Low- and High-Skill Migration Flows: Free Mobility versus other Determinants

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Abstract

We investigate what economic factors drive international migration of workers to France and how their influence varies across different skill levels under restrictive policies and through time as free mobility is implemented. We find that neither incentive nor policy parameters are similar across skill levels. Migration drivers such as a network of compatriots and relative incomes influence the movement of low-skill workers. High-skill individuals however move only according to financial opportunities be they standard of living or returns to skill within a class. We conclude that competition for high-skill workers among OECD countries requires more than free mobility to attract successfully high-skill migrants even for a developed country such as France.

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1. Introduction

In this paper, we investigate what economic factors drive international migration of workers to France and how their influence varies across different skill levels. We also analyze whether free mobility affects the skill mix of work-related migration flows, and whether a selective relaxation of constraints on migration of high skill workers is effective.

Concerns about the effect of globalization on movements of people has recently fed worries in many Western governments about what appears to be growing pressures from large flows of low-skill people and increased difficulties in attracting high-skill individuals. Most high-income countries, among which France, have reacted by relaxing barriers to high-skill migration and simultaneously tightening rules of entry for low-skill migration. Yet these policies are largely ad hoc and do not result from a careful analysis of international skill-specific movements of people. In fact, very little is known about workers' incentives to move when they have different levels of skill.[1] To draft efficient skill-specific policies, it is thus important to understand better at the empirical level what drives international workers' movements.

Theoretical studies of migration drivers are numerous (see for example Massey et al., 1993, for a survey). Factors that have been shown to affect incentives to migrate significantly at the aggregate level are financial returns represented by relative incomes, relative inequalities and cost of migration (see Borjas, 1987, 1990, Helliwell, 1997, Hatton and Williamson, 2002). Cultural networks have been subject to special scrutiny in the migration context as they are seen as alleviating migration psychological costs (Bartel, 1989, Zimmermann, 1996) or improving employment and/or wage opportunities for newcomers (Gross and Schmitt, 2003). Aside from

[1] The international economics literature has addressed indirectly related issues such as the possible substitution or complementarity between trade and migration flows (see Harris and Schmitt, 2003, for a survey) or FDI and migration flows (Kugler and Rapoport, 2007). A simple model of two-way migration by skill levels is presented by Schmitt and Soubeyran (2006).

the literature on brain drain and brain circulation which tend to focus on the impact on source countries (see for example, Commander et al., 2004; Beine et al, 2001, Stark et al., 1997) few studies exist on international migration for different skill levels and some focus on the highly skilled only. For example, geography-based studies look at the movements of highly skilled mostly from the viewpoint of the international division of labor (see Koser and Salt, 1997 for a survey). The literature on self-selection of immigrants studies the highly skilled in international and internal migration (for example, Hunt and Mueller, 2004, Borjas et. al, 1992, Newbold, 1996). Two recent exceptions are Docquier et al. (2006), which looks at the determinants of concentration of skilled and unskilled migrants in OECD countries and Peri (2008), at the attractiveness of the European Union for skilled and unskilled.

Most empirical studies of migration, however, are based on observations of the immigrant stock in the receiving country, thereby focusing more on the overall magnitude of the phenomenon or cohort effects than on time-related variations in migration. A few studies focus on the determinants of overall migration flows: Clark et al. (2002), Hatton and Williamson (2002) and, Karemera et al. (2000) for flows to the US and Canada; Gross and Schmitt (2003) and Mayda (2005) for flows to OECD countries. The reason for the lack of studies is the general scarcity of data on skill-specific international flows of migrants. When flow observations exist, they often do not reflect immigrant experience. Skill selection in traditional immigration countries is often an administrative procedure which does not necessarily consider labor market constraints. For example, the Canadian point system ensures that about half of new immigrants annually have a high level of education or skills. Yet there is mounting evidence that a large proportion of immigrants who come under the point system end up in unskilled jobs because of various barriers to entry on the Canadian labor market (see for example Reitz, 2000). Thus, the case of France presents several distinct advantages. First, inflow data are recorded according to

three skill-related occupation categories; second, immigrant workers are registered independently from other types of migrants (family reunion, refugees, etc.) and they must have a job which most likely ensures their occupation matches their training.[2] Third, the implementation of free mobility within the EU is an interesting natural experiment as France has a dual immigration policy system: i.e., free-mobility with EU-member countries and constraining policy with the rest of the world. For all these reasons, it is interesting to evaluate the impact of the main migration drivers including time-shifting policies on *skill-differentiated flows*.

To better understand what drives workers with various types of skills we expand the immigration flow model developed in Gross and Schmitt (2003) in three directions. First, we develop the relationship between cultural networks and skill levels; second, we allow for relative income distribution to generate skill-specific selection bias which affects the magnitude of the flows; and third, we allow for an asymmetric impact of free mobility across skill classes.

The study covers 3 categories of immigrants, low-, intermediate and high-skill workers from 63 source countries to France from 1983 to 2000. We show that most standard migration drivers found in the literature to affect total migration also drive low- and intermediate-skill flows and cultural network is a powerful contributor to the dynamics. High-skill workers, however, are mostly influenced by financial perspectives at destination especially higher returns to skill. Finally immigration policies are effective in general, yet and perhaps surprisingly, free mobility has only a very limited influence on incentives to move beyond the initial impact effect. Hence, two major conclusions emerge from this study: First, market-related incentives are vastly different at both ends of the skill spectrum and for high-skill workers, destination countries compete mostly on the basis of financial attractiveness. Second, free mobility hardly changes the

[2] The credential recognition by employers whether objective or subjective may thus be an issue to take into account insofar as it favors immigrants from some source countries.

roles of migration drivers especially for the high-skill people and attracting them requires more than simply relaxing immigration constraints for a country like France.

The paper is organized as follows. Section 2 develops a brief theoretical framework and Section 3 provides some background information on French immigration policy and on the composition of immigration flows from the early 1980s to 2000. Section 4 reviews the empirical implementation and the main results. Section 5 offers some concluding remarks.

2. Theoretical framework

Observed migration flows are the result of individuals' decisions to move to a new country and of policy constraints imposed by receiving countries. Models of migration flows typically capture these forces within a push and pull framework for the individual migrant (for example, Clark et. al, 2002 and Hatton and Williamson, 2002). Although migrant's incentives might be influenced by the existence of several factors in the host countries, we focus here on labor market incentives. Our starting point is that individual incentives are skill-specific and that freer international mobility is likely to affect these incentives differently. What we mean by skills here is dictated by the data which are job classifications corresponding to different education attainment. Thus, while factors influencing migration decisions may be the same across skill levels, elasticities or even signs may differ. In this paper, we emphasize two factors: cultural clustering in the host country and relative wage distributions per class of skills in the origin and destination countries. Below, we briefly develop a framework encompassing both factors that is consistent with the data used in this paper.

Consider an individual belonging to skill class s_i who is contemplating migrating to country d. The gross gain from migrating is $w^d(s_i)$-$w^o(s_i)$, where w^o (w^d) is the wage in the country of origin (destination). If the costs of migrating are denoted by $C(s_i)$, the probability of

migrating for an individual belonging to class of skill i can be written as $q_i=q_i[w^d(s_i)-w^o(s_i),C(s_i)]$. This probability depends positively on the difference between the wage in the countries of destination and origin, and negatively on the cost of migrating. In turn, these wages largely depend on the wage distribution in these two countries (Borjas, 1987), as well as on possible wage premia that migrants with specific skills might enjoy. The fact that wages may differ within a skill class may either come from differences in abilities (see for example, Gibbons and Katz, 1992), or from jobs that have different compensation across sectors and firms. Below, we use ability. We therefore assume that individual's wage in skill class s_i in the country of destination depends on the earnings distribution for this class of skills (i.e., the mean $\mu^d(s_i)$ and the variance $\phi^d(s_i)$) and on a wage premium associated with cultural clustering in the destination country ($sc^d(s_i)$),

$$w^d(s_i) = w^d[\mu^d(s_i), \phi^d(s_i), sc^d(s_i)]. \quad (1)$$

In the country of origin, earnings for the same class of skill depends only on the first two factors,

$$w^o(s_i) = w^o[\mu^o(s_i), \phi^o(s_i)]. \quad (2)$$

Hence, the decision to migrate to a country like France not only depends on the comparison of the average earnings in the origin and destination countries, but also on the variances within the migrant's skill class. In that we follow Clark et al. (2007) and Borjas (1987) where the relative dispersion in incomes at home and in the destination country can lead to a selection bias in the types of immigrants. However, in our case, the wage distribution is for a given class of skills rather than all individuals. Thus, suppose that, for skill class s_i and holding everything else the same, the variance in wages is low in the country of origin with respect to that for France. This means that high-ability workers in that class of skills must find France relatively attractive, while low-potential workers in the same class of skills must find France

relatively unattractive. The opposite exists when the variance in the country of origin is high compared to France's, leading to migrants' selection bias. A change in these wage distributions and the resulting effects on the flow of migrants inform us about the particular direction of the bias. For example, suppose that the variance in France's distribution of wages is not only larger but rises relatively to home. The change leads to a stronger bias in favor of high-ability workers (more high-ability workers and less low-potential workers are attracted to France), leading to a higher migrant's average ability within that class of skills.[3]

