How does income inequality influence international migration?

By Thomas Liebig* and Alfonso Sousa-Poza

Department of Economics and Research Institute for Labour Economics and Labour Law

University of St. Gallen

Switzerland

*Corresponding author. Address: Research Institute for Labour Economics and Labour Law, Guisanstrasse 92, CH-9010 St. Gallen, Switzerland; Tel. +41-71-224 2809; E-mail: Thomas.Liebig@unisg.ch.

How does income inequality influence international migration?

Paper summary

The increasing importance of highly-skilled migration in times of so-called "skills shortages" is leading to a growing interest in the determinants and characteristics of highly-skilled migration. However, migration theory with regard to the highly-skilled is not well developed. An important strand of literature that clearly serves for the derivation of empirically testable hypotheses about the determinants of particular types of migrants is self-selection theory. This theory has been adopted by Borjas (1987) for the analysis of the relation between the income distribution and the skills of migrants. He concludes that a relatively more equal income distribution in the host country *vis-à-vis* the source country leads to a negative self-selection of migrants (*i.e.* the lowly-skilled will be particularly attracted) and vice versa. Borjas has confirmed this hypothesis with data on immigration to the US. Chiswick (1999) and others, however, have questioned these results.

Sample-selection biases may arise in single-country analyses and in all studies based on host-country data, due to the impact of host-country specifics such as migration policy, network migration, and the like. Due to a lack of internationally comparable data, however, international empirical studies with *data from the origin countries* have not been undertaken to resolve the dispute between Borjas and Chiswick. Furthermore, data on the *intentions* to emigrate (as opposed to actual migration data) have the distinct advantage of being free from the above-mentioned selection-bias problem. This paper sheds some new light on this controversy by analysing the relationship between country-specific emigration propensities and each country's score on the Gini-Index of inequality. The 1995 International Social Survey Programme (ISSP) conducted a survey on national identity, which gathers the necessary data in a rich international microdata set.

The main result of this paper is that, ceteris paribus, a more egalitarian income distribution is associated with lower emigration propensities, while income inequality does not have any impact on the emigration propensities of highly-skilled persons. These results seem to contradict Borjas' prediction that highly-skilled should be particularly attracted by countries which have relatively high returns to skills. Thus, the analysis presented in this paper is more in line with the arguments put forward by Chiswick (1999) and others.

JEL Categories: J61, F22

I. Introduction

A well-established result in migration economics is the fact that migrants are not a random sample of the population in the source countries. Processes of selection alter the sample on both sides of the market. In the context of so-called "skills shortages" in many OECD countries, the importance of highly-skilled migration is rising and many countries have selectively opened their labour markets for highly-skilled immigrants.[1] Research on the determinants of skilled immigration, however, is still largely lacking.

Among the migration theories, one that can clearly be used for the derivation of empirically testable hypotheses about the determinants of particular types of migration is self-selection theory. This theory has been adopted by Borjas (1987, 1994) to analyse immigration. A key and much-disputed prediction of Borjas (1987) is that a more unequal income distribution in the sending country will have a negative impact on the skills mix of migrants in the host country (*i.e.*, negative self-selection). Provided there is negative self-selection, a second prediction of Borjas' model is that a higher income inequality in the origin country will lead to lower emigration rates. Chiswick (1999, 2000), however, argues that generally, positive self-selection can be expected. In his view, a higher income inequality in the origin country only attenuates positive self-selection.

Most studies which test for the self-selection of migrants rely on host-country data (see Chiquiar and Hanson, 2002 and the overview in Chiswick, 2000). Such an approach is problematic as specific host-country characteristics such as migration policy, migration networks, historical links, geographical proximity, etc. are likely to bias immigration to these countries.[2] For example, if a country's migration policy favours immigration of highly-skilled labour, then testing for the selectivity of migrants with data from this country is not possible. These are severe limitations. Earlier studies on the selectivity of migrants have tried to counter these limitations by either studying internal migration (*e.g.* Gabriel and Schmitz, 1995; Bailey, 1993) or by focusing on the emigration of in-migrants (*e.g.* Constant and Massey, 2002; Burda *et al.*, 1998; Borjas and Bratsberg, 1996; Beenstock, 1996; Jasso and Rosenzweig, 1988).[3] The aim of this paper is to overcome the above-mentioned limitations by analysing multiple source-country data on emigration intentions. There are two main advantages of such an approach: first, data on emigration intentions do not face the sample-selection problems mentioned above. Furthermore, empirical tests of a theory that deals with migration incentives, such as self-selection theory, should rely on emigration propensities

