Altruism and return migration

We formulate our ideas in the simplest possible model. Consider a family unit, consisting of a parent migrant and her offspring. There are two periods. At the beginning of the first period, the parent migrant resides and works in the host country. The child does not contribute to family income, and is subsidised by the parent in period 1, but joins the labour market in the second period. The parent decides about her own consumption in periods 1 and 2, and the child's consumption in period 1; furthermore, she decides for herself and for her offspring whether to return in period 2, which determines the child's consumption in the second period. The parent has altruistic preferences, to the effect that she transfers income to the child in period 1, and obtains utility from the child's benefit in period 2. The return decision is taken by comparing lifetime welfare in the two locations.[3]

Let the utility function of the parent migrant is given by

$$V^P = U^1(c^1, k^1) + hU^{2I}(c^{2I}, k^{2I}, a^I, b^I) + (1-h)U^{2E}(c^{2E}, k^{2E}, a^E, b^E) \quad (1)$$

where c^1, c^{2j} and k^1, k^{2j}, $j = I, E$, are consumption of parent and offspring in host– (Immigration, I) and home (Emigration, E) country, and and a^j and b^j are preference parameters. The parameter h is either 0 or 1; the migrant chooses h, and returns if $h = 1$.

The budget constraints of parent and child are given by

$$c^1 + hc^{2I} + (1-h)c^{2E} + k^1 = y^1 + hy^{2I} + (1-h)y^{2E}, \quad (2\text{-a})$$

$$hk^{2I} + (1-h)k^{2E} = hz^{2I} + (1-h)z^{2E}, \quad (2\text{-b})$$

where y^1 and y^{2j} are income of the parent in the first and second period in home- or host country ($j = E, I$) respectively, and z^{2j} are the respective income flows for the child in period 2.

The parent migrant solves the above problem by maximising (1) with respect to own consumption in the two periods, and the offspring's consumption in period 1, subject to (2-a) and (2-b), for two scenarios: Remaining in the host country in period 2, or returning back home. The decision whether or not to return home is based on a comparison of the indirect lifetime utility functions in the two cases.

Suppose that period 1 and period 2 utility functions are of the following simple form:

$$U^1(c^1, k^1) = ln c^1 + \gamma ln(k^1), \tag{3-a}$$

$$U^{2j}(c^{2j}, k^{2j}) = ln(c^{2j}b^j) + \gamma ln(k^j a^j), j = E, I, \gamma \geq 0. \tag{3-b}$$

Normalising $a^I = 1$ and $b^I = 1$, a parameter $b^E > 1$ indicates that each unit of consumption creates a higher utility to the parent migrant when residing in the home country. Similarly, the parameter a^E reflects the parent's beliefs about the offspring's benefits of living (and consuming) in the home country. If $a^E > 1$, the parent considers each unit of consumption in the home country as more beneficial for the child than each unit of consumption in the host country. The parameter γ is an altruistic weight, and we assume that $\gamma \geq 0$.

For these utility functions, the immigrant returns if the following expression is larger than zero:

$$(2 + \gamma) ln\left(\frac{y^1 + y^{2E}}{y^1 + y^{2I}}\right) + ln b^E + \gamma \left[ln\left(\frac{z^{2E}}{z^{2I}}\right) + ln a^E \right] > 0. \tag{4}$$

If the parent is not altruistic ($\gamma = 0$) and indifferent between consuming in home- or host country ($b^E = 1$), the return decision reduces to the classical comparison between earnings in home- and host country - a comparison between lifetime income in the two locations. For $y^{2I} > y^{2E}$, migration is permanent. If the migrant has a preference for consuming at home ($b^E > 1$), the second term is positive, and migration may be temporary, although wages are persistently higher in the host economy. These are results which have been studied before (see for instance Dustmann 1997).

Now consider an altruistic parent ($\gamma > 0$). The first term in (4) is the total loss in utility in case of a return migration, because earnings are lower at home. This term includes now the loss in utility the parent experiences by not being able to allocate the same amount of resources to the offspring in the first period, because lifetime earnings are lower in case of a return. Altruism towards the offspring leads therefore to a larger weight of the earnings advantage in the host country when making the re-migration decision.