We now investigate the circumstances under which a premium associated with cultural clustering in the destination country exists and is skill-dependent. We are particularly interested by the links between this possible premium and the conditions under which cultural clustering plays a greater role for low-skilled migrants than it does for high-skilled ones. To do so we extend Gross and Schmitt (2003)'s model to classes of skills. Assume thus the existence of two labor markets in which a migrant can work: a labor sub-market that rests on migrants' specific cultural knowledge or language, and an anonymous but not-culturally-specific labor market. The wage in the destination country, $w^d(s_i)$,depends on skills and it can take two values: $w_a(s_i)$, the wage in the anonymous labor sub-market, or $w_e(s_i)$, the wage in the ethnic-specific labor sub-market. In the Appendix, we show two results. First, irrespective of the class of skills, the ethnic-specific labor market cannot be too large to sustain a wage premium. Second, a positive wage premium in the ethnic-specific labor sub-market is more difficult to sustain for high-skill classes than it is for low-skill classes when wages are increasing more with skill levels in the anonymous labor market than they do in the ethnic-specific labor market. This may be due for instance to high-skilled labor having more opportunities in the anonymous labor market than in the ethnic-specific market. The implication is that, up to an upper skill level $\bar{s}$, the relatively low-skill

[3] See Clark et al. (2007) for a characterization of the net rate of immigration when relative wage inequality changes with skills at the individual level.

migrants earn a positive premium, $sc(s_i)$, in the ethnic-specific labor market giving them an incentive to cluster in the destination country, while migrants with high skill ($s_i \geq \bar{s}$) do not.[4]

Of course migration costs matter too. Aside from the usual monetary costs of migration linked to distance, immigration policies which regulate entries of foreign workers influence the probability to migrate. Since France has free mobility within the European Union and a restrictive policy with other countries, we model the change from restricted to free mobility as a reduction in the cost of migrating. The introduction of free mobility has a direct positive effect on the flows of migrant. But, since wages increase with skills, freer mobility has naturally a stronger positive effect on the flows of low-skill migrants than on the flows of high-skill migrants if the cost of migrating is independent of skills (see Clark et al., 2002).

The above description relates to an individual's probability to migrate to a particular country and needs to be adapted to the more aggregate framework of migration inflows. The number of individuals belonging to a class of skill deciding to migrate from a county to a given destination is the product of individual probability and the size of the relevant population such that,

$$Mig(s_i) = q_i POP(s_i) = q_i[\mu^d, \mu^o, \phi^d(s_i)/\phi^o(s_i), sc^d(s_i), C(s_i)]POP(s_i). \quad (3)$$

We expect the sign associated with μ^d to be positive, with μ^o to be negative, with ϕ^d / ϕ^o to be ambiguous as it depends on the selection bias within a skill category, with $sc^d(s_i)$ to be positive for lower skill levels only, and with $C(s_i)$ to be negative but with different elasticities across skill

[4] Cutler et al. (2008) find that ethnic concentration has a positive impact on earnings; Anderson et al. (2009) find that recent immigrants benefit from networks by having higher employment rates and higher earnings when employed. Also, Edin et al. (2003) show that the benefits from the network vary with immigrants' characteristics and skills in particular. Their results show that the least skilled immigrants benefit the most from networks and "for immigrants with high school or more education, there is no evidence of an enclave effect" (p. 348). It is less easy to find direct evidence about the second theoretical result. However, since our empirical test of the clustering hypothesis is independent of the wage premium, the empirical analysis depends on only one of these two results.

classes. We now turn to the description of French immigration policy and the evolution of the flows.

3. Immigration to France, policy and facts

Like in many European countries, France's legal immigration is made of two linked components: foreign workers followed by family reunion. New permanent immigrant workers enter the French labor market under two distinct categories: First, they may be recruited directly from abroad in which case employers filing requests for visas must prove that no national can fill the positions; second, foreigners who reside legally in France with a job contract but no work permit can file a request to obtain such permits. The initial permanent work permit is for a minimum period of one year, renewable for successive 10-year periods.

There are however some exceptions to the above work permit regulation. From 1947 until 1986, citizens from Algeria were considered "nationals" in France and enjoyed complete freedom of movements between the two countries. Also, some aspects of immigration are defined at the European Union (EU) level and one of the corner stones of the Rome Treaty (1957) is guaranteed free mobility for citizens of member countries. Thus, France, Belgium, Netherlands, Luxemburg Germany and Italy acceded to free mobility in 1968, UK, Ireland and Denmark, in 1972. Greece became a member of the EC in 1981 and free mobility became effective in 1988. That year, Portugal and Spain joined the Community and free mobility became effective in 1992. Finally, the European Economic Area (EEA) also created in 1992 and including Austria, Finland, Iceland, Liechtenstein, Norway and Sweden instituted free mobility between EEA and EU countries in 1994.[5] EU citizens working in France under free mobility are

[5] See EEC (1994), Appendix V, pp. 0325-0326. In 1995, Austria, Finland and Sweden became members of the Union and their accession had no new implications for mobility.

exempted from requesting work permits; until 2000, however, employers had to register them with the authorities (EEC, 1997, Art. 48.1).

One key characteristics of French immigration policy is that it has never involved explicit quotas on permanent immigrants. The recruitment of permanent new foreign workers can be adjusted by ministerial decree and until 1983, migration flows evolved mostly under political or economic impulses (Weil, 1991, chapter 8). That year, however, the implementation of regulations was tightened; requirements for work permits were redefined and became strictly enforced. Also the yearly flow of new permanent immigrant workers became conditioned on the state of the labor market (Blanc-Chaléard, 2001, Chapter 5, Section 3). Since then, no major change in policy for immigrant workers has occurred, except that in the middle of 1996, France agreed to exempt highly skilled intra-company transfers (i.e., senior executives and highly-trained technicians), researchers and university professors from the labor market test (OECD, 1998, p.106).[6]

Taking advantage of the worker-based immigration policy and its stability since 1983 we focus on the *flows of new permanent immigrant workers.* It is restricted to workers in part because skill-level observations are not available for the so-called "indirect" entries on the labor market and because including them might bias the results. Indirect entries are family members who follow immigrant workers with a delay of at least two years and under restricted conditions (Weil, 1991, chapter 8) as well as refugees. The former are assumed to be part of the household decision made by the worker and refugees obviously come for motives other than economic

[6] Between 1995 and 2000, the total number of intra-company transferees to France increased by a factor of 2.5 (OECD, 2002, Part I, Table I4). It is likely however that these occupations represent only a small proportion of the high-skill category; nevertheless we do test whether the change had an impact on the magnitude of the flows.

motives.[7] The period covered is 1983 to 2000. The end year is determined by the fact that workers from EU countries are no longer registered after 2000.

The annual inflow of new workers and changes in the skill distribution over time are depicted in Figure 1. The three skill categories are, high-skill (managers, intellectuals, and technicians), intermediate-skill (workers and employees with qualifications) and low-skill (workers and employees without qualifications; see details in Appendix A.2.). While French immigration statistics do not use internationally-defined occupation classification, the skill classes can be matched easily with ILO ISCO-88 (see Appendix 3).

[*Insert Figure 1, about here*]

Since the early 1980s, the inflow has fluctuated quite widely and the most striking feature is the sharp peak in 1992; it corresponds to Spain and Portugal gaining accession to free mobility within the EU. Between 1991 and 1992, the inflow of new workers from Portugal increased almost twenty fold (from 768 to 15,221) and that from Spain, almost fivefold (from 194 to 962). Note that flows from Sweden, Norway and Austria experienced much more modest increases after the introduction of the single market in 1994. In the second part of the 1990s, the inflow was back to its early 1980s' low level. A partial amnesty for family members residing illegally in France in 1997 and a stubbornly high unemployment rate (around 12%) are likely to have contributed to lower levels of new entries.