instead of using immigration data.[4] Second, a multi-national analysis based on microdata is possible. Although there are several studies based on source-country data, such as Chiquiar and Hanson (2002), these only cover one source country and thus the generality of the findings is limited. Our approach is valuable as it not only allows us to control for many important socio-demographic factors, but also enables us to test the generality of the results. We proceed in two steps. Firstly, we show that positive self-selection can generally be expected in international migration. Secondly, we demonstrate that positive self-selection even holds for migrants coming from source countries from a high income inequality. The main finding of our analysis is that a higher income inequality in the country of origin is generally associated with a higher emigration propensity, while there is no impact on highly-skilled persons.

The remainder of this paper is structured as follows: section two presents Borjas' self-selection theory in a setting in which a migrant chooses between two prospective host countries, taking Germany and the US as examples. Section three outlines Chiswick's (1999) modelling as a competing theory of self-selection processes. Section four presents an alternative approach for testing self-selection, based on an international survey on national identity. The results of the regressions are presented and discussed in section five. The paper concludes with some implications of the results for the presumed emerging "competition" for highly-skilled immigrants.

II. Borjas' self-selection model in an international context

Borjas (1987) has used a model developed by Roy (1951) that explains the sorting of workers among different employment opportunities to analyse the self-selection of migrants.[5] It explains the skills level of migrants by the relative wage differentials (*i.e.*, the relative returns to skills) between sending and host countries. Provided that the correlation between skills in the two countries is sufficiently high, a key prediction of Borjas (1987: 552) is that "[i]f the income distribution in the sending country is more unequal [...], emigrants will be chosen from the lower tail of the income distribution in the country of origin." Those who enjoy below-average earnings both in the source and in the host country are then defined as negatively-selected immigrants.

In contrast to this negative self-selection, positive self-selection occurs when the host country's earnings distribution is more dispersed. This effect arises because the source country "taxes" highly-skilled labour and "insures" less skilled workers to a greater extent than the host country. Importantly, neither differences in mean earnings nor migration costs determine the type of self-selection, although they shape the size of the migration flow.

The principle of immigrant self-selection in an international context can also be depicted in a graphical way. Figures 1 a) and b) show the cases of positive and negative self-selection.[6] These presentations expand Borjas' (1996: 298) elaboration by allowing for two different countries (Germany and the US), which "compete" for highly-skilled migrants. Germany has a more "egalitarian" wage structure than the US, its curve is therefore somewhat flatter than that of the US. In this case, the United States would always enjoy an advantage over Germany in attracting highly-skilled labour.

(Figures 1 a) and b) around here)

However, this is still not the whole story for countries like Germany. In many European OECD countries and particularly in Germany, the tax and benefit system ensures that the payoff to skills is quite evenly distributed. On the other side of the Atlantic, the US has one of the most progressive returns to skills in the OECD (see also Bell and Freeman, 1995). According to the Gini-Coefficient, which proxies different relative returns to skills by measuring relative income (although not wage) inequality, Germany has a very egalitarian income distribution *vis-à-vis* the US.[7] Out of the countries for which data is available, only 14 have an even more egalitarian income distribution than Germany, mainly comprising other EU countries and countries in transition. 41 countries have a relative income distribution between that of Germany and that of the US, whereas only 32 have an income distribution that is even more unequal than the US's.[8] Therefore, a third situation has to be distinguished, illustrated by Figure 1 c), which is probably also the most likely one.

(Figure 1 c) around here)

In this case, the income distribution in the source country is somewhere between that of the US and that of Germany: whereas the latter would attract the lowly-skilled immigrants, their

highly-skilled counterparts would migrate to the US. The widening of the wage gap with increasing skills levels which occurs between Germany and the US points to a second problem. The US will *ceteris paribus* be more attractive for particularly highly-skilled workers than Germany, and Germany will in turn be particularly attractive for very lowly-skilled foreigners, thereby facing adverse selection. The relative attractiveness of the US *vis-à-vis* Germany increases with the skills level, making the problem most pronounced in the case of the most valuable (*i.e.* highest-skilled) migrants.