In addition, the parent takes account of the offspring's utility in the second period, which is reflected by the bracketed expression in (4). The first term shows that, if economic prospects for the offspring are better in the host country ($z^{2I} > z^{2E}$), the probability that the parent migrant may consider to stay abroad increases. Career considerations for the offspring may lead to a permanent migration, even if, in isolation, the parent migrant would consider it beneficial to return home (either because $y^{2I} < y^{2E}$, or because $b^E > 1$).

The second term in brackets reflects the parent's perception about whether consumption is more beneficial for the offspring in home- or host country. If the parent migrant perceives the host country environment as detrimental to the utility of the offspring (which, in our simple model, is indicated by

$a^E > 1$), then this may compensate for economic reasons for which the parent considers the future of the child as more promising in the host country. Reasons why the parent migrant may perceive the home country as a more appropriate environment for the future of the offspring include possible marriage arrangements, as well as concerns that the host country will undermine a traditional life style, or inhibit cultivation of religious practises.

We would expect that beneficial influences of the home country environment are felt as more important for daughters, while, at the same time, beneficial aspects of possibly advantageous labour market conditions and earnings prospects in the host country weight less for female than for male offsprings. These differences in perceived benefits of residence in the host country for male and female children should be more pronounced, the more diverse and traditional the cultural background of the parent immigrant.

An immediate implication of our model is that the presence of children in the household may have an effect on the return propensity of the parent migrant, but that this effect can not be signed unambiguously. However, relative to boys, girls should affect the likelihood of return more towards return.

These implications of our model are in principle testable. If we observed return patterns or return plans of immigrants, together with background characteristics and the number and gender of their children, we could investigate the effect of children on these plans. We are in the privileged position not only to have information on return realisations of a sample of migrants over a 14 years period, but also survey information on return plans. Conditioning on variables which encompass the migrant's economic advantage in the host country, the association between variables on presence and gender of children, and return tendencies, allow us to test the hypotheses set out above.

3. Empirical investigation

3.1. Background and data

Our survey information covers a migrant population in Germany. Migrants in the sample stem from a migration movement that was predominantly motivated by economic reasons. Between the mid 1950's and 1973, the strong economic development in Northern Europe and the resulting demand for labour led to a large inflow of migrants mainly from the periphery countries of Europe, but also from Turkey, North Africa, South America and Asia, into Central Europe. The main receiving countries were Belgium, France, Germany, the Netherlands, Switzerland, and the Scandinavian countries. This movement came to a halt in 1973/74, the turning point of the rapid economic development in Northern Europe, when countries stopped active recruitment policies or/and put severe restrictions on further labour immigration.

The data we use for the present analysis refers to immigrants from the former recruitment countries Italy, Spain, Turkey, Yugoslavia, and Greece. It is drawn from the German Socio-Economic Panel (GSOEP), which started in 1984,[4] and contains a boost sample of migrants from these origin countries. It is this subsample which we use for our analysis. The GSOEP is, to our

knowledge, the only household panel which oversamples immigrants, and provides a sufficient database for statistical analyses of these minorities. In the first wave, the sample includes some 1500 households with a foreign born head. Foreign born individuals are asked a number of specific questions regarding their economic behaviour, and their economic and social integration.

From the overall data base, we generate a dataset which contains background information on the immigrant. To make sure that we only include individuals who immigrated by their own decision, we restrict the sample to migrants who were at least 18 years old when they entered the country. We link all individuals in the sample to their children. We compute for each migrant the number of children below the age of 16 who live in the same household, and distinguish between males and females.

We construct two variables that capture return plans of the immigrant. The first variable is based on an actual future return. The panel survey includes reasons for panel attrition. One of these reasons is *Moved Abroad*, which is most likely to correspond to a return migration, if the respondent is foreign born. We follow migrants over the course of the panel, and construct an indicator variable, equal to one if the migrant returns home within the next 13 years. In Table 1, we give details on the distribution of returns over the length of the panel. The table entries indicate that about 20% of the sample population in 1984 returned home over the following 13 years period.

