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ABSTRACT

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In most destination countries, immigration policies are increasingly tilted toward the most skilled individuals. Whether this shift hurts economic prospects in sending countries, as argued by the traditional brain drain literature, is somewhat controversial. The most recent literature has focused on the link between skilled out-migration and educational achievements. In this paper, we emphasize a different channel. It is often argued that skilled migrants raise economic welfare at home thanks to a relatively larger flow of remittances. Skilled migrants typically earn relatively more and, *ceteris paribus*, will therefore remit more. However, they are also likely to spend a longer span of time abroad and also are more likely to reunite with their close family in the host country. Both factors should be associated with a relatively *smaller* flow of remittances from skilled migrants. Hence, the sign of the impact of the brain drain on total remittances is an empirical question. We first develop a simple model showing that skilled migrants may have indeed a lower propensity to remit home out of a given flow of earnings abroad. We then derive an empirical equation of remittances and estimate it on a large panel of developing countries. As a measure of the brain drain, we use the dataset by Docquier and Marfouk (2004) that in turn builds on the pioneering work of Carrington and Detragiache (2004). We find considerable evidence that the brain drain is associated with a smaller flow of remittances.

JEL Classification: F02, F22

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1. Introduction

Immigration policies in receiving countries is increasingly tilted in favour of skilled migrants (Beine et al. 2003, OECD, 2003). This trend has raised considerable concern among policy makers in developing countries, afraid of having to bear the cost of education of skilled migrants and of losing their most entrepreneurial and talented workers. Anecdotal evidence is startling. According to Stalker (1994), Jamaica had to train five doctors to retain just one, Grenada 22. Central America and the Caribbean countries are particularly affected by the brain drain, presumably because of their proximity to the US. African countries have also suffered from a massive emigration of their skilled workers, with 30% of the best educated manpower working abroad, chiefly in the EU.

The brain drain is not, however, an unmitigated curse, at least in theory. The possibility for educated migrants to move abroad should raise the returns to education and, in the end, may even lead to an increase in the numbers of educated workers that stay at home (Bhagwati and Hamada, 1976; Bhagwati, 1974; Mountford, 1997; Stark et al. 1997, 1998). Moreover, skilled migrants will typically earn more and may therefore remit more (Ratha, 2003), relieving the foreign exchange constraint at home and hence fostering growth. Yet, even the impact of remittances on home country growth is open to question. Much of the most descriptive literature on remittances argue that they are used "unproductively", citing micro evidence that too often remittance income is wasted on conspicuous expenditures[1]. More elaborate models conclude that higher remittances may exacerbate moral hazard problems on the recipient' side and discourage work effort. Growth may fall as a result. Building on this argument, Chami et al. (2003) argue that remittances are not an effective source of capital for development.

In this paper we take a fresh look at the first issue, namely whether the brain drain is associated with a larger flow of remittances. We find that the conventional wisdom is, as it often happens, wrong. There is no evidence that skilled workers remit more. This is not so simply because they come from relatively wealthy families. Rather, it also reflects the fact that skilled migrants are relatively more likely to spend a longer time span abroad, thereby weakening their ties with the home country. Overall, we conclude that the growing bias in receiving countries toward skilled migration is likely to penalize the flow of remittances back to sending countries.

[1] See however Adams (1991, 1998) for a contrarian view.

2. The behaviour of skilled migrants: some descriptive evidence

The impact of the emigration of the highly skilled on the economic prospects of origin countries is highly controversial. The early literature (Bhagwati, 1976) tended to concluded that the brain drain was detrimental to sending countries. Even when skilled workers happened to be unemployed at home, their social marginal productivity was not necessarily nil, as they could have moved inland in the countryside, where they would have been employed productively. More crucially, the costs of education are borne by the home country tax payers. The more recent literature is however more nuanced as to the effects of the brain drain. Mountford (1997), Stark et al. (1997, 1998), and Beine et al. (2001, 2003) argue that the possibility of migrating abroad raises the returns to education and may therefore boost the investment in education. It could then well be that, ex post, even after some of the educated workers have moved abroad, the home country share of educated people rises rather than falling.