These variations have been accompanied by a significant change in the skill distribution, namely a complete reversal in the proportions of low- and high-skill immigrant workers. In the mid 1980s, they were 42% and 26% respectively and in 2000, 23.5% and 48%. Throughout the period, the intermediate-skill category remained constant at about 1/3. From the early 1980s, and abstracting from 1992 when unusually large flow of low-skill Portuguese workers crowded out

[7] Estimates show that, in the 1990s, the number "indirect entries" on the labor market was about the same as that of new immigrant workers (Fondation Kastler, 2005).

high-skill workers (14% of total in 1992), the trend has been clearly toward a higher proportion of skilled workers as demand for such workers changed and amendments to policy made their entry easier. Table 1 further details the geographical distribution in relation to skill levels.

[*Insert Table 1, about here*]

Over the period about 2/3 of all immigrant workers came from high-income OECD countries (including Israel) with the largest total flows from France's EU neighbors with free-mobility agreements (Great Britain, Italy, Germany, and Belgium). The distribution is slightly skewed toward high skill (35% vs. 31% on average). However, the US represents the largest high-skill flow and intensity (10,108 or 89.2% of total inflow). It is also the country with the highest total flows among those without free-mobility agreement. Immigrant workers from Japan and Canada also show high skill intensity (84% and 82%) but for smaller flows. Middle East and North Africa, the second main source of migration, show a slightly lower than average proportion of high-skill migrants (29%). Each of the remaining regions represents less than 10% of all immigrant workers with a general bias toward low skill except Latin America. Note that some countries in Sub-Sahara Africa, Central Europe-Central Asia and Asia exhibit a proportion of high-skill workers similar to that of EU countries with free mobility (67% for South Africa, 63% for Hungary and 61% for Mexico).

To summarize, on average high-income countries are the main providers of immigrant workers with a relatively balanced distribution across the three types of skill. Free mobility within the EU however, may have generated a bias toward low skill workers as the largest providers of skilled labor are high-income non-European countries. These preliminary observations suggest that the liberalization of labor movements may not be a sufficient factor to attract high skill workers and thus, skill-specific incentives to move should be investigated.

4. Estimations and results

For the empirical investigation, model (3) is developed within a fixed effect specification and for each skill level the log specification is,

$$LIFL^{i}_{j,t} = \gamma^{i}_{j} + \beta_1 LPOP^{i}_{j,t-1} + \beta_2 LINC^{i}_{j,t-1} + \beta_3 LINCF^{i}_{t-1} + \beta_4 LDIST^{i}_{j,t-1} + \beta_5 LCULT_{j,t-1} + \beta_6 UNEMPF_{t-1} + \beta_7 FREEMOB_{j,t} + \beta_z D_{z,t} + \varepsilon^{i}_{j,t}, \quad (4)$$

with γ^{i}_{j}, the source-country specific fixed effect and $\varepsilon^{i}_{j,t}$ a randomly distributed error term. The fixed effect controls for source-country specific characteristics such as monetary migration cost due to distance or language spoken. Since our model is skill-specific the fixed effect can also capture relative institutional rigidities of sub-job markets (Becker et al., 2004). There is an important empirical literature on the endogeneity of wages with respect to immigration. It does however exhibits mixed results (see for example, Card, 2001, Borjas, 2003). Moreover Gross (2002) shows with a simultaneous model that worker migration has had little impact on French wages. Nevertheless, potential simultaneity is addressed by measuring most explanatory variables, including income, at the end of the previous period (*t-1*). Note that specification (4) can be seen as an augmented-gravity model without France's population which is highly correlated (0.971) with France's income per capita.

The dependent variable ($LIFL^{i}_{j,t}$) is the log of the inflow of new permanent workers from source country *j* to France during period *t*, for a given skill class *i*. The sample of 63 source countries covers respectively 86.8% of low-skill, 91.2% of intermediate-skill and, 95.4% of high-skill inflow of workers. To avoid too many zero values annual flows are summed over 3 years between 1983 and 2000 such that there are 6 sub-periods (t=6).[8] The basic statistics for the variables are given in Table 2. The means for the three skill specific dependent variables are very close (242, 236 and 215 in order of increasing skill level) but the dispersions are quite different.

[8] The transformation $\ln(infl^{s}_{j,t}+1)$ is applied to the remaining small number of zero-observations (9, 4, 8 for low-, intermediate-, high-skill workers). A detailed description of all variables is provided in Appendix 2.

While the minimum value is 0 for all skill categories, the maximum is 17,579 for low-skill workers, 9,541 for intermediate-skill and 2,706 for high-skill workers. In most instances, very large values correspond to exceptional circumstances. In the low and intermediate categories the maximum corresponds to Portugal's access to free mobility; next follows the period covering the last years of wars in Lebanon (1989-91). In the high skill category, the maximum is reached by the UK in 1989-91 which may be linked to a fourfold increase in foreign direct investment in that period.

[*Insert Table 2, about here*]

The relevant population in source countries captures a scale effect for potential pools of immigrants. We make it skill specific by weighting each total source-country population with Barro and Lee (1997, 2000)'s share of people who have completed primary school for low-skill, secondary school for intermediate-skill and post-secondary school for high-skill migrants ($LPOP^{i}_{j,t-1}$). Skill classes are matched with education levels via the ILO ISCO-88 for occupations and the UNESCO ISCED-1997 for education levels (see Appendix 3 for details).

Earnings incentives are measured by two variables: relative income variance and, skill-adjusted income per capita. First, relative income variance ($LDIST^{i}_{j,t-1}$) is measured by the ratio of top-to-average earnings and average-to-bottom earnings in the source country over that of France. The three components of the ratios (i.e., top, average and bottom earnings) are coming from country-wide distributions of incomes by economic activity (i.e., ISIC-Rev.2 or ISIC-Rev.3, see Appendix 2 for details). The ratios however are made skill specific by taking into account the top of the distribution (top over average earnings) for high-skill migration and the bottom of the distribution (average over bottom) for the other two categories of skills.[9] In both

[9] Since our theory is about income variation within skill classes which are empirically broadly defined we chose not to use the alternative source of wage provide by the ILO October Enquiry on occupational wages (see Freeman and Oostendorp, 2002) which would be too specific.

cases an increase in the overall ratio reflects a relative increase in dispersion in the source country with respect to France. Consistent with our theoretical argument we differentiate between countries' sub-period with dispersion larger than France's (i.e., $LDIST^{i}_{j,t-1}>1$) for which a positive change in relative inequality means a broadening of the gap with France (i.e. increased relative inequality) and those with dispersion smaller than France's (i.e., $LDIST^{i}_{j,t-1}<1$) for which a positive change shows a narrowing of the relative inequality within skill classes. All countries with dispersions for both skill categories systematically higher than France's are developing or transition countries except Israel. Moreover, extremely large income dispersions for both skill categories are observed in Sub-Sahara Africa and Middle-East North Africa. On average over the years, most high-income countries exhibited lower dispersion than France in both skill categories and, not surprisingly, countries which are the most equal are Northern European countries (e.g., in Denmark and Norway, high- and low-skill income diverge by less than 10% from average). Finally, among countries with larger dispersion than France (>1), low-skill incomes are more widely distributed than high-skill incomes while both dispersions are close among the countries less dispersed than France (<1) (in Table 2, averages of ratios are 1.41 and 1.20).

Second, the skill-adjusted absolute income in source countries and France is computed by multiplying income per capita with the ratio of top-to-average (bottom to average) earnings for high (low) skill ($LINC^{i}_{j,t-1}$, $LINCF_{t-1}$). Unadjusted income per capita is used for the intermediate skill category. Income per capita while not an exact measure for earnings is chosen because it is consistently available for all sample countries over the time period. Adjusted income for low skill varies by a factor of more than 1,350 between the poorest (Ethiopia) and the richest (Norway) while income for high skill varies by a factor of 460 (Cambodia vs. Norway). The push/pull argument predicts a negative/positive impact on flows from increased income in source/destination country.