Self-selection models implicitly assume that skills are transferable. However, perfect transferability is rather unlikely, *e.g.* due to country-specific human capital. If skills are only imperfectly transferable, the curves for the skills returns in the prospective host countries are likely to flatten, ceteris paribus reducing the likelihood of positive self-selection. It is also possible that the transferability is somewhat country-specific. For example, knowledge of Japanese production-techniques may be transferable to countries that have industries that take advantage of these techniques, directing positive self-selection within this migrant group towards such countries.

An additional prediction of Borjas' (1987: 551) self-selection model is that countries with more income inequality should have lower emigration rates if there is negative self-selection (*i.e.*, if the host country has less income inequality than the source country). The reason behind this is that the migration incentives of the most skilled decrease while the least skilled will continue to migrate. Conversely, in the presence of positive self-selection, a higher income inequality should be associated with higher emigration rates.

Borjas has tested these hypotheses with data on immigration to the US, by regressing immigrant earnings and the emigration rate from the origin countries of US immigration on relative skills differentials in the countries of origin. As a proxy for the relative skills differentials, Borjas (1987: 545) uses the "ratio of household income of the top 10 percent of the households to the income of the bottom 20 percent of the households". His results seem to support his model's predictions on the impact of income inequality on migration.

III. *Alternative models*

Borjas' results have been challenged by other studies on immigrant self-selection. Chiswick (1999) argues that larger relative wage differentials in the origin countries do only imply a

less favourable selectivity, *i.e.* negative self-selection is not likely to occur. In a recent paper, Chiquiar and Hanson (2002) find support for Chiswick's argument based on data on migration from Mexico to the US.

The various models proposed by both Chiswick (1999) and Chiquiar and Hanson (2002) can be interpreted as expansions of the human capital model, which was first proposed by Sjastaad (1962). In Chiswick's (1999) modelling, migrants tend to be positively self-selected due to the presence of out-of-pocket costs to migration. The latter foster positive self-selection, as direct migration costs have a shorter time equivalent (*i.e.* lower opportunity costs) for the highly-skilled. Furthermore, Chiswick (1999) argues that ability is likely to positively affect efficiency in migration, which reinforces positive self-selection. Borjas' modelling assumes instead that time-equivalent migration costs are equal for all types of migrants. In the presence of direct migration costs, a larger wage inequality in the country of origin thus does not necessarily imply negative self-selection, but rather only a less favourable self-selection.[9]

We subsequently examine the dispute between Borjas, whose model predicts a negative self-selection of migrants from countries with a very large returns to skills (*i.e.* earnings) differential, and Chiswick and others, who argue that large income differentials do not preclude positive self-selection.[10]

IV. Data and methodology

We test the two alternative hypotheses by analysing the relationship between country-specific emigration propensities and each country's score on the Gini index on inequality. The 1995 International Social Survey Programme (ISSP) conducted a survey on national identity, which gathers the necessary data in an international microdata set. The survey covered 23 countries and has a sample size of approximately 28,000 individuals. It allows for the identification of socio-demographic characteristics of people with high emigration propensities, especially of the skilled. This is particularly noteworthy as there are no international statistics on the relative share of skilled migrants. Furthermore, all traditional immigration countries (USA, Canada, Australia and New Zealand) participated in the survey as well as many EU countries, including Germany. A key question in the survey is whether the respondent would be willing to move to another country to improve his work or living conditions. We identified all

respondents which answered "very willing" as people with a high emigration propensity. Of course, this propensity is not necessarily associated with actual migration.[11] However, it should be noted that self-selection theory is mainly concerned with "incentives" to migrate, which does not necessarily correspond with actual migration (see also Chiquiar and Hanson, 2002). Therefore, the migration propensity might serve as a better proxy for an empirical test of the theory than immigration, which is likely to be biased due to the impact of host-country specifics such as migration policy, network migration, country-specific migration costs, and the like. These biases are likely to be at work in single-country analyses and in all studies based on host-country data – *i.e.*, in basically all empirical tests of self-selection theory.[12] Furthermore, in a reply to a Jasso and Rosenzweig (1990) critique on his 1987 paper, Borjas (1990) acknowledges that selective emigration of the foreign-born (*i.e.*, "on-migration") is likely to bias studies based on host-country data. Finally, it is generally assumed that "intentions" are a monotonic function of the underlying variables motivating actual migration behaviour. Intention data have also been used in other studies on self-selection, such as in Burda *et al.* (1998).[13]