A different line of argument emphasises the role of remittances. According to Ratha (2003), "the negative effects of brain drain are offset to some extent by inward remittances from migration workers". There is indeed some (limited) evidence that remittances tend to increase with the level of skills (Johnson and Whitelaw, 1974; Rempel and Lobfell, 1978). Presumably, skilled migrants earn relatively more and therefore are, ceteris paribus, likely to remit more. However, there are many unresolved issues with this strand of literature. First, the evidence is not univocal, with for instance Rodriguez and Horton (1994) showing in the case of the Philippines that the educational level of migrants has no impact on the amount of remittances. Second, skilled workers may come from more educated and wealthy families and have therefore less of an incentive to remit. Finally, they may spend a longer period of time abroad[2], either because they are more willing to reunify with their families in the host country or face lesser constraints in doing so. Indeed, a typical finding in the literature is that the flow of remittances tends to decline with the length of the migrants' stay (Lucas and Stark, 1985). Therefore, even a positive coefficient of education on remittances cannot be taken as evidence that the brain drain is associated with a larger flow of remittances. The direct effect of skills may indeed be positive, but the overall effect, that controls for the longer propensity to stay abroad of skilled migrants, may well be negative.

[2] More direct evidence on the positive relationship between education and duration of stay comes from Reagan and Olsen (2000) for the US. Similarly, the intended duration of stay is found to rise with education in Germany (Steiner and Villing, 1994). Knerr (1994) also finds that for Pakistan skilled migrants tend to stay longer abroad than unskilled workers.

There is indeed substantive evidence that skilled migrants tend to stay longer in the host country. Borjas and Brastberg (1996) show that, under fairly general conditions, return migration will tend to amplify the initial selection bias. Hence, if migrants were initially relatively skilled, then the least skilled will be more likely to return to their home country. Intuitively, if the initial selection bias is positive with the more skilled also more prone to migrate, then the least skilled will be the marginal migrants and will be more likely therefore to reconsider their initial decision.. Solimano (2002) reports that, at least in science and engineering (S&E), a large fraction of Ph.d. graduates from developing countries tends to remain in the US after graduating. National Science Foundation data show that, four years after graduation, 88 and 79 percent of respectively China's and India's graduates in S&E are still working in the United States. More comprehensive evidence comes from Lindstrom and Massey (1994) for Mexican migrants, Reagan and Olsen (2000) for the US, Bauer and Gang (1998) for Egypt, Steiner and Velling (1994) and Schmidt (1994) for Germany. Rodriguez and. Horton (1994) show that, in the case of the Philippines, returnees are somewhat less educated than those still abroad. Finally, Borjas (1989) shows that the least successful foreign scientists are more likely to return home from the US.

In what follows, we provide further evidence on this set of issues for the European case. We rely on the European Community Household Panel (ECHP) that collects data on European households from 1994 to 2001. We focus on foreign born individuals with a view to assessing whether skilled migrants are more likely to reunite with their close family members and less likely to return home. In figure 1, we show the percentage of households where spouses are reunited and live in the same dwelling. We see that for Europe as a whole and for all periods low individuals are less likely to be reunited with their spouse.

The ECHP is a closed panel and cannot be easily used therefore to study return migration. However, some useful insights come from an analysis of the pattern of attrition. Clearly, other factors in addition to the migrants' choice to return home may affect attrition. We assume therefore that attrition is due either to the unwillingness of respondents to be interviewed again or to their choice to move to a different location, possibly to their home country. Accordingly, we include among the regressors the number of visits for the interview (under the plausible assumption that individuals are more likely to drop out of the panel when interviews are very time consuming) and a set of time dependent dummies for the immigrant's region of origin, with the view to picking up the effect that changing conditions in the home country may have on the return decision of migrants. We estimate a simple equation where the probability for an immigrant of remaining (i.e. not dropping out) from