The cultural clustering or network variable is measured by the size of the population from the same region or country already established in France ($LCULT_{k,t-1}$ with k=1 to 13). It is constructed by extrapolating annual values between two consecutive censuses (see Clark et al., 2002). Unfortunately data is not available for all source countries individually and, in some cases the variable had to be computed for regions considered culturally similar.[10] The lack of country-specific data may be a concern to capture cultural clustering. However, it is likely that clustering occurs with people from the same region rather than the same country in cases of small population. For example, in 1990, the number of residents from each of six Sub-Sahara countries (Burkina Faso, Chad, Ethiopia, Gabon, Niger and South Africa) in France was less than 1,800 and it was as low as 837 for Niger (Docquier and Marfouk, 2006).[11] The fact that new immigrants would consider the Sub-Sahara population as a whole for clustering rather than just their country-specific population is thus not improbable. We allow for networks to impact differently immigrants from countries that are French-speaking in whole or in part (Belgium, Canada, Luxemburg and Switzerland) or are a former French colony by interacting a *FRENCH* dummy with the cultural variable as they might be less concerned about clustering.

Finally we control for the two policy regimes in place: Restricted immigration based on labor market test proxied by French unemployment rate ($UNEMPF_{t-1}$), and free mobility for EU members measured by a dummy which takes value 1 when the agreement starts being implemented ($FREEMOB_{j,t}$) for any given country. Note that when there is free mobility, the unemployment rate measures the perceived probability of finding a job. The free-mobility

[10] The only exception is America as there is no distinct data for North and South America; however, the distribution is almost even across Northern and Southern sample countries (i.e., 52.9% and 47.1% respectively in 1990 and 54.9% and 45.1% in 1999; Docquier and Marfouk, 2006).

[11] To our knowledge the only source for country-specific stock of immigrants in France is Docquier and Marfouk (2006). However, while most sample countries are covered the data is available only for two census years (1990 and 1999). So the gain in cross-sectional quality for the measure occurs at the cost of losing half the time dimension of the panel. Yet the results from the shortened sample with country-specific clustering data are robust qualitatively, i.e., cultural clustering is weaker for skilled workers (results available upon request).

dummy is used as a shift factor and we also test the impact of free mobility on incentives by interacting the dummy with some of the migration determinants. Other events taken into account are the change of status of Algerian workers for whom free mobility became restricted with the introduction of work permits in 1986 (D_1=*Algeria*); and the war in Lebanon from 1983 to 1989 (D_2=*Lebanon*) which led to selective relaxation of immigration rules.[12]

The model is estimated separately for each skill category and thus, for each case the dataset is made of 63 balanced panels of six periods that is 378 observations. Efficiency of the standard errors is ensured by corrected for possible within-cluster correlation across errors (Wooldridge, 2002, chap. 10).

4.1. Basic specification

Starting with the basic specification including the shift dummy for free mobility, the three skill categories clearly exhibit quite different results (Table 3, columns 1 to 3).

[*Insert Table 3, about here*]

While most standard migration drivers are significant for low- and intermediate-skill workers, only income matters for high-skill workers thereby justifying separate estimations. Before discussing the interpretation of the results in detail we present some robustness tests. First, because the network measure is not available for each country individually, we test an alternative measure ($LCULTREG_{p,t-1}$) which is computed for broadly defined regions (columns 4 to 6). Signs and coefficient magnitudes remain stable but results are somewhat weakened which is consistent with network being more broadly defined. Second, we allow for the network factor to carry a different weight for migrants from French-speaking countries (columns 7 to 9). In

[12] To test whether the large impact of opening up borders with Portugal on low-skill worker in 1992 biases the overall results, we added a dummy for that particular event. It is not significant implying that the *FREEMOB* dummy does capture the event adequately even for Portugal.

column 7, the language advantage decreases drastically the role of cultural community for low-skill migrants but there is no significant effect for the other two skill categories. Hence lack of language proficiency might be one of the drivers behind clustering. Interestingly, Docquier et al. (2006) also find unskilled immigrants more sensitive to language barriers. We also test for the relevance of the share of youth in the population ($YOUTH^{i}_{j,t-1}$ in columns 10 to 12) as young people are more likely to migrate but it is not significant at any skill level. Also since our sample includes many developing countries, the impact of source income on migration may increase as people move out of poverty. To test this hypothesis we introduce the inverse of squared income. In columns 13 to 15 non-linear effects are insignificant for all levels of skills. Based on these results we now use specifications in columns 7 to 9 for further discussion.

Interestingly, the response to some of the standard migration drivers diminishes steadily as the level of skill increases. Most factors are significant for low- and intermediate-skill migrants but all elasticities are smaller in absolute values for intermediate than for low-skill flows (source-country income is not significant for intermediate skill). The pool of relevant population lost significance with correction for serial correlation. This can be expected as population may act as a time trend. Nevertheless the lack of significance is consistent with the source-country fixed effect and the focus on workers only. Cultural clustering acts as a strong driver for new inflows of lower skill individuals from non-francophone countries. Policy wise, the significance of the French unemployment rate with the expected negative sign shows that it acts as a regulator of the flows. Accession to free mobility within the EU generates a relatively large impact effect of approximately 300% in low-skill and 180% in intermediate-skill migration.[13] One of the reasons for such a large impact is the small size of the number of migrants. For example, Sweden's accession to free mobility which happened within the sample

[13] Note that the results are insensitive to the introduction of a time trend (the results available upon request).

period raised the number of low-skill migrants to France from 7 to 32 and that of intermediate-skill from 32 to 86 while the number of skilled migrants dropped slightly (351 to 348). Similarly, the number of low and intermediate-skill migrants from Spain increased from 72 to 886 and 107 to 1010 respectively.

The results for the high-skill workers are very different as only one factor matters: skill-specific French income. Cultural networks do not drive high-skill workers, which is consistent with our theoretical argument that high-skill individuals seek job opportunities in the large labor market and not in their cultural community. The market test (unemployment rate) is not significant suggesting that migration restriction conditioned on a job contract have not been binding for high-skill workers. In fact the market test remains insignificant even when controlling for the exemption of some high-skill intra-company transfers and researchers in 1996.[14] Finally, free mobility has no impact effect which is consistent with our theoretical argument that as wages increase with skills, freer mobility has a stronger positive effect on the flows of low-skill migrants than on the flows of high-skill migrants when migrating costs are not very different across skill classes. It is worth noting that the Adjusted R^2 increases substantially with the FE methodology compared to OLS. This suggests that some of the explanatory power can be attributed to source country time-invariant effects. One can be geographical distance (i.e., proxy for moving costs). Another one could be that employers hire systematically from some source country because of information advantage on education credentials whether objective or subjective.

The important point to be taken from the basic specification is that responsiveness to standard migration drivers varies substantially across skill classes; with lower-skill workers

[14] The results of the basic specification with a dummy for the exemption interacting with unemployment rate are: *LIFL(high skill) =c_j -.062(.80)LPOP-.128(.78)LINC+3.40(.01)LINCF-.032(.33)UNEMPF-.176(.38)FREEMOB +.050(.87)LCULT+ .489(.44)LDIST>1-1.05(.41)LDIST<1+.007(.52)DUM97*UNEMPF.* P-values are in parentheses.

responding to most standard migration drivers, and high-skill workers responding only to financial incentives. Moreover, policies have little effect on high-skill flows while they are efficient for low-skill workers. Specifically, the introduction of free mobility has a much more significant impact on low-skill workers than on high-skill workers.

4.2. Migration and free mobility.

The next question is whether free mobility changes responses to push and pull factors as it could provide some insight into the impact of policies on migration incentives. In Table 4, the free-mobility dummy (*FREEMOB*) is interacted with the labor market condition and cultural clustering under the condition of identical income elasticities with and without mobility because of multi-collinearity issues.

[*Insert Table 4, about here*]

Low- and intermediate-skill workers (columns 1-2, and 4-5) show very similar results again. In column 1, the elimination of constraining immigration rules translates into a weaker effect of the job market indicator. There are two possible reasons. First, government employees have imperfect information about the actual state of the labor market and tend to be over-cautious. Second, employers minimizing hiring costs avoid paperwork and give preference to EU workers after liberalization.

Immigration is also more sensitive to cultural clustering when cross-border mobility increases. If employers give preference to EU workers, possibly more marginal workers in a given skill category are hired and they may have a stronger preference for clustering. For high-skill workers, the unemployment rate (columns 7) is significant under free mobility and cultural clustering never matters regardless of the degree of mobility (column 8).