Using microdata allows to control for socio-demographic characteristics. We run probit-regressions with three groups, one including all surveyed persons and two comprising the sub-sample of the highly-skilled and the sub-sample of the respondents with medium and low education.[14] By relying on the Gini index as a proxy for wage inequality, the paper follows Borjas' (1987) approach. Borjas, however, proxies skills differentials by income differentials. Chiswick (1999) argues that these two differentials may only be poorly related. The analysis presented here partly avoids this criticism, as we compare the sub-sample of highly-skilled persons with all surveyed individuals (and with respondents having medium or low education). A strong positive correlation between skills and income therefore suffices for the validity of our approach. This, of course, is predicted by standard economic theory and imposes a much less stringent assumption than the one underlying Borjas' proxy.

A final important point is that we test a theory that is relative in nature with absolute data. More specifically, according to Borjas' theory, negative self-selection occurs when the *relative* income distribution is more unequal in the source than in the host country. The ISSP data set, however, captures migration intentions and has no information on the host country to which each respondent implicitly refers to. Thus, it is conceivable that a large proportion of *e.g.* Filipinos have the United States in mind, whereas Polish respondents implicitly refer to Germany. Testing such a relative theory with absolute data is only possible when our set of countries in principle comprises a reasonably closed system, *i.e.* the emigration intentions of

most respondents refer to another country of the sample. As we have included all traditional immigration countries and most Western European countries, we believe this to be a fair assumption. Note that even if a kind of clustering in migration takes place, *e.g.* the Eastern European countries refer to Germany and the Western European nations to the US, our estimates will not be biased.

V. Empirical analysis

The country-specific Gini values are shown in the last column of Table 1. As it can be seen, the Anglo-Saxon countries have a much higher inequality than Western Europe. Eastern European countries have fairly diverging Gini values, ranging from below 20 in Slovakia to almost 40 in Poland.

Table 1 also depicts the desired emigration rates, *i.e.* the percentage of respondents that stated they would be "very willing" to move to another country in the 1995 ISSP.

(Table 1 and Figure 2 around here)

No clear pattern seems to exist. Surprisingly, many eastern European countries have very low desired emigration rates. This result corresponds well with the relatively low actual emigration rates from these countries that have been reported elsewhere.[15] Averaging the five possible responses to the question "Would you be willing to move to another country to improve your work or living conditions?" on the Lickert's scale from 1 ("very unwilling") to 5 ("very willing") alters the picture somewhat. The results are shown in Figure 2. Still, there is no obvious pattern. Now, however, the Philippines stand out as the country with the highest emigration propensity, followed by Sweden. At first sight, Sweden's high emigration inclination appears puzzling. This points to an important difference between potential mobility – *i.e.*, emigration inclination – and actual emigration. The two need not to be correlated in countries which are already at the top end of the income and/or human development scale. It may well be that theoretically, Swedish citizens would be very willing to move to other countries to improve their work or living conditions. In practice, however, it might prove difficult for them to find such countries, as Sweden is already at the top end of

both GNP per capita and of the Human Development Index. Furthermore, and more importantly, it should be noted that Sweden joined the European Union in the year the survey was conducted and Sweden was among the countries with the highest increase in unemployment rates between 1992 and 1996. Thus, there might have been an increased awareness of new opportunities abroad at that particular date.

Table 2 depicts sample-mean tests (t-tests) in order to establish the significance of country differences in emigration propensities. There are apparently and significant large inter-country differences in the emigration inclination, even between neighbouring countries such as, for example, Sweden and Norway. In fact, only in very few and apparently unrelated bi-country comparisons are the sample means not significantly different.

(Table 2 around here)

We subsequently ran a set of probit regressions, controlling for socio-demographic characteristics. As Borjas' migrant self-selection theory predicts fundamentally different migration incentives for highly-skilled *vis-à-vis* lowly-skilled persons, the overall sample was divided in two groups. The first group included only people with a university degree and the second was comprised of the rest of the sample, *i.e.* people with medium or low education.

(Table 3 around here)

Standard migration theory predicts that young, highly-qualified, single males should be the most mobile group.[16] In the base regression, we controlled for age, education, marital status and gender. All of these factors had the predicted sign and were highly significant. The positive impact of high education on the migration propensity is particularly noteworthy. Unless other factors, such as income inequality, counterweight the impact of education, one would generally expect positive self-selection. The results of the base regression are, to our knowledge, the first empirical evidence for the positive selectivity-hypothesis of migrants based on a multi-country analysis of source-country data.