the panel is a function of his/her individual and household characteristics. Finally, we estimate two separate equations for immigrants from other EU countries and for non EU immigrants. The key finding (table 1) is that more educated immigrants from non EU countries are less likely to drop out from the panel, even after controlling for age, gender, employment status, and their length of stay in the host country. The effect is statistically significant for immigrants from non EU countries. Whether this finding indicates that educated immigrants are more willing to be interviewed again or less likely to move elsewhere is difficult to determine. What can be said however is that this effect is quantitatively much stronger for immigrants than for natives, for whom home return is not an option.

3. Remittances and the brain drain: a simple model

The evidence in the previous section provides considerable support to the notion that skilled migrants tend to stay longer in the host country, and are more likely to reunite with their close family members. We illustrate the implications of these findings for remittances with the help of a simple model.

We assume that the household is made of two different groups, one very close and the other less close to the migrant. Moreover, only "close" family members are assumed to reunite with the migrant in the host country. The size of each group is normalized to 1. Hence, in what follows, f_R (with $0 \leq f_R \leq 1$) is both the percentage and the number of close family's members that live with the migrant abroad. Let also C_D, C_H, and C_R denote the consumption respectively of "distant" family members (D), of those "close" family members that stay at home (H), and of those "close" family members that have reunited with the migrant (R). Finally, we assume that the utility of an (altruistic) migrant can be represented as follows:

$$U = U(C_M, f_R) + f_R\, V^C(C_R) + (1-f_R)\, V^C(C_H) + V^D(C_D) \qquad (1)$$

where C_M is the migrant's own consumption. Migrants therefore derive utility from their own consumption (C_M), the consumption of their non migrating close relatives $[(1-f_R)\, V^C(C_H)]$, of those who reside abroad together with them $[f_R\, V^C(C_R)]$ and of their more distant relatives $[V^D(C_D)]$. We make two key assumptions. First, migrants also enjoy the proximity of their close family: their

utility therefore is increasing in f_R, i.e. $U_f > 0$. Second, for a given C, both the level and the marginal value of the migrant's utility are relatively larger for the "close" family members, i.e.

$$V^C(C) > V^D(C) \text{ and } V'^C(C) > V'^D(C) \quad (2)$$

There are four budget constraints, one for the migrant:

$$C_M = w - (f_R R_R + (1-f_R) R_H + R_D) - \theta f_R \quad (3)$$

and one for each of the household groups:

$$C_i = Y_i + R_i \qquad i = R, H, D \quad (4)$$

In equation 3, w denotes the migrant's wage, R_i remittances to group i, and θ the cost for the migrant of bringing his relatives to the host country. Migrant's consumption is then equal to his wage minus the sum of remittances and reunification costs. In equation 4, household members have two sources of revenue, namely their own income (Y_i) and remittances (R_i).

The first order condition with respect to remittances to, say, non migrating close household members (R_H) can be written as:

$$-(1-f_R) U_C(C_M,f_R) + (1-f_R) V'^C(Y_H+R_H) = 0 \rightarrow U_C(C_M,f_R) = V'^C(Y_H+R_H) \quad (5)$$

After deriving analogous conditions for R_R and for R_D we find that:

$$U_C(C_M,f_R) = V'^C(Y_H+R_H) = V'^C(Y_R+R_R) = V'^D(Y_D+R_D) \quad (6)$$

which because of (2) implies:

$$(Y_H+R_H) = (Y_R+R_R) > (Y_D+R_D) \quad (7)$$

Then, unless Y_D is significantly smaller than Y_H (a somewhat implausible case, given that Y_H will typically fall following the migration of one of his close members), we have that remittances to

close non migrating household members (R_H) will be larger than those to distant family members (R_D).

Given (6), the first order condition with respect to f_R reads simply as:

$$-U_C\,\theta + U_f = 0 \rightarrow U_f / U_C = \theta \qquad (8)$$

which states that the marginal rate of substitution between f_R and C_M must be equal to its cost. This condition will play, as we shall see below, a key role in our results.