Since the impact of free mobility is very weak in general for high-skill workers and since all countries with free mobility are high-income countries, we also estimate the model with the distinction between three broad groups of countries: high income (*HI*), low income (*LI*) as classified by the World Bank and, other countries (see Appendix 2 for details). The most interesting results are in columns 10 and 11. Again, the unemployment rate is significant for high-income countries and not for others but more importantly the distributions of incomes matter for migrants from both high- and low-income countries. Skill migration is negatively correlated with increased dispersion in source countries except when they are middle-income countries or low-income countries with relatively large dispersion. Hence, for high-income countries and some low-income countries, high-ability skilled people are less likely to migrate as their prospect of higher income at home increases and overall the selection bias increases toward low-ability migrants. Finally, to test for the robustness of our dispersion measure we use a more standard specification for the Roy's hypothesis by assuming that absolute rather than relative source country inequality ($SCDIST^{i}_{j,t-1}$) has a non linear impact. In columns 16 to 18, Table 3, income distribution is weakly significant with the expected sign only for high-skill workers. Thus, the results indicate that source countries with larger dispersion see smaller high-skill migration flows. This is consistent with the results obtained from the original dispersion measure when countries are divided into groups and with Hunt and Mueller (2004) who find a similar result for high-skill migration from Canada to the United States in the late 1980s.

A few more specific comments are called for. Starting with low-skill workers, the elasticity of source income is 1/3 of that of French income; thus, standard of living in source countries must improve three times as fast to compensate for France's attractiveness. Among the major supplier countries of low-skill workers, only Cambodia and Lao PDR had faster average annual growth rates than France during the period (5.1% and 3.1% vs. 1.2%). Furthermore,

networks matter and generate increasing flows at about 2.4% yearly for each 1% increase in the size of the community, regardless of immigration policies except for francophone source-countries with only 0.8% increase in migration. Finally, with liberalization of labor mobility, the job market indicator becomes much weaker suggesting that policy was binding for unskilled migrants. Overall the intermediate skill category exhibits similar results as low skill but with elasticities about ½ as small.

The striking feature for high-skill migrants is that only financial incentives matter; specifically, income at destination and relative dispersion in incomes regardless of the degree of mobility. The strong role of financial incentives is indeed consistent with Docquier et al. (2006). Moreover, the negative impact of income distribution suggests that the winners in the international competition for high-skill are countries that have become less equal in that skill class. France's distribution of high-skill incomes has remained constant for decade while in a majority of OECD countries the upper quintile of the income distribution has become much richer during the period (Ladaique, 2005). Hence, slower growth in per capita income (1.2% a year vs. 1.8% in the Netherlands, 1.7% in Germany, 1.6% in Belgium) combined with a relative narrowing distribution in high incomes indicate that France may have had increasing difficulties in attracting high-skill workers from other high-income countries despite free mobility. The absence of distribution impact for middle income and transition economies may then explain its greater success at attracting high-skill individuals from countries like Hungary, Argentina or India; it also justifies the lowering of immigration constraints for high-skill people from non-EU countries making the policy basically no longer binding. Interestingly, France's weak position in the competition for European workers is not new. Already in the 1950s and 1960s it had difficulties attracting Italian workers who were considered the most desirable unskilled workers,

as they were offered much better working conditions in Germany, Switzerland or the Netherlands (Blanc-Chaléard, 2001, chap. 4).

5. Conclusion

In this paper, we analyze whether standard factors deemed to influence migration flows act with the same intensity across skill classes and whether free mobility changes these incentives. We focus on France because the analysis can be carried on new migrants who are employed in their trade. Broadly speaking, immigration policies and financial incentives matter. However, consistent with our theoretical framework, we find that neither incentive nor policy effects are similar across three skill levels.

Specifically, our main results are the following. First, cultural network matters for low- and for intermediate- but not for high-skill workers. This is consistent with our theoretical hypothesis that high-skill migrants do not seek a culturally familiar community when entering foreign labor markets. It is reinforced by the fact that the knowledge of local language is a sufficient factor to offset some of the need for a familiar cultural community. This is an important result because it suggests that labor market considerations are important in regard to other explanations such as the existence of amenities to understand clustering. Indeed, it is arguably the case that the existence of amenities would be more attractive to high-skill workers than to low-skill workers simply because the value attached to amenities is likely to rise with income. If it was the case, clustering should be especially prevalent with the high income/high-skill workers. The fact that we find clustering especially relevant for low-skill workers and not for high-skill workers is very much consistent with a labor-market explanation of clustering. Second, high-skill individuals move mostly according to financial opportunities. While the standard of living in France is attractive enough for high-skill migrants from middle income and

transition countries, greater skill premium in the form of larger dispersion of income is necessary for those from high-income countries. France with low growth in standard of living and stable dispersion in the high-income bracket relative to other OECD countries has become less competitive in the market for high-skill individuals. Hence, the "French model" which favors a stable distribution of income may indeed penalize the country in the competition for high skill. Third, the introduction of free mobility has a scale impact mostly on the flow of low- and intermediate-skill workers and has little impact on incentives for any category of workers. Thus, constraining policies are effective at controlling the flows of low- and intermediate-skill workers regardless where they come from. Financial competitiveness is thus a necessary condition to be successful in attracting high-skill migrants especially from other high-income countries. And, if France wishes to compete for the much sought after pool of high-skill workers, it should consider incentive tools rather than relying solely on liberalization of people's movements with limited effect. While these conclusions are not easily generalized to all destination countries as the type of immigration policy that is liberalized matters, they may be valid for countries with immigration policies based on a labor market test. Clearly, more country-specific studies are necessary to get a broader view on the impact of free mobility on skill-specific flows. Also, a next step is to focus on high-skill flows and extend the analysis to the role of high-skill specific factors such as knowledge-intensive clusters, opportunities for entrepreneurship and transnational investments.

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Appendix 1: Cultural clustering

Assume a migrant chooses whether to supply a high (e_h) or a low level of unobservable effort (e_l) in an infinitely repeated game with a large number of employers in an anonymous labor market and with a group of n employers in the ethnic specific labor market. A migrant with skill s_i supplies a high effort in the ethnic specific labor market provided that,

$$(w_e(s_i)-e_h)(1+\delta+\delta^2+...)>(w_e(s_i)-e_l)+[p(n)(w_e(s_i)-e_l)+(1-p(n))(w_a(s_i)-e_l)](\delta+\delta^2+...)$$

where δ is the migrant's discount factor (uniformly distributed over [0,1] within any skill class) and $p(n)$ is the probability of finding a new job in the ethnic specific labor market which depends on the quality of the information and on the number of employers, n on this market (with $p'(n)>0$ since the larger n is, the less informed employers are and the easier it is to find a high paying job after having shirked). The inequality represents the migrant's trade off between supplying e_h in every period (the term on the left-hand side) and the consequences of shirking by choosing e_l today (the right-hand side). When shirking, the migrant earns the payoff ($p(n)(w_e(s_i)-e_i)$) plus the present value of the expected payoff from finding a new job (in either labor market). There is only a short-term advantage of earning a high wage without providing a high level of effort since the migrant loses her job once a low level of output is observed. Rewriting the above inequality,

$$\delta>\delta^*(s_i)=\frac{e_h-e_l}{[1-p(n)][w_e(s_i)-w_a(s_i)]}. \qquad \text{(A.1)}$$

For any δ above $\delta^*(s_i)$, a new migrant belonging to class s_i chooses e_h. Otherwise, she chooses e_l. Since the discount rate is uniformly distributed over [0,1] within each skill class, (A.1) also gives the proportion of shirking migrants in each skill class. Two results are derived from (A.1).

Result 1: The larger the ethnic specific labor market for each skill class, the higher the proportion of shirkers among migrants, and the lower the wage premium in the ethnic specific labor market.

To see this, note that the size of this market depends on n. In (A.1), $\delta^*(s_i)$ rises with n since $p'(n)>0$, implying a higher proportion of shirking migrants earning a high wage. Employers therefore must lower the wage premium or eliminate it.[15]

Result 2: Given a positive premium in the ethnic labor market, the proportion of shirkers rises with skill classes provided that wages rise more with respect to skills in the anonymous labor market than in the ethnic specific labor market.

[15] Note that $p(n)$ does not need to be very high (i.e., $p(n)>1-(e_h-e_l)/(w_e-w_a)$) for all migrants to shirk.