Our second variable on return plans is based on survey information about future intentions of the immigrant as regards returning back home. In each survey year, migrants are asked about whether they wish to remain permanently in the host country, or whether they wish to return to their respective home country at some point in the future. Immigrants are first asked whether or not they intend to remain permanently in Germany. If not, they are asked to specify the number of years they would like to remain before returning back home.

In Table 2, we report cross tabulations on these two variables. We also report column percentages. In 1984, about 73% of the sample migrant population intends to return home in the future. Of those immigrants who did return over the period between 1984 and 1997, 84% indicated in 1984 that they have the intention to return; only 16% responded in 1984 that they have no intention to return.

In Table 3, we report some descriptive statistics of the variables we use in the analysis below. All this information refers to the first survey year, 1984. In the first column of the table, we report numbers for the entire sample population. In columns 2 and 3, we report means of variables for the sample of those who did return between 1984 and 1997, and for those who intended to return at some point in the future.

Table 1. Frequency of return migrations

	Year													
	85	86	87	88	89	90	91	92	93	94	95	96	97	Total
Number returners	163	67	59	74	53	41	29	35	36	43	35	31	22	688
Percentage	4.74	1.95	1.72	2.15	1.54	1.19	0.84	1.02	1.05	1.25	1.02	0.90	0.64	20.02

Table 2. Intentions and realisations

	Return between 84 and 97		
	No	Yes	Total
Intended return (1984) no	665	98	763
(percentage)	30.37	15.91	27.19
Intended return (1984) yes	1525	518	2043
(percentage)	69.63	84.09	72.81
Total	2190	616	2806

For the overall sample, the average migration duration in 1984 is 14.3 years. Migrants entered the host country, on average, at age 28 (remember that we restrict our sample to those who are at least 18 years old at entry). The average age of immigrants in 1984 is about 42 years. About 59% of individuals in the data set have children; 16% have only daughters, and 19% have only sons. The average migrant in our sample has 1.2 children, of whose 0.56 are daughters.

In the next two columns in the table, we report mean 1984 characteristics for the two samples of individuals who return home, and who intend to return home. Those who return home between 1984 and 1997 are on average 3 years older than the sample population; they were older at entry; and they have been in Germany slightly longer. Interesting are the variables that measure children: The average number of children of returners is clearly lower than for the sample population. Also, while 59% of those who do return have no children, this is the case for only 41% of the overall population. Even more interesting, while 19% of the sample population has only sons, and 16% has only daughters, among those who return, 14% have only sons, but 15% have only daughters. This is compatible with the predictions of our model.

The next column reports results on individuals who intend to return in 1984. The differences of this group with respect to observable characteristics is less pronounced - in fact, mean characteristics of the overall sample, and of those who intend to return are very similar.

3.2. Estimation

Our model above suggests that return plans of the immigrant are determined by the relative income prospects in the two countries, locational preferences, and future economic and welfare prospects of the child. For the empirical analysis, we define the (latent) return propensity of the immigrant as a linear function of variables that reflect these measures:

$$I_{it}^* = \alpha_0 + \alpha_1 Y_{it} + \alpha_2 B_{it} + \beta_1 C_{it} + \beta_2 G_{it} + u_{it}, \tag{5}$$

where i and t are indices for the individual and for time, and Y and B are (vectors of) variables which reflect the relative economic advantage, and the preference of the parent migrant for the host country. The variable C is a measure for children. In the estimations below, we use alternatively an

Table 3. Stayers and returners

Variable	All	Return : 1984–1997	Intention 1984: Return
	Mean	Mean	Mean
Age at entry	28.119	30.765	28.407
Age in 1984	42.419	45.356	42.332
Years of residence	14.300	14.591	13.925
Years of residence <6	0.087	0.117	0.094
Years of residence $\in$ [6, 10]	0.105	0.094	0.106
Years of residence $\in$ [11, 20]	0.656	0.607	0.672
Years of residence $\in$ [21, 30]	0.148	0.174	0.125
Years of residence > 30	0.002	0.006	0.001
Years of education	9.355	9.220	9.289
Female	0.449	0.452	1.459
Number of children	1.194	0.733	1.158
Number of daughters	0.569	0.381	0.559
Number of sons	0.624	0.352	0.599
No children	0.413	0.593	0.417
One child	0.197	0.163	0.201
Two children	0.225	0.157	0.225
Three children	0.105	0.064	0.103
More than three children	0.056	0.020	0.051
Only daughters	0.160	0.153	0.167
Only sons	0.190	0.138	0.192
Origin: Turkey	0.302	0.259	0.331
Origin: Yugoslavia	0.221	0.109	0.196
Origin: Greece	0.153	0.194	0.163
Origin: Italy	0.184	0.207	0.175
N.obs.	2058	477	1520