We are now ready to examine the impact of a higher skill content of migration. More skilled migrants will typically earn a higher wage abroad. From equations 1 and 3 we can easily see that an increase in w will, for a given flow of remittances and an unchanged value of f_R, lead to a rise in the migrant's own consumption (C_M) and, as a result, to a fall in the marginal utility of C_M. Hence, U_f / Uc will be greater than θ. For a new equilibrium to obtain, the degree of family reunification will also have to rise, so as to bring U_f / Uc back in line with θ. As claimed, (high wage) skilled migrants will be therefore more likely to reunite with their family.

What about remittances? Given (6), in the new equilibrium both V'^C and V'^D will need to fall and, as a result, for a given set of Y_i's, remittances to all groups (H, R and D) will increase[3]. However, the fact that both R_H and R_D will increase does dot necessarily imply that the total flow of "actual" remittances[4] will increase. There will be indeed two effects. First, as just noticed, the amount of per capita remittances will rise both for non migrating "close" and "distant" family members (the "wage" effect). Second, a larger share of "close" family members will reunite with the migrant. The composition of non migrating members will therefore shift toward the low remittance group. i.e. the distant family members (the "reunification" effect[5]). If the latter effect is stronger than the wage effect, per capita remittances to non migrating household members will decline. The model does not provide an unambiguous answer in this respect. Only empirical analysis can resolve such ambiguity.

[3] More formally, R_i and f_R will increase following a rise in w if they are both normal goods, i.e. if $U_{ik} - U_{kk}\,U_i / U_k > 0$.
[4] In what follows we focus on "actual" remittances, namely the amount of transfers to non migrating household members (R_H and R_D). Indeed, R_R (the remittances to those "close" family members that have already reunited with the migrant) is simply an intra household transfer and does not generate any foreign exchange inflow for the home country.
[5] Reunification may well be dictated by immigration laws in the host country. Yet, reunification procedures are typically quite generous in most destination countries. Moreover, migrants have considerable leeway in selecting which close family members to bring to the host country. Migrants may also select the host country based on the latter's provisions for family reunification. Overall, therefore, reunification is likely to be largely endogenous.

Finally, we can also examine the impact of higher income at home. If Y_i rises, the marginal utility of remittances to group i will fall. Remittances will therefore decline.

4. Remittances and the brain drain: econometric evidence

Empirical analysis of the brain drain has been hampered by the lack of comprehensive and comparable data. Thanks however to the pioneering work of Carrington and Detragiache (1998) and the contribution of Docquier and Marfouk (2004), this gap is now being filled. Carrington and Detragiache (1998) rely on the 1990 US census to estimate the number of skilled migrants to the US from a large set of sending countries. Unfortunately, for non US destinations, they only have information on the total number of migrants. They address this shortcoming by assuming that migrants to non US OECD destinations have the same skill composition as migrants to the US. Obviously, their origin country data on the brain drain are a valid approximation only for those countries that send most of their migrants to the US. Docquier and Marfouk (2004) overcome this limitation by relying on national sources for destinations other than the US to estimate the skill composition of migrants[6]. Finally, both Carrington and Detragiache (1998) and Docquier and Marfouk (2004) relate the total figure of skilled migrants to the Barro Lee data set on educational achievements to derive a measure of migration rates for skilled workers.