To show this, consider how $\delta^*(s_i)$ changes with s_i. Using (A.1), it comes:

$$sign\frac{\partial\delta^*(s_i)}{\partial s_i} = sign\{-(e_h - e_l)(\frac{\partial w_e}{\partial s_i} - \frac{\partial w_a}{\partial s_i})\},$$

Which is positive provided that $\partial w_a / \partial s_i > \partial w_e / \partial s_i$ since wages rise with skills and $e_h > e_l$. Thus, like for Result 1, a higher proportion of shirkers implies that the premium needs to be lowered or eliminated; in this case for the higher skill classes.

Appendix 2: Variables and Data sources

Immigration flows from Taiwan are combined with those from China; data for the Czechoslovakia and Germany have been recreated using weighted averages with population as the weight. Also, the end of the previous period (t-1 = 1982, 1985, 1988, 1991, 1995, 1997).

D_1=ALGERIA: dummy equal to 1 in first sub-period (1983-85) and 0 otherwise. From 1947 until 1986, Algerian citizens were considered nationals and did not register as immigrants. In September 1986, France reinstated visas for all countries excluding the EU and Switzerland. (Weil, 1991, p. 338-41).
D_2=LEBANON: Dummy equal to 1 during the war period, 1983-1989, and 0 otherwise.
FREEMOB: Dummy equal to 1 for each year EU/EEA countries had free mobility with France and 0 otherwise. It takes the value 1 for the whole period for Belgium, Denmark, Germany, Ireland, Italy, Luxembourg, The Netherlands, and U.K.; from 1988 on for Greece; from 1992 on for Portugal and Spain; and from 1994 for Austria, Finland and Sweden.
FRENCH: Dummy equal to 1 if the country is French-speaking in whole or part (Canada and Switzerland; Luxembourg uses French as official language for legislative texts) or a former French colony in Africa and Asia, and 0, otherwise.
HI: Dummy equal to 1 for high-income countries. It takes the value 1 for Australia, Canada, Israel, Japan, New-Zealand, Switzerland, US and EU/EFTA countries (Belgium, Denmark, Germany, Ireland, Italy, Luxembourg, Netherlands, U.K., Greece, Portugal, Spain, Austria, Finland, Norway, and Sweden).
$LCULT_{k,t-1}$ ($LCULTREG_{p,t-1}$): Cultural clustering is the population of country *k* (region *p*) in France in year *t-1*. (Weil, 1991; INSEE, 1999b, Table B.02-18). Annual observations are computed by extrapolating observations between three consecutive censuses (March 4, 1982, March 6, 1990 and March 8, 1999) using yearly total inflows of immigrants as in Clark et. al. (2002): $CULT_{k,t} = \delta CULT_{k,t-1} + IFL^{tot}_{k,t-1}$

Country	**Population of same culture in France** ($CULT_{k,t-1}$)	**Population of same region** ($CULTREG_{m,t-1}$)
Benin, Burkina Faso, Cameroon, Chad, Rep.Dem. Congo, Côte d'Ivoire, Ethiopia, Gabon, Guinea, Madagascar, Mali, Mauritania, Mauritius, Niger, Senegal, South Africa, Togo.	Sub-Sahara Africa	Sub-Sahara Africa
Algeria	Algeria	Maghreb
Tunisia	Tunisia	
Morocco	Morocco	
Egypt, Lebanon	Maghreb[1]	
Turkey	Turkey	Asia
Vietnam[2]	Vietnam	
Cambodia, China (incl. Taiwan), India, Iran, Israel, Japan, Lao PDR, Pakistan, Syria, Thailand	Asia excluding Turkey and Vietnam	
Poland	Poland	Europe other than EU
Bulgaria, Czechoslovakia, Hungary, Romania	Europe other than EU excluding Poland	
Argentina, Brazil, Canada, Chile, Mexico, US	America	America
Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK	EUR	EUR
Australia, New-Zealand	Oceania	Oceania

[1] Maghreb includes Morocco, Tunisia and Algeria. [2] The 1999-census observation is not available and the population series is constructed by cumulating inflows starting from the 1990-census observation.

$LDIST^i_{j,t-1}$: Country-level relative dispersion of incomes in France and source country *j* in the last year of the previous period. Three indexes are computed: The ratio of the highest income (T_j) to average (A_j) used for the high skilled and average (A_j) to bottom (B_j), used for the low skilled:

$$Ldist(high\ skill) = \frac{\frac{T_j}{Av_j}}{\frac{T_{France}}{Av_{France}}} \qquad Ldist(low\ skill) = \frac{\frac{Av_j}{B_j}}{\frac{Av_{France}}{B_{France}}}$$

The three levels of incomes are taken from the Wages by economic activity ISIC-Rev.2 or ISIC-Rev.3, establishment surveys (ILO, 2003a, Table 5A). When a year is missing, the closest available year is used. When observations on a sector for several years are missing they are computed using the overall average income growth rate. Data is not available for some countries and substitute values are used: For Greece, Portugal is used; for Argentina, the simple average of Brazil and Chile is used; for Cambodia, Loa PDR and Vietnam, the average of China and Myanmar is used; Egypt is used for all Middle East/North Africa countries (Algeria, Iran, Lebanon, Morocco, Syria, Tunisia); for Sri Lanka, the average of India and Bangladesh is used. Data for only two sample countries from Sub-Sahara Africa is available (i.e., Mauritius and Guinea) and information from out of sample countries is used: Kenya for Ethiopia and Madagascar; the average of Guinea and Kenya for Benin, Burkina Faso, Cameroon, Congo, Gabon, Côte d'Ivoire, Senegal and Togo; the average of Egypt and Guinea for Mali, Chad, Niger, Mauritania. Finally, sectoral data for France is not available and net average monthly income for full-time workers in the 3 occupational categories defined for migrant workers is used (i.e., Managers and technicians for top income; unskilled blue-collar workers for bottom income). The only available year is 1997 (INSEE, 1999a). However, Ladaique (2005), using household survey budget data for 1984, 1994 and 2000, shows that the income shares of the bottom, middle and top quintile have not changed in France between the mid-1980s and 2000. A result confirmed by Oxley et al. (1997).

$LIFL^i_{j,t}$: Inflow of immigrant workers with *i=l,h* (low, intermediate, high skill) from country *j* (63 source countries) for period *t* (t=1 to 6; 3-year periods from 1983 to 2000: 1983-85, 1986-88, 1989-91, 1992-94, 1995-97, 1998-2000). Low skill=unskilled and specialized workers; intermediate=workers and employees with qualifications; high skill= managers, professionals, and technicians. In 1984, the government published only the total number of immigrant workers per skill category. We applied the % it represents of the average of the two neighboring years (1983 and 1985) to each source country. (OMI).

***$LINC^i_{j,t-1}$*:** GDP per capita multiplied by the ratio $(T^i_j/A^i_j)_{t-1}$ for high skill and the ratio $(B^i_j/A^i_j)_{t-1}$ for low skill (see *LDIST*). GDP per capita in constant 2000-US$ at the end of the previous period *(t-1)* in source country *j*. (World Bank, 2005). Some early missing values (Guinea, Loa PDR, Vietnam, Lebanon, 1982, 1985 and Czechoslovakia, 1985) have been computed extrapolating from the regional real GDP growth (Heston et. al., 2002).

***$LINCF_{t-1}$*:** French GDP per capita multiplied by the ratio $(T^F_j/A^F_j)$for high skill and the ratio (B^F_j/A^F_j) for low skill (*LDIST*) French GDP per capita in constant 2000-US$ in the last year of the previous period. (World Bank, 2005).

LO: Dummy equal to 1 for low-income countries as classified by the World Bank, that is Benin, Burkina Faso, Cambodia, Chad, Rep. Dem. Congo, Ethiopia, Guinea, India, Côte d'Ivoire, Lao, Madagascar, Mali, Mauritania, Niger, Pakistan, Senegal, Togo, Vietnam.

***$LPOP^i_{j,t-1}$*:** 15-64 year old population at the end of the previous period in source country *j* multiplied by the share of people aged 25 and over who have completed primary/secondary/post-secondary school. The percentages are held constant for five year when there is no original observation and the average over the 3-year sub-period of the sample is computed. Missing countries are taken from the WDI or, in last resort, computed from neighboring available countries. (World Bank, 2005, and Barro and Lee, 1997, 2000).

***$SCDIST^i_{j,t-1}$*:** Source country dispersion in income see *LDIST*).

$UNEMPF_{t-1}$: Unemployment rate in France at the end of the previous period (ILO, 2003b).