In the highly-qualified group, only gender and marital status had a significant impact. This result is underlined by the surprisingly small influence that employment status seems to have

(column 2 of Table 3). Only students have a significantly higher migration propensity, whereas the impact of unemployment is only at the margin of significance.

In column 3 of Table 3, we additionally control for foreign parents, knowledge of English, and whether the respondent has lived abroad. These factors should mainly influence the obstacles to migration by lowering both psychic and actual migration costs. Indeed, knowledge of the English language and prior migration have a significant impact on the migration propensity. Nevertheless, the three characteristics mentioned above have to be interpreted with caution as they are likely to be highly correlated. In this regression, we also had to exclude all English-speaking countries as well as Spain and Russia. In the latter two countries, the question had not been posed, while inclusion of the former would have obviously biased our analysis.

In Table 4, we run the first two sets of regressions again, now replacing the country dummies by each country's respective PPP-adjusted GNP per capita value and furthermore adding country-specific Gini coefficients. In the full sample, the coefficients for the socio-demographic characteristics (age, sex, level of education and marital status) confirm the main results of migration theory. Now even unemployment fosters the migration inclination significantly.

(Table 4 around here)

Even though we have been controlling for GNP per capita, the Gini-coefficient has a positive and highly significant impact.[17] A higher income inequality thus leads ceteris paribus to higher incentives to migrate. In Borjas' (1987) analysis based on US immigration data, however, countries with more income inequality had lower migration rates. Such a negative coefficient is implied by the assumption of wealth maximisation if there is negative selection. Vice versa, a positive coefficient can be expected if there is positive self-selection: the migration incentives for the lowly-skilled increase while the highly-skilled will still migrate. This appears to be the case in our analysis. We reconfirmed this result by running regressions separately for the highly-skilled group and the medium- and lowly-skilled group. For the latter sub-sample, a higher earnings inequality is indeed associated with a higher emigration propensity, as predicted by wealth maximisation in the presence of positive self-selection.[18]

For the highly-skilled sub-sample, however, there is no significant impact of inequality on migration propensity.

VI. Conclusions

Positive self-selection can be generally expected in international migration, even in the presence of high income inequality in the country of origin. Our result that a high income inequality does not seem to affect the emigration propensity of the highly-skilled contradicts Borjas' (1987) prediction that higher income inequality in the source country should lead to negative self-selection. If we do not control for the per-capita GNP, the relationship even becomes positive, *i.e.* a higher income inequality may even be associated with higher migration propensities of the highly skilled. These results indicate that explanations relying solely on income differentials may not suffice to adequately describe the migration behaviour of the highly-skilled. The model seems to be too much ceteris-paribus based to explain a complex phenomenon like (skilled) migration, as other factors such as language skills, prior migration, nationality of parents, *etc*., intervene.

Our results in line with those of Chiswick's (1999) and Chiquiar and Hanson's (2002) models of self-selection processes, who are based on a human capital model. They predict that positive self-selection will even occur in countries with high inequality if migration costs are lower for the highly-skilled, although positive self-selection may be weakened. Our findings support these alternative models that are based on a human capital migration model.[19] We found that a higher income inequality tends to foster emigration. The impact of income inequality on the inclination to migrate, however, becomes insignificant in the highly-skilled sub-sample. Importantly, however, there is no indication of a negative relationship, as predicted by Borjas. Even when income inequality in the origin country is high, positive self-selection can still be expected.

These results also have important implications for policies seeking to attract skilled migrants using financial incentives, particularly since a competition for skilled migrants seems to be currently emerging among OECD countries. *Inter alia*, tax incentives have been introduced to attract highly skilled workers. In the Netherlands, for example, highly-skilled foreigners benefit from a 30 per cent income tax discount for ten years, which was specifically initiated to be a magnet for highly-skilled migrants. Even "egalitarian" Sweden has introduced tax

incentives for highly-skilled foreign workers.[20] In France, stock option taxation has been relaxed to make the country more attractive for mobile workers in the ICT sector.[21] In the US, highly-skilled temporary immigrants are exempt from income tax for the first three years.[22] In this context, it is of particular interest to determine which factors influence the location choice and the supply of highly-skilled migrants, *i.e.* which persons find it worthwhile to migrate to a certain host country.