indicator variable for the presence of children, and the number of children. Finally, the variable G is a measure for the gender of the child. We use alternatively an indicator variable if there are only daughters in the household, and a variable for the number of daughters.

As we have pointed out above, exogeneity of the children variable may be violated for at least two reasons: there may be unobserved factors that affect return propensities, and, at the same time, return plans and fertility decisions may be simultaneously determined.

Our main test for an effect of children on return plans is based on differential effects of boys and girls. If individuals make their fertility decisions conditional on return plans, and this is the sole source of correlation between return plans and children in a simple regression, then the coefficient on the gender variable β_2 should be equal to zero, as gender is determined after the fertility decision. A coefficient β_2 that is different from zero is compatible with a model where the presence of children affects return decisions, and the effects differ according to gender (as in the model we have set out above).

If the association between fertility- and return decisions is entirely due to unobserved factors relating to both, then, again, the gender variable should not matter. Again, a significant gender coefficient is only compatible with a model where considerations about children affect return plans.

3.2.1. Models and specification

We specify the estimation equation as a reduced form equation. We have no direct measure for the earnings advantage of the immigrant in the host economy. Earnings differences are represented by a set of human capital variables, including education, age (at entry), gender, and years since migration. Macro differences in economic conditions between the two countries are reflected by country of origin dummies. Besides measuring macro differences in the immigrant's earnings potential in the home country, country dummies also pick up the cultural distance between immigration-emigration country, and may therefore reflect differences in preferences B for migrants from different origin.

Similarly, age at migration is likely to affect both the earnings differential between the two locations and preferences for the host country. Migrants who enter the country at a later age may have more difficulties to adopting to the foreign life style, and are likely to maintain stronger links to the country of origin. Furthermore, the older the migrant is upon entry, the lower may be the ability to acquire human capital which is specific to the host country labour market. The migration duration is a measure of exposure of the immigrant to the host country culture. The number of years of education is a measure for earnings opportunities in the two countries. Besides that, it may also reflect the adaptability of the individual to an alien environment.

The first set of models we estimate relates an indicator variable, measuring whether the immigrant has returned over the period between 1984 and 1997, to the set of conditioning variables, and our variables measuring presence and gender of children.

The second set of models utilises information about return intentions, available in each wave of the panel. We estimate models where the dependent variable is the intention of the immigrant to return back home. The repeated information on this variable allows for the estimation of models that condition on unobserved fixed effects - and, therefore, eliminate one of the problems discussed above.

3.2.2. Sample problems

There are a number of additional problems that we are not explicitly addressing in this paper. The first problem relates to the variable that measures actual returns over the future course of the panel. This variable is censored, in the sense that it does not pick up all immigrants who do return. Therefore, some immigrants who return later may erraneously be coded as non-returners. However, if children are the reason for a non-return, then its impact on plans should materialise early on in the child's development. In this sense, it is likely that our 14 years period covers those returns that are related to the presence of children in 1984.

A second problem is that the sample is choice based - those who have a higher propensity to remain in Germany are also more likely to be observed when the panel starts (i.e., in 1984). This problem is similar to that of stock sampling in duration analysis - we get a length bias, oversampling those with long durations in Germany. To solve this problem requires additional assumptions, and an estimator that models survival in conjunction with the

equation of interest (see Ridder 1984 for details on such models). This is beyond the scope of the current paper. Rather than modelling the process of choice based sampling, we will here discuss the likely effect this may have on estimates of the parameters of interest.