$YOUTH_{j,t}$: Mid-year estimated population aged 15 to 24 years by 5-year age groups, both sexes (US Bureau of Census, 2009).

Table A.1: Simple correlations: Basic specification

	LPOP(Prim)	*LPOP(Sec)*	*LPOP(HighS)*	*LINC(Low)*	*LINC(Interm)*	*LINC(High)*	*LINCF(Low)*[a]	*LCULT*
LINC(Low)	.335	-	-	1				
LINC(Interm.)	-	.412	-	-	1			
LINC(High)	-	-	.381	-	-	1		
LINCF(Low)	.074	-	-	.025	-	-	1	
LINCF(Interm.)	-	.093	-	-	.042	-	-	
LINCF(High)	-	-	.122	-	-	.060	-	
LDIST(Low)	-.389	-	-	-.566	-	-	.086	
LDIST(High)	-	-	.417	-	-	.354	-	
LCULT	-.038	-.059	-.115	.250	.239	.237	.043	1

UNEMPF	.062	.075	.095	..025	.037	-.051	.730	.036

[a] The simple correlation between all levels of income in France and LCULT, UNEMPF are identical as income per capita which is constant over time is multiplied by a different scalar for each skill level (see footnote 15).

Appendix 3: Skill/education correspondence

Table A.3.1.: Education/occupation

Skill categories				Education categories		
OMI		**ILO ISCO-88**		**UNESCO ISCED-1997**		**Barro-Lee**
1	Workers and employees without qualifications (ouvriers et employés non qualifiés; manoeuvres et ouvriers spécialisés)	9	Elementary occupations	1, 2	Primary and secondary basic education	Completed primary
2	Workers and employees with qualifications (ouvriers et employés qualifiés; ouvriers qualifiés et professionnels)	4 to 8	Clerks, service workers, shop and market sale, skilled agriculture and fishery workers, craft and trade related workers, plant and machine operators, assemblers.	3	Upper secondary	Completed secondary
3	Managers, professionals and technicians (cadre, intellectuels, techniciens, ingénieurs, agents de maîtrise).	1 to 3	Managers, professionals, technicians and associate professionals.	4 to 6	Post secondary non-tertiary and tertiary	Completed post-secondary school

Sources: ILO (1990), UNESCO (1999), OMI (various years), Barro-Lee (1997, 2000).

Table 1: Immigration from Main Countries and regions by skill category (1983-2000)

	Total Immigrant Workers	Regional distribution (% of total)	Skill distribution within regions			
			Low skill workers	High skill workers	Countries with highest share of high skill	Countries with lowest share of high skill
TOTAL	**261,761**	**100%**	**91,316 (35%)**	**81,208 (31%)**	-	-
High-Income and OECD	173,394	66.2%	54,691 (32%)	60,296 (35%)	US (89%) Japan (84%)	Portugal (2%) Italy (24%)
High-Income with free mobility	132,551	50.6%	45,811 (35%)	36,894 (28%)	Norway (67%) Finland (63%)	Portugal (1%) Italy (24%)
Middle East and North Africa[a]	39,564	15.1%	13,277 (34%)	11,614 (29%)	Syria (46%) Egypt (46%)	Lebanon (22%) Morocco (31%)
Central Europe and Central Asia	18,241	7.0%	9,301 (51%)	2,727 (15%)	Hungary (63%) Czechoslov.(54%)	Turkey (8%) Poland (9%)
Sub Sahara Africa	16,579	6.3%	7,977 (48%)	3,021 (18%)	South Africa (67%) Madagascar (42%)	Guinea (2%) Mali (7%)
Asia	10,657	4.1%	4,844 (46%)	2,360 (22%)	India (46%) China+Taiw. (34%)	Lao PDR (1%) Cambodia (1%)
Latin America	3,326	1.3%	1,225 (37%)	1,190 (36%)	Mexico (61%) Argentina (57%)	Brazil (27%)

[a] Immigration from Algeria was not recorded from 1983 to 1985.

Table 2: Main statistical characteristics of the variables (3-year periods)

	Mean	Minimum	Maximum
Inflow immigrant workers ($IFL^{i}_{j,t}$)			
Low skill	242	0	17,579
(Low skill without Portugal 1992-94)	(199)	(0)	(5,235)
Intermediate skill	236	0	9,541
High skill	215	0	2,706
Population source countries ($POP^{i}_{j,t-1}$) in millions			
Completed primary school	4.65	0.019	107.7
Completed secondary school	3.91	0.003	112.6
Completed post-secondary school	1.82	0.003	48.9
Income per capita in source countries ($INC_{j,t-1}$)			
Low skill	5,945	25	33,815
Intermediate skill	8,036	85	37,199
High skill	10,361	113	51,867
Income per capita in France ($INCF_{t-1}$)			
Low skill	12,076	10,664	13,323
Intermediate skill	18,393	16,243	20,292
High skill	27,418	24,213	30,249
Relative distribution of incomes ($DIST^{i}_{j,t-1}$) [a/]			
Low Skill: Ratio (Source/France) >1	1.41	1.00	2.62
Low Skill: Ratio (Source/France) <1	0.83	0.66	0.99
High Skill: Ratio (Source/France) >1	1.20	1.00	1.60
High Skill: Ratio (Source/France) <1	0.82	0.67	0.99
Cultural network ($CULT^{j}_{t-1}$) in thousands	519.8	1.4	1,602.2
Unemployment rate in France ($UNEMPF_{t-1}$)	10.3	7.8	12.3

[a/] The distribution is defined as top over average income for high skill and average over bottom for low skill so that in both cases a larger value indicates a larger dispersion.

Table 3: Flow of immigrant workers: Basic specification

	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$
	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**
	Low	**Intermediate**	**High**	**Low**	**Intermediate**	**High**	**Low**	**Intermediate**	**High**
$LPOP^{i}_{j,t-1}$	-.476(.180)	.415(.097)*	-.076(.750)	-.402(.248)	.424(.083)*	-.036(.880)	-521(.130)	.335(.284)	-.093(.689)
$LINC^{i}_{j,t-1}$	-1.17(.045)**	-.434(.341)	-.130(.774)	-1.36(.016)**	-.560(.196)	-.160(.720)	-1.38(.013)**	-.381(.392)	-.056(.897)
$LINCF_{t-1}$	3.97(.004)**	2.53(.009)**	3.58(.002)**	4.35(.002)**	2.63(.006)**	3.68(.002)**	4.45(.002)**	2.58(.009)**	3.47(.004)**
$UNEMF_{t-1}$	-.377(.000)**	-.257(.000)**	-.017(.430)	-.374(.000)**	-.257(.000)**	-.014(.514)	-.372(.000)**	-.256(.000)**	-.019(.374)
FREEMOB	3.09(.000)**	1.85(.000)**	-.180(.363)	2.98(.000)**	1.84(.000)**	-.253(.220)	3.17(.000)**	1.80(.000)**	-.211(.279)
$LCULT_{k,t-1}$	1.28(.023)**	1.17(.002)**	.028(.926)	-	-	-	1.90(.004)**	.981(.041)**	-.189(.563)
$LDIST^{i}_{j,t-1}>1$	.020(.985)	.485(.292)	.415(.511)	-.162(.875)	.501(.267)	.494(.425)	-.417(.660)	.568(.223)	.408(.510)
$LDIST^{i}_{j,t-1}<1$	-1.20(.321)	-.069(.949)	-.998(.424)	-1.45(.237)	-.019(.986)	-1.03(.400)	-1.42(.236)	-.120(.913)	-1.03(.418)
$LCULTREG_{p,t-1}$	-	-	-	.826(.110)	1.08(.004)**	-.208(.527)	-	-	-
LCULT*FRENCH	-	-	-	-	-	-	-1.55(.060)*	.517(.548)	.563(.356)
T	6	6	6	6	6	6	6	6	6
N	63	63	63	63	63	63	63	63	63
D of F.	305	305	305	305	305	305	304	304	304
F-test for $\mu^{i}=\mu_{j}^{i}$	15.53(.000)	16.60(.000)	16.88(.000)	14.48(.000)	15.64(.000)	16.63(.000)	14.31(.000)	14.77(.000)	14.09(.000)
Adj. R^2	.797	.827	.891	.793	.825	.891	.800	.827	.891
Schwarz B.I.C	687.8	596.5	523.5	691.2	598.1	523.2	687.5	599.0	525.5