If Borjas were right, countries with an equal income distribution would particularly attract lowly-skilled people – regardless of the level of earnings (which, of course, still matters for the overall size of the migration flow). This has important implications for zones of free migration, such as in the wake of Eastern EU enlargement: countries with a very equal income distribution, such as Germany and Sweden, would then attract the lowly-skilled, whereas the highly-skilled compatriots of the latter would migrate to countries like the UK. In light of our findings, however, countries with a rather equal income distribution need not *per se* be concerned about attracting only lowly-skilled people. This insight also somewhat weakens calls for tax incentives in order to "remain competitive" for highly-skilled migrants. These will only have a level effect of attracting higher numbers of skilled people, not an additional effect via the altered earnings distribution.

Notes:

---

[1]   These countries include Germany and the UK; see OECD (2001a) for an overview of recent developments in highly-skilled migration.

[2]   See also Jasso, Rosenzweig and Smith (2000).

[3]   However, the economics that determine the out-migration decision differ substantially from those determining in-migration. Borjas and Bratsberg (1996) argued that out-migration intensifies the original selection. Chiswick (2000) concludes from a survey of various studies that out-migrants are likely to be less favourably selected than the original migrants, whereas Jasso and Rosenzweig (1988) argued that the most skilled are likely to out-migrate.

[4]   Tidrick (1971) and Finifter (1976) were among the first to test for selection processes using questionnaires on the inclination to emigrate from the US. A similar approach has been taken by Burda *et al.* (1998) for analysing the on-migration of immigrants in Germany.

[5]   A fundamental assumption in self-selection models is that earnings increase with skills.

[6]   In Borjas' (1987) model, a third case is distinguished in which immigrants have below-average earnings in the country of origin but enjoy above-average earnings in the host country. We exclude this possibility from our analysis.

[7]   This holds even if one controls for the distribution of skills, see Blau and Kahn (1996).

[8]   See World Bank (2001).

[9]   Jasso, Rosenzweig and Smith (1998) have developed a theoretical framework incorporating differing returns to skills and migration costs against the background of selective immigration law.

[10]   In this context, another strand of literature should be mentioned, the so-called "new economics of migration". Stark (1991), to whom this set of theories is due, has argued that migration need not correspond to wage differentials. In his models, other motives such as risk diversification and relative deprivation are the primary triggers for migration.

[11]   For an overview of the discussion of the use of intention data see Manski (1990).

[12]   A noteworthy exception of the lack of empirical studies with source country data is provided by Chiquiar and Hanson (2002). However, their study only covers Mexican emigration to the US.

[13]   Note that self-selection theory is a supply-side theory. In a similar line of reasoning in the labour supply literature, Kahn and Lang (1991) have argued that work intentions should be used rather than actual work.

[14]   Correctly, "skilled" refers to the ability of performing certain tasks, while "qualified" stands for educational attainment. As "abilities" are difficult to measure, most studies assume that the highly-skilled have at least tertiary education, *e.g.* a bachelor's degree or an equivalent to this (see *e.g.* Winkelmann (2001) and Auriol/Sexton (2001)). In effect, this assumption thus justifies a somewhat interchangeable use of the terms "high-qualified", "highly-educated" and "highly-skilled".

[15]   See, for example, the recent analysis of the International Organization for Migration (2002) and Fidrmuc (2001).

[16] See, for example, the overviews provided by Massey (1993) and Ghatak/Levine/Price (1996).

[17] This still applied after we additionally controlled for changes in unemployment rates between 1992 and 1996, which also had a significant impact on migration inclination.

[18] Note that this result is also in accordance with the relative deprivation assumption of the "new economics of migration" by Stark (1991), see also Note 10.

[19] However, our findings are also in line with the "new economics of migration", particularly with the assumption of relative deprivation.

[20] See Mahroum (2001), who also provides other examples.

[21] For a discussion of the role of stock option taxation in the competition for mobile highly-skilled labour, see Liebig (2001).

[22] See OECD (2001b), 190.

Bibliography

Auriol, L.; Sexton, J. (2001);
"Human resources in science and technology: Measurement issues and international mobility". In: OECD (ed.): *International mobility of the highly skilled*. Paris: OECD, 13-38.

Bailey, A. (1993);
"A Migration History, Migration Behavior and Selectivity." *Annals of Regional Science*, 27, 315-326.