Consider any one wave of the panel. This wave oversamples individuals with a high propensity to stay in Germany. Accordingly, when using this particular wave to estimate the effect of children on return propensity (or future return), we select on a particular sample. The effect of this on the parameter estimates can be studied in the same framework than the classical selection bias problem.

Suppose for the moment that the immigrant considers the host country environment as more beneficial for the child than the home country environment. According to our model, the presence of children should then reduce the return propensity of immigrants. As those with lower propensities are also less likely to be in the sample at any one point in time, children affect sample selection. Now consider the coefficient estimate we obtain on the children variable, based on the selected sample in any one wave. Those individuals who have no children, but are nevertheless in the sample, must have a larger propensity to stay (explained by unobservables). Therefore, the children coefficient, estimated from this sample, is in absolute size smaller than the coefficient relating to the total sample. The reason is that the reference category in the selected sample (those without children) are more inclined to stay than the reference category in the overall sample, thus biasing the coefficient on the children variable to zero. This line of argumentation assumes that those who are more likely to intend to return (or to actually return over the next 13 years) are at the same time less likely to be included in the sample.[5] Therefore, the coefficient on the children variable can be seen as a lower bound. Furthermore, and conditional on the children variable, the sign of the gender variable should be unaffected. Similar considerations hold when using intentions, based on all survey years, as we use a sample that changes over time, in the sense that those with high return propensities leave the sample.

4. Results

4.1. Return realisations

We first investigate the association between children and their gender, and immigrants' return realisations. We consider the first year of the panel (1984), and create a binary variable I, being equal to one if the migrant returns home over the next 13 years. We regress this indicator variable on background variables, and variables measuring the presence of children, where both sets of variables are measured in 1984. We use two sets of measures for the variables in C. First, we use binary indicators for the presence of children, and whether all children are females. Second, we use the number of children, and the number of daughters. In Table 4, we present marginal effects (evaluated at sample means) for different specifications of probit models.

In all specification, age at entry is positively associated with a future return of the immigrant. This may reflect that those who are older upon entry are less likely to be economically successful abroad. Also, older immigrants may

Table 4. Return realisations, 1984, marginal effects

Variable	1 ME	1 StE	2 ME	2 StE	3 ME	3 StE	4 ME	4 StE	5 ME	5 StE	6 ME	6 StE
Age at entry/10	0.071	0.012	0.070	0.012	0.071	0.012	0.072	−0.012	0.700	0.127	0.694	0.125
Years since migration/10	−0.034	0.017	−0.034	0.017	−0.033	0.017	−0.033	0.017	−0.357	0.171	−0.386	0.169
Education/10 (years)	0.041	0.045	0.037	0.045	0.024	0.045	0.022	0.045	0.036	0.045	0.026	0.044
Sex	0.014	0.019	0.013	0.019	0.011	0.019	0.010	0.019	0.013	0.019	0.009	0.019
Turkish	−0.147	0.023	−0.145	0.023	−0.133	0.024	−0.133	0.024	−0.158	0.024	−0.170	0.025
Greek	−0.077	0.026	−0.076	0.026	−0.075	0.026	−0.076	0.025	−0.076	0.026	−0.075	0.025
Italian	−0.077	0.026	−0.079	0.025	−0.080	0.025	−0.082	0.025	−0.078	0.025	−0.078	0.025
Yugoslavian	−0.219	0.018	−0.218	0.018	−0.215	0.018	−0.215	0.018	−0.218	0.018	−0.215	0.018
Children in HH	−0.134	0.021	−0.162	0.023					−0.160	0.023		
Only daughters			0.093	0.031					0.056	0.036		
Number children					−0.057	0.008	−0.075	0.012			−0.075	0.012
Number daughters							0.035	0.017			−0.004	0.021
Only daughters*Turkish									0.108	0.064		
Number daughters*Turkish											0.083	0.024
N. Obs.	2056		2056		2056		2056		2056		2056	

Note: Probit Estimates; Marginal Effects evaluated at sample means.

have more difficulties to adopt to a new environment. The negative coefficient on the years since migration variable indicates that time of residence enhances assimilation, and reduces return propensities. Again, this may reflect adoption to the host country due to exposure, as well as a positive association between economic status abroad, and years of residence. The level of education has a positive, but insignificant coefficient. Base category are immigrants of Spanish origin. The origin dummies indicate that there are considerable differences in return probabilities between immigrants of different origin, with Turks and Greeks having higher return propensities, and migrants from the former Yugoslavia having lower return propensities, relative to Spanish immigrants.