Table 3: Flow of immigrant workers: Basic specification. Cont'd

	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$	$LIFL^i_{j,t}$
	10.	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**
	Low	**Intermediate**	**High**	**Low**	**Intermediate**	**High**	**Low**	**Intermediate**	**High**
$LPOP^i_{j,t-1}$	-.382(.326)	.447(.082)*	-.114(.652)	-.561(.138)	.372(.139)	-.229(.400)	-.474(.172)	.432(.086)*	-.064(.791)
$LINC^i_{j,t-1}$	-1.62(.004)**	-.562(.231)	.124(.761)	-	-	-	-1.18(.041)**	-.443(.326)	-.104(.819)
$LINCF_{t-1}$	3.84(.011)**	2.44(.017)**	3.78(.002)**	3.36(.024)**	2.66(.016)**	4.49(.000)**	3.94(.004)**	2.45(.007)**	3.61(.002)**
$UNEMF_{t-1}$	-.375(.000)**	-.256(.000)**	-.020(.369)	-.389(.000)**	-.257(.000)**	-.009(.665)	-.381(.000)**	-.259(.000)**	-.015(.500)
$FREEMOB$	2.99(.000)**	1.82(.000)**	-.126(.464)	3.12(.000)**	1.87(.000)**	-.114(.513)	3.11(.000)**	1.86(.000)	-.188(.338)
$LCULT_{k,t-1}$	1.27(.012)**	1.18(.002)**	.001(.997)	1.44(.010)**	1.13(.005)**	-.091(.781)	1.29(.022)**	1.18(.002)**	-.024(.939)
$LDIST^i_{j,t-1} >1$	.360(.715)	.507(.259)	.052(.931)	1.03(.263)	.511(.271)	.448(.320)	-	-	-
$LDIST^i_{j,t-1} <1$	-2.08(.113)	-.180(.872)	-.993(.403)	-.532(.651)	-.141(.891)	-.348(.761)	-	-	-
$YOUTH^i_{j,t-1}$	-.105(.168)	-.032(.505)	.062(.233)	-	-	-	-	-	-
$INC^i_{j,t-1}$	-	-	-	$-.42*10^{-4}$ (.243)	$-.41*10^{-4}$ (.080)*	$-.49*10^{-4}$ (.022)**	-	-	-
$1/(INC^i_{j,t-1})^2$	-	-	-	1088(.115)	-1016(.851)	-5343(.357)	-	-	-
$SCDIST^i_{j,t-1}$	-	-	-	-	-	-	-1.29(.193)	.175(.808)	-3.82(.067)*
$(SCDIST^i_{j,t-1})^2$	-	-	-	-	-	-	.279(.130)	-.001(.994)	1.10(.037)**
T	6	6	6	6	6	6	6	6	6
N	63	63	63	63	63	63	63	63	63
D of F.	305	305	305	305	305	305	305	305	305
F-test for $\mu^i=\mu_j^i$	15.20(.000)	16.21(.000)	16.96(.000)	13.29(.000)	14.97(.000)	16.95(.000)	15.1(.000)	16.6(.000)	17.2(.000)
Adj. R^2	.800	.827	.892	.792	.826	.894	.797	.827	.893
Schwarz B.I.C	687.5	599.0	523.8	694.4	599.5	521.2	687.8	596.5	520.6

$LIFL^i_{j,t}$, is the flow of migrants from a given source country to France over 3 years; $LPOP^i_{j,t-1}$ is population with relevant education in source countries; $LINC^i_{j,t-1}$ $(LINCF_{t-1})$ is income per capita for the relevant skill category in source countries (France), $UNEMF_{t-1}$, is unemployment in France; *FREEMOB*, is the dummy for free mobility with France; $LCULT_{k,t-1}$, is cultural clustering of the relevant source country; $LDIST^i_{j,t-1} >1$ $(LDIST^i_{j,t-1} <1)$, is income dispersion larger (smaller) in the source country than in France; $LCULTREG_{p,t-1}$, is cultural clustering of the relevant region of origin; *FRENCH*, is a dummy for French-speaking source countries (see Appendix 2 for details).

The estimations include source-country specific fixed effects and a dummy for the war in Lebanon and the change in policy toward Algeria which are not reported here. Robust standard errors for within period correlation. P-value in parentheses.

Table 4: Flow of immigrant workers: Free mobility

	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$
	Low Skill		**Intermediate skill**	
	1.	**2.**	**3.**	**4.**
$LPOP^{i}_{j,t-1}$	-.420(.229)	-.527(.126)	.343(.284)	.333(.286)
$LINC^{i}_{j,t-1}$	-1.40(.017)**	-1.38(.013)**	-.383(.414)	-.379(.393)
$LINCF^{i}_{t-1}$	4.28(.004)**	4.51(.001)**	2.68(.009)**	2.61(.008)**
$UNEMF_{t-1}$	-.437(.000)**	-.372(.000)**	-.288(.000)**	-.256(.000)**
$LCULT_{k,t-1}$	2.38(.001)**	1.88(.004)**	1.17(.022)**	.963(.044)**
*LCULT*FRENCH*	-1.58(.057)*	-1.54(.061)*	.516(.550)	.521(.545)
$LDIST^{i}_{j,t-1} > 1$	-.430(.654)	-.416(.660)	.585(.201)	.566(.225)
$LDIST^{i}_{j,t-1} < 1$	-1.89(.116)	-1.39(.245)	-.397(.717)	-.108(.922)
	Free mobility (total effect)			
$UNEMF_{t-1}$**FREEMOB*	-.140(.001)**	-	-.137(.000)**	-
$LCULT_{k,t-1}$**FREEMOB*	-	2.10(.002)**	-	1.09(.025)**
T	6	6	6	6
N	63	63	63	63
d.f.	303	303	303	303
F-test for $\mu^{i}=\mu_{j}^{i}$	14.99(.000)	14.29(.000)	14.85(.000)	14.76(.000)
Adj. R^2	.807	.800	.825	.827
Schwarz B.I.C	680.8	687.7	601.3	598.9

Table 4: Flow of immigrant workers: Free mobility. Cont'd.

	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$	$LIFL^{i}_{j,t}$
	High skill			
	5.	**6.**	**7.**	**8.**
$LPOP^{i}_{j,t-1}$	-.119(.615)	-.092(.693)	-.184(.490)	-.158(.516)
$LINC^{i}_{j,t-1}$	-.057(.893)	-.056(.897)	-.052(.901)	-.136(.727)
$LINCF^{i}_{t-1}$	3.72(.002)**	3.46(.004)**	3.75(.004)**	3.52(.002)**
$UNEMF_{t-1}$	-.010(.669)	-.019(.372)	.027(.448)	-.019(.416)
$LCULT_{k,t-1}$	-.349(.342)	-.182(.574)	-.282(.464)	-.382(.290)
*LCULT*FRENCH*	.614(.316)	.561(.358)	.554(.376)	.862(.158)
$LDIST^{i}_{j,t-1}>1$	.441(.475)	.407(.511)	.393(.551)	.182(.767)
$LDIST^{i}_{j,t-1}<1$	-.984(.432)	-1.02(.419)	-.940(.441)	1.95(.242)
	Free mobility (total effect)			
$UNEMF_{t-1}$ * *FREEMOB*	-.048(.031)*	-	-	-
$LCULT_{k,t-1}$ * *FREEMOB*	-	-.196(.552)	-	-
			High- vs low-income countries	
$UNEMF_{t-1}$*HI	-	-	-.105(.055)*	-
$UNEMF_{t-1}$*LI	-	-	-.028(.689)	-
$LDIST^{i}_{j,t-1}>1$* HI count.	-	-	-	-4.57(.000)**
$LDIST^{i}_{j,t-1}<1$ *HI count.	-	-	-	-3.75(.022)**
$LDIST^{i}_{j,t-1}>1$* LI count.	-	-	-	.020(.987)
$LDIST^{i}_{j,t-1}<1$ *LI count.	-	-	-	-6.91(.022)**
T	6	6	6	6
N	63	63	63	62
d.f.	303	303	303	300
F-test for $\mu^{i}=\mu_{j}^{i}$	14.43(.000)	14.08(.000)	13.14(.000)	13.18(.000)
Adj. R^2	.892	.891	.892	.896
Schwarz B.I.C	523.8	525.5	528.6	526.4

See notes, Table 3.

Figure 1: Distribution by skill categories