In what follows, we rely on the Docquier and Marfouk (2004) data set to investigate the relationship between remittances and skilled migration. Our estimating equation is inspired by the model in section 3[7]. We distinguish two groups of migrants, skilled and unskilled. We denote remittance of skilled and unskilled workers by R_S and R_U respectively. Total remittances are therefore identically equal to:

$$R = m_S R_S + m_U R_U \qquad (9)$$

where m_i denotes the number of migrants in group i. To implement the model in section 3, we would need detailed information on the degree of family reunification and the numbers of close versus distant relatives. While we have no such data, we can nonetheless derive an estimating equation. What the model suggests is that for either skilled or unskilled migrants remittances are a

[6] Docquier and Marfouk (2004) also extend the Carrington and Detragiache dataset to 2000.
[7] Our results differ from those in Faini (2002) for two main reasons. First, we use a different and broader data set. Second, the estimating equation is more closely related to theory.

function of the migrant's wage and the income of his family members. We can therefore write the following behavioural equation:

$$R_i = \alpha_i w_i - \beta_i y_i \quad i=S,U \tag{10}$$

where w_i and y_i denote respectively the wage level of migrant i and the per capita income of his household members. We know that, with altruism, remittances should be a declining function of y_i (the income of those left behind). Hence, we expect. $\beta_i > 0$ for i=S;U, where β_i measures the degree of altruism. The impact of w_i is instead ambiguous. If the reunification effects is stronger than the wage effect, it could well be that α_i is less than zero, with higher wages leading to less rather than more remittances. We are mainly interested in a milder form of this paradox, namely the possibility that high wage skilled migrants remit relatively less than unskilled workers. This will be true if $\alpha_S w_S < \alpha_U w_U$. Finally, we assume, based on common sense and human capital theory, that skilled migrants earn more than unskilled workers, i.e. that $w_S > w_U$. Hence, for our paradox to hold (i.e. for $\alpha_S w_S < \alpha_U w_U$), we need that α_S to be sufficiently smaller than α_U, an hypothesis fully consistent with our model. Given that we have no strong a priori on the functional form of eq. 10, in what follows therefore we first postulate a linear relationship and then experiment also with a log linear functional form.

We face an additional hurdle, given that we have no separate information on the wage level of skilled and unskilled migrants (w_i) and the income of their household members (y_i). We can nonetheless substitute equation 10 for i=S,U in equation 9 and estimate an aggregate equation. After some simple algebra we find that:

$$R/P = \alpha_U w_U M/P + (\alpha_S w_S - \alpha_U w_U)\, m_S/P - \beta_U\, (1-p_S y_S/Y)\, m_U/p_U\, Y/P - \beta_S\, p_S y_S/Y\, m_S/p_S\, Y/P \tag{11}$$

where M (= $m_S + m_U$) is total migration, P (= $p_S + p_U$) denotes total population, and Y (= $p_S y_S + p_U y_U$) represent total income in the home country. Equation (11) can be estimated by regressing per capita remittances (R/P), on the total stock of migrant abroad relatively to population (M/P)[8], the ratio of skilled migrants to the home country population (m_S/P), and income per capita times the migration rate of unskilled and skilled workers ($m_U/p_U\, Y/P$ and $m_S/p_S\, Y/P$). The major shortcoming of this approach is the need to assume that the unobservable distributional parameter, $p_S y_S/Y$, is the same across countries.

[8] Notice that M/P does not indicate real money supply but the total migration rate.

Our data sources are as follows. Remittance data come from the IMF. They include workers remittances, compensation of employees, and capital transfers. Population and income data come from the World Bank. All other data are from Docquier and Marfouk (2004). We have data for 1990 and 2000 for both the level and the composition of migration. Remittance data are averaged over 1990-91 and 2000-01.

We first estimate eq. 11 for each period separately. We then pool the data, after testing that the relevant coefficients are constant across time and, accordingly, that pooling is appropriate. In the pooled equation, we control for possible time effects by adding a dummy variable that takes the value of 1 in the year 2000. We expect the coefficient on the stock of migrants to be higher in 2000, given that wages are likely to have increased between 1990 and 2000. Hence, we experiment with an alternative specifications that interacts the time dummy with the migration stock variable. The pooled estimates are presented in column 1 of table 2[9]. The pooling restriction is not rejected by the data at the 5% significance level, with $F(4, 178) = 0.94$.