Beenstock, M. (1996);
"Failure to Absorb: Remigration by Immigrants Into Israel." *International Migration Review*, 30, 950-978.

Bell, L. and Freeman, R. (1995);
"Why do Americans and Germans Work Different Hours?" in: F. Buttler, W. Franz, R. Schettkat and D. Soskice (eds.) *Institutional Frameworks and Labor Market Performance: Comparative Views on the U.S. and German Economies*, New York: Routledge: 101-131.

Blau, F.; Kahn, L. (1996);
"International Differences in Male Wage Inequality: Institutions versus Market Forces." *Journal of Political Economy*, 104 (4), 791-837.

Borjas, G. (1996);
Labor economics. New York *et al*.: McGraw-Hill.

Borjas, G. (1994);
"The economics of immigration". *Journal of Economic Literature*, 32 (4), 1667-1717.

Borjas, G. (1990);
"Self-Selection and the Earnings of Immigrants: Reply." *American Economic Review*, 80 (1), 305-308.

Borjas, G. (1987);
"Self-Selection and the Earnings of Immigrants." *American Economic Review*, 77 (4), 531-553.

Borjas, G. and Bratsberg, B. (1996);
"Who leaves? The Outmigration of the Foreign-born." *Review of Economics and Statistics*, 78 (1), 165-176.

Burda, M.; Härdle, W.; Müller, M. and Werwatz, A. (1998);
"Semiparametric Analysis of German East-West Migration Intentions: Facts and Theory." Journal of Applied Econometrics, 13 (5), 525-542.

Chiquiar, D.; Hanson, G. (2002);
International Migration, Self-Selection, And the Distribution of Wages: Evidence from Mexico and the United States. NBER Working Paper No. 9242.

Chiswick, B. (2000);
"Are immigrants Favorably Self-Selected? An Economic Analysis." In: Brettell, C. and Hollifield, J. (Eds.): *Migration Theory: Talking Across Disciplines*. New York: Routledge, 61-76.

Chiswick, B. (1999);
 "Are Immigrants Favorably Self-Selected?" *American Economic Review*, 89 (2), 181-185.

Constant, A.; Massey, D. (2002);
"Self-Selection, Earnings, and Out-Migration: A Longitudinal Study of Immigrants to Germany." IZA Discussion Paper No. 672, Bonn.

Fidrmuc, J. (2001);
Migration and Adjustment to Shocks in Transition Economies. Center for European Integration Studies Working Paper No. B23, University of Bonn.

Finifter, A. (1976);
"American Emigration." *Society*, 13, 30-36.

Gabriel, P; Schmitz, S. (1995);
"Favorable Self-Selection and the Internal Migration of Young White Males in the United States." *Journal of Human Resources*, 30, 460-471.

German Federal Statistical Office (2001);
Statistical yearbook for the Federal Republic of Germany 2001. Wiesbaden: Federal Statistical Office Germany.

Ghatak, S.; Levine, P. and Wheatley Price, S. (1996);
"Migration Theories and Evidence: An Assessment." *Journal of Economic Surveys*, 10 (2), 159-198.

International Organization for Migration (2002);
New Challenges for Migration Policy in Central and Eastern Europe. Geneva: International Organization for Migration.

Jasso, G.; Rosenzweig, M. (1990);
"Self-Selection and the Earnings of Immigrants: Comment." *American Economic Review*, 80 (1), 298-304.

Jasso, G.; Rosenzweig, M. (1988);
"How Well Do U.S. Immigrants Do? Vintage Effects, Emigration Selectivity, and Occupational Mobility." Reserach in Human Capital and Development, 6, 229-253.

Jasso, G.; Rosenzweig, M.; Smith, J. (2000);
"The Changing Skill of New Immigrants to the United States: Recent Trends and Their Determinants." In: Borjas, G. (ed.) *Issues in the Economics of Immigration*. National Bureau of Economic Research Conference Report, Chicago and London: University of Chicago Press, 185-255.

Jasso, G.; Rosenzweig, M.; Smith, J. (1998);
"Determinants of Immigrants' Gains from Immigration." *Mimeographed.*

Kahn, S.; Lang, K. (1991);
"The Effect of Hours Constraints on Labor Supply Estimates," *Review of Economics and Statistics* 73:605-611.