In the first pair of columns, we add a dummy variable, being equal to one if the individual has children in 1984. This variable is strongly significant, and indicates that the presence of children reduces the probability to return over the next 13 years period by about 13 percentage points. In column 2, we add an indicator variable, being equal to 1 if all offsprings are daughters. This variable is significant, and has a positive sign. If children are present in the household, and all these children are girls, then the probability of a return is reduced, but by less than if the gender of the children remains unspecified. Although the total effect of the presence of children on the return probability is still negative, it is significantly lower in absolute value in all-girl households.

This is compatible with the hypothesis set out above. The significant coefficient of the "only daughters" variable is only compatible with a model where the return decision is influenced by children, as we have pointed out above. However, it does include that the coefficient on the children variable may also capture the effect of return plans on fertility.

In the next pair of columns (columns 3), we add instead a variable on the number of children. The estimates re-enforce our previous findings, indicating a negative association between the number of children and future return plans. Each additional child is associated with a reduction in the probability of return by about 5.7 percentage points. In columns 4, we add the number of daughters as additional regressor. The coefficient on the children variable measures now the association between the number of boys and return propensities. The coefficient on the variable number of daughters measures the differential effect of daughters as opposed to boys. This latter variable is positive and significant, indicating that, while each boy is associated with a decreases in return probabilities by 7 percentage points, each girl is associated with a decrease in return probabilities by only 4 percentage points.

As we discussed above, the coefficient on the children variables is likely to be biased if we have omitted variables that affect fertility decisions and return propensities at the same time, or if fertility and return decisions are simultaneous decisions. If this is the case, and there is no effect of children on return propensities, then the effect should be the same, no matter what is the gender of the child. Our framework however (where children affect return decisions) is compatible with a differential effect of boys versus girls. Notice that, although our findings is in support of our hypothesis, it does not rule out that return plans may also influence fertility decisions.

The dependent variable in these regressions measures realised returns over a window of 14 years; the results do therefore not allow us to distinguish whether children affect the fundamental decision of return, or simply change

the point of return. Parents may want to remain abroad until the offspring has graduated from primary or secondary school, or return before the child enters any such school. Nevertheless, results are in line with the hypothesis set out above that concerns about childrens' careers affect return plans. The sign of the differential effects of female as opposed to male children is compatible with the hypothesis that career concerns, which include education, are considered less important for daughters.[6]

The differences in effects between boys and girls on return decisions are likely to differ according to the cultural background of the parent. The immigrants in our sample are all from Europe, except for the Turkish group. Turks are also the only Muslim group in the sample. It is very likely that the beneficial effect that return to the home country has for daughters is perceived as stronger in this group, compared to immigrants from Southern European countries. To test for this, we add an interaction variable between Turkish origin, and the variables for the number or presence of daughters.

The results are reported in the last two pairs of columns of Table 4. They suggest a notable difference in the differential effects of boys and girls on return plans for Turkish immigrants. In the last column, where we regress on the number of children, the difference between the differential effect of daughters, and daughters from a Turkish family is particularly strong. Here it is only the Turkish subsample that drives the difference in the estimations.

4.2. Return intentions

We now use information about return intentions of the migrant that is available for each year of the survey. We construct from this information an indicator variable, being equal to one if the migrant reports the intention to return home in the future, and zero if not.

We use the same specification than above, and we present estimates in Table 5. In the first two pairs of columns, we present results of linear probability models. We use information from all 14 years of the panel. All regressions include a vector of time dummies. In the first pair of columns, we present results when including a variable on the number of children; in the second pair of columns, we report results when including the number of children together with the number of daughters.

The estimates are compatible with those obtained for return realisations. The presence of children is associated with a reduction of the return probability, but the size of the coefficient is smaller than the effect on realised returns (as in Table 4). The next pair of columns adds the number of daughters as an additional regressor. Again, results indicate that the effect of daughters on the return propensity is smaller in absolute levels than the effect of sons. The differential effect is smaller than before, and not significantly different from zero.