Generally speaking, the coefficients have the expected sign. Most of them are significantly different from zero at standard statistical levels. The main findings can be summarized as follows. First, total migration carries a positive sign, as expected. Ceteris paribus, therefore, an increase in the M/P, the stock of migrant relative to the home country population, will be associated with a larger flow of remittances, Second, the coefficient of m_S/P is negative, but not significantly different from zero. This coefficient is key for our analysis. We have seen that $(\alpha_S w_S - \alpha_U w_U)$ could be of either sign depending whether the wage effect is stronger or weaker than the reunification effect. A negative sign indicates that $\alpha_S w_S < \alpha_U w_U$, i.e. that the reunification effect is stronger than the wage effect. Finally, our estimates also suggest that $\beta_U > 0$ and that $\beta_S < 0$. Apparently, the degree of altruism, as measured by the coefficient β_i, is positive for unskilled workers, but negative in the case of skilled workers. In column 2 we allow for the fact that many of our observations are censored at R=0. The results are basically unchanged with respect to column 1 and stay so even if we restrict our sample to those observation with R>0 (column 3).

In column 4, we introduce some curvature in the relationship between remittances and home income. As noticed earlier, we have no strong a priori about the functional form of eq. 10 and feel therefore worthwhile to experiment with alternative functional specifications. We find again that

[9] The estimates for each period separately are available from the author. Also, we only report the specification with the time dummy interacted with the migration stock variable.

remittances are positively affected by a larger stock of migrants and that the population share of skilled migrants carries a negative, albeit statistically insignificant, coefficient. Interestingly enough, the degree of altruism of both skilled and workers is now found to be positive. Note that, if we are willing to assume that $\beta_U = \beta_S$, namely an equal degree of altruism between skilled and unskilled migrants, we can easily compute the distributional parameter. We find that $p_S y_S/Y = 0.24$, a somewhat large but not unreasonable value.

We also control for the possibility that the total migration rate is endogenous. We re-estimate the equation with an instrumental variable procedure, using the (log of) distance between the home and the host country[10] as an instrument. Distance is typically a major determinant of migration; at the same time, it should not affect a a financial flow such as remittances. Hence, it should be quite an adequate instrument. The R^2 of the first stage regression is 0.96 and the F statistics is 685.8. Distance is a significant determinant of migration, suggesting that it contains a lot of additional and hopefully exogenous information. In the second stage regression (reported in column 5 of table 2), all previous results carry through and, if anything, are even stronger both in terms of coefficients size and statistical significance.

We can now assess the impact of a shift in the composition of migration toward skilled workers, keeping both the stock of migrants, per capita income of those left behind, and the migrants' wages constant. From eq. 11, we see that:

$$\partial(R/P)/\partial(m_S/p_S) = (\alpha_S w_S - \alpha_U w_U)\, p_S/P - \beta_S\, [p_S y_S/Y]\, Y/P + \beta_U\, [p_U y_U/Y]\, p_S/p_U\, Y/P \qquad (12)$$

The effect of an increase in m_S/p_S (and of a proportionate decline in m_U/p_U) will vary among countries as a function of the skill composition of population (p_S/P and p_S/p_U) and income per capita (Y/P) Table 3 shows the total effect for a selected set of countries. The impact on remittances of a shift toward skilled migrants is always negative. Equally crucially, it turns to be quite large for a number of countries, such as Jamaica (-4.8%), El Salvador (-3.2%), Lesotho (-2.9) and Morocco (-1.5%). The impact is particularly strong for the Caribbeans and the Central American countries, but quite significant also for countries in other regions. On average, a rise of 10% in the share of skilled migrant is associated with a fall of 1% in the GDP share of remittances, a substantial impact[11].

[10] We take a weighted average of income per capita in the EU and in the US, with weights reflecting the relative importance of these two destinations.
[11] The results are only little changed if we set the coefficient on p_S/P equal to zero.