Liebig, T. (2001);
Is There a "Tax Penalty" on Stock Options in Germany? Discussion Paper No. 73 of the Research Institute for Labour Economics and Labour Law, University of St. Gallen.

Massey, D. *et al*. (1993);
"Theories of international migration: A review and appraisal." *Population and Development Review*, 19 (3), 431-466.

Mahroum, S. (2001);
"Europe and the Immigration of Highly Skilled Labour." *International Migration*, 39 (5), 27-43.

Manski, C. (1990);
"The Use of Intentions Data to Predict Behavior: a Best-Case Analysis." *Journal of the Americal Statistical Association*, 85 (412), 934-940.

McFadden, D. (1973);
"Conditional Logit Analysis of Qualitative Choice Behavior." In: Zarembka, P. (Ed.): *Frontiers in Econometrics*. New York: Academic Press, 105-142.

OECD (2001a);
International mobility of the highly skilled. Paris: OECD.

OECD (2001b);
OECD employment outlook. Paris: OECD.

Roy, A. (1951);
"Some Thoughts on the Distribution of Earnings." *Oxford Economic Papers*, 3, 135-146.

Sjaastad, L. (1962);
"The costs and returns of human migration". *Journal of Political Economy*, 70 (Supplement), 80-93.

Stark, O. (1991);
The migration of labor. Cambridge: Basil Blackwell.

Tidrick, K. (1971);
"Need for Achievement, Social Class and Intention to Emigrate in Jamaican Students." *Social and Economic Studies*, 20, 52-60.

Winkelmann, R. (2001);
"Why do firms recruit internationally? Results from the IZA international employer survey 2000". In: OECD (ed.): *International mobility of the highly skilled*. Paris: OECD, 133-150.

World Bank (2001);
World development report 2000/2001. New York: Oxford University Press.

World Bank (1998);
World development indicators. Washington: The World Bank.

Tables and Figures

(a) Positive selection of immigrant flows, both to Germany and to the US

(a) Negative selection of immigrant flows, both to Germany and to the US
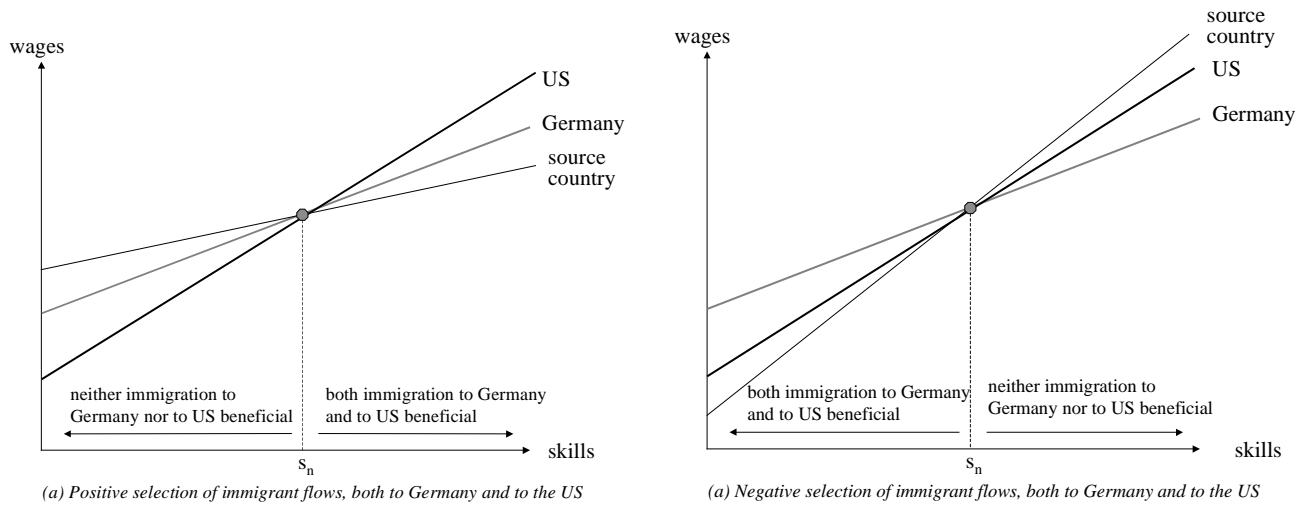
Figure 1 a) and b): Positive and negative self-selection of immigrant flows[1]

(c) Positive selection of immigrant flow to the US, negative selection to Germany