In the second pair of columns we add an interaction variable between the number of daughters, and the country of origin of the parents being Turkey. As for return realisations, we obtain a significant difference between Turkish households, and households from European countries in the way daughters affect return plans. The coefficients indicate that boys decrease the probability of return by about 2.6 percentage points, while daughters lead to a small increase (though not significantly different from zero).

Table 5. Return intentions, all years

Variable	1		2		3		4	
	Linear probability models				Fixed effects models			
	Coeff	StE	Coeff	StE	Coeff	StE	Coeff	StE
Age at entry/10	0.008	0.005	0.081	0.050	–	–	–	–
Years since migration/10	−0.079	0.005	−0.805	0.055	–	–	–	–
Education/10 (years)	−0.051	0.016	−0.052	0.016	–	–	–	–
Sex	−0.010	0.007	−0.010	0.007	–	–	–	–
Turkish	−0.046	0.012	−0.060	0.013	–	–	–	–
Greek	0.047	0.013	0.047	0.013	–	–	–	–
Italian	−0.117	0.013	−0.116	0.013	–	–	–	–
Yugoslavian	−0.129	0.012	−0.128	0.012	–	–	–	–
Number children < 16	−0.025	0.004	−0.026	0.004	−0.019	0.007	−0.020	0.007
Number daughters	0.009	0.006	−0.002	0.007	0.011	0.010	0.003	0.012
Number daughters*Turkish	–	–	0.030	0.009	–	–	0.020	0.014
N. Obs.	18422		18422		18422		18422	

All regressions include time dummies.

To address the problem of unobserved heterogeneity, we estimate fixed effects models. The parameters on the children variables can be interpreted as the marginal effect on return intentions if the number of children (or daughters) changes. Results are reported in columns 3 and 4. Coefficient estimates indicate that the number of children is associated with a reduction in return propensities. The coefficient estimate is significant at the 5 percent level, and only slightly smaller than the coefficients in the level estimates, indicating that unobserved heterogeneity being correlated with both the tendency to have children, and to remain permanently in the host country is only a minor problem. In the last pair of columns, we add the interaction variable between the number of daughters and Turkish origin of the parents as an additional regressor.

Like in the level estimations, for Turkish households the presence of daughters has no effect on the return propensity, while the presence of sons has (see results columns 4). More importantly, the coefficients for daughters and sons are significantly different from each other for Turks, but not for immigrants from European countries.

5. Discussion and conclusion

In this paper, we argue that dynastic motives may be an important determinant of return migration. We develop this idea in a simple model, where the parent is altruistic, and cares about future earnings prospects and perceived effects of the home country environment on the child's welfare. Our model illustrates that permanent or return migration may be chosen as an optimal strategy by the migrant for purely altruistic motives towards the offspring.

We test the implications of the model. We use data on immigrants' return realisations, as well as return intentions. We establish a negative relationship between both indicator variables, and the presence and number of children,

conditional on a set of variables which capture differences in other determinants of return migration. This simple association may confound the effect of children on return plans, and the effect of return plans on fertility decisions. If the latter is the sole cause for the coefficient estimates, then boys should be equally associated with return plans than girls. We find that the relationship is smaller in magnitude for female offsprings, and the difference is significant. We also find that the difference between boys and girls is larger for families that are culturally more distinct, and more likely to evaluate the future of a female child in the home country as more advantageous. These results support the conjecture that concerns about the child influence return intentions and return realisations of parents.

Our analysis introduces a new aspect to the analysis of the determinants of return migration. It emphasises that return plans may not only be driven by life cycle considerations of the individual migrant, but, in addition, by dynastic motives, which relate return intentions to concerns about the future welfare of the offspring. We have argued in previous papers (see e.g., Dustmann 1996) that migration policies which aim at economic assimilation and social integration of immigrants need to provide the migrant with long term perspectives in the host country, thus reducing the likelihood that adaptation is hindered by an envisaged future return. Here we extent this argument by suggesting that concerns beyond the individual's life span may influence return plans. One immediate consequence is that the provision of appropriate opportunities for the children of immigrants have not only the obvious direct effects, but in addition implications for the behaviour of generation immigrants. Fertig and Schmidt (2001) provide evidence on the relatively poor educational and earnings achievements of second generation immigrants in Germany. This analysis suggests that improvement of career opportunities of second generation immigrants may have effects beyond those intended.