6. Conclusions

It is often argued that the negative impact of the brain drain may be mitigated by its favourable effect on remittances. We have shown in this paper that this is not generally true. The brain drain seems to be associated with a lower rather than a larger flow of remittances. This is both because skilled migrants are more likely to come from relatively wealthy families and because their propensity to remit is relatively lower, presumably reflecting the fact that they are keener (and more able) to bring their most close relatives in the host country.

The findings of this paper will need to be confirmed by further research, especially at the household level. Anyway, they show that skilled migration is unlikely to boost and may actually depress the flow of remittances to the source country. Whether in turn the negative impact on remittances of the brain drain also affects growth is another key, and yet relatively unexplored, area of research[12].

[12] See however Chami et al. (2003) and Faini (2002) for some (conflicting) evidence on the link between growth and remittances. See also Rajan and Subramanian (2005a,b) for an insightful discussion of the different growth impact of aid and remittances.

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Figure 1

Family reunification

(percentage of households where spouses are reunited)

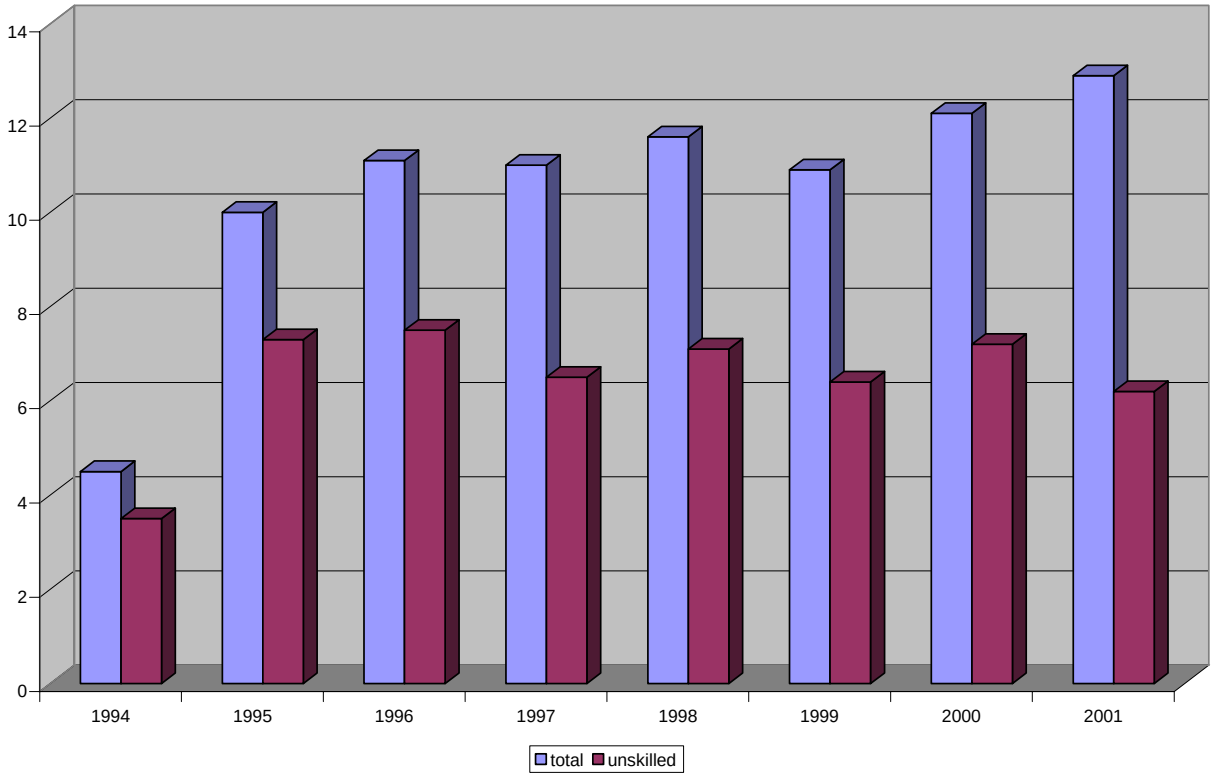

Table 1

The pattern of attrition in the ECHP sample

Dep. Var. Prob (D_i =1)						
	Natives		EU immigrants		Non EU immigrants	
Household size	0.012	***	0.019		0.025	*
Age	-0.010	***	-0.012	***	-0.008	***
Highest ed.	0.034	***	0.063		0.120	*
Intermediate ed.	0.005		0.032		0.104	*
Gender	0.062	***	0.099	*	0.168	***
Employment	0.108	***	0.007		0.145	***
Spouse	0.282	***	0.249	***	0.241	***
Visits	-0.043	***	-0.055	***	-0.022	*
Minutes	0.000		0.002		-0.002	
Immigrant						
Immigrant EU						
Immigrant non EU						
Length <5			0.416	***	0.538	***
Length 6-15			0.447	***	0.567	***
Length 16-25			0.689	***	0.846	***