Endnotes

[1] See for instance Djajic and Milbourne (1989), Dustmann (1997, 2001), Dustmann and Kirchkamp (2002), Mesnard (2000), and Drapier et al. (2001). Empirical papers include Co et al. (2000) (who test a hypothesis set out in Dustmann 1995) and Borjas and Bratsberg (1996).

[2] An exception is Djajic (2000).

[3] For simplicity, we exclude the possibility that parent and offspring live in different locations in period 2. This does not affect the qualitative results of our analysis, as long as there is a cost attached to living apart.

[4] See Wagner et al. (1993) for information on the GSOEP.

[5] More formally, define the variable $S_{it} = 1$ if individual i is observed in wave t. Suppose that the return propensity index I^* is linear in the child indicator variable c, with $I_i^* = \alpha_0 + \alpha_1 c_i + u_i$, and that the individual returns (or intends to return) if $I_i^* > 0$. Suppose that the underlying index variable for S_{it} (S_{it}^*) can be described as $S_{it}^* = \gamma_0 + \gamma c_i + v_i$, and denote $\mathrm{Corr}(u_i, v_i)$ by ρ. Then omission of the (generalised) residual $\mathrm{E}(u_i|c_i, S_{it} = 1)$ from the equation of interest leads to a biased estimate for γ. It is easy to show that the generalised residual decreases in c_i; therefore, the bias is downward for $\rho > 0$ and $\alpha > 0$.

[6] This is in line with findings by Gang and Zimmermann (2000), who demonstrate that education is significantly lower for female than male second generation immigrants in Germany.

References

Angrist J, Evans WN (1998) Children and their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size. *American Economic Review* 88:450–477

Iacovou M (1996) Fertility and Female Labour Force Participation. Mimeo, University College London

Borjas GJ, Bratsberg B (1996): Who Leaves? The Outmigration of the Foreign-Born. *Review of Economics and Statistics*:165–176

Co CY, Gang IM, Yun MS (2000) Returns to Returning. *Journal of Population Economics* 13:57–80

Djajic S (2000) Immigrant Parents and Children: An Analysis of Decisions Related to Return Migration. mimeo, The Graduate Institute of International Studies, Geneva, Switzerland

Djajic S, Milbourne R (1988) A General Equilibrium Model of Guest-Worker Migration: The Source-Country Perspective. *Journal of International Economics* 25(3/4):335–351

Drapier C, Hubert J, Rapoport H (2001) On the Law of Return in rural-urban interactions: An economic rationale for solidarity with return migrants. mimeo, Bar Ilan University, Israel

Dustmann C (1996) Return Migration - The European Experience. *Economic Policy* 22:214–250

Dustmann C (1997) Return Migration, Savings and Uncertainty. *Journal of Development Economics* 52:295–316

Dustmann C (2000) Temporary Migration and Economic Assimilation. Swedish Economic Policy Review 7:213–244

Dustmann C (2001) Return Decisions of Immigrants. In: Djajic S (ed) *International Migration*: *Trends*, *Policy and Economic Impact*. Chapt. 11. Routledge

Dustmann C, Kirchkamp O (2002) The Optimal Migration Duration and Activity Choice after Re-Migration. *Journal of Development Economics* 67:351–372

Fertig M, Schmidt CM (2001) First- and Second-Generation Migrants in Germany - What Do We Know and What Do People Think. IZA discussion paper No 286

Gang IN, Zimmermann KF (2000) Is Child like Parent? Educational Attainment and Ethnic Origin. *Journal of Human Resources* 35:550–569

Mesnard A (2000) Temporary Migration and Capital Market Imperfections. mimeo, University of Toulouse

Ridder G (1984) The Distribution of single-spell duration data. In: Neumann GR, Westergård-Nielsen N (ed) *Studies in Labor Market Analysis*. Springer, Berlin Heidelberg New York