Constant	Yes		Yes		Yes	
Country dummies	Yes		Yes		Yes	
Time*Origin	Yes		Yes		Yes	
Time dummies	Yes		Yes		Yes	
Nob	345830		6041		7823	
Nob _cens	40786		870		1208	

Legend: *p<0.05, **p<0.01, ***p<0.001

D_i=1 if the respondent does not drop out from the panel

Visits: number of visits to complete the interview at time t-1

Minutes: length of the interview at t-1

Length: immigrant's length of stay in the host country

Table 2

Remittances and the skill composition of migration

	(1)	(2)	(3)	(4)	(5)
	R/P	R/P	R/P	ln (R/P)	ln (R/P)
M/P	3.7 (2.2)	4.3 (2.4)	3.8 (2.3)	0.36 (8.20)	0.47 (3.0)
m_S/P	-1.96 (0.22)	-0.9 (0.1)	-1.7 (0.2)	-0.09 (1.1)	-0.21 (1.42)
m_U/p_U Y/P	0.15 (2.62)	0.17 (2.8)	0.13 (2.1)	--	--
m_S/p_S Y/P	-0.017 (3.5)	-0.025 (3.7)	-0.014(1.5)	--	--
m_U/p_U ln(Y/P)	--	--	--	-2.49 (4.2)	-4.24 (1.93)
m_S/p_S ln(Y/P)	--	--	--	-0.77 (6.3)	-0.87 (3.7)
t M/P	1.2 (0.8)	1.1 (0.7)	3.6 (0.4)	0.02 (1.19)	0.07 (1.62)
R^2	0.63	0.62	0.63	0.45	0.42
NOB	188	188	134	134	134

Legends

R: total remittances, M: migration stock, P: home country's population, m_S (m_U) : skilled (unskilled) migrants, p_S (p_U): home country's skilled (unskilled) population, Y: GDP, t: time effect.

Table 3

The impact of a 10% increase in skilled migration on the GDP share of remittances

Caribbean		SubSaharan Africa	
Antigua	-1.38	Cote d'Ivoire	-0.26
Barbados	-0.89	Guinea Bissau	-0.14
Dominica	-1.45	Lesotho	-2.86
Grenada	-1.41	Mali	-0.47
Jamaica	-4.77	Mauritania	-0.04
		Mozambique	-0.17
South America		Nigeria	-0.65
		Sudan	-0.63
Colombia	-0.36	Swaziland	-1.02
Ecuador	-1.67	Tanzania	-0.03
Paraguay	-0.59	Uganda	-0.61
Peru	-0.29		
Venezuela	-0.06	Asia	
		Bangladesh	-0.55
Central America		Malaysia	-0.11
		Mongolia	-0.24
Belize	-0.86	Nepal	-0.23
El Salvador	-3.18	Philippines	-1.00
Guatemala	-0.73		
Honduras	-1.49	Western Asia	
Mexico	-0.62		
		Georgia	-0.96
Northern Africa		Turkey	-0.53
		Ukraine	-0.03
Egypt	-0.72		
Morocco	-1.53		
Tunisia	-0.92		

Source: own calculations based on column 4 of Table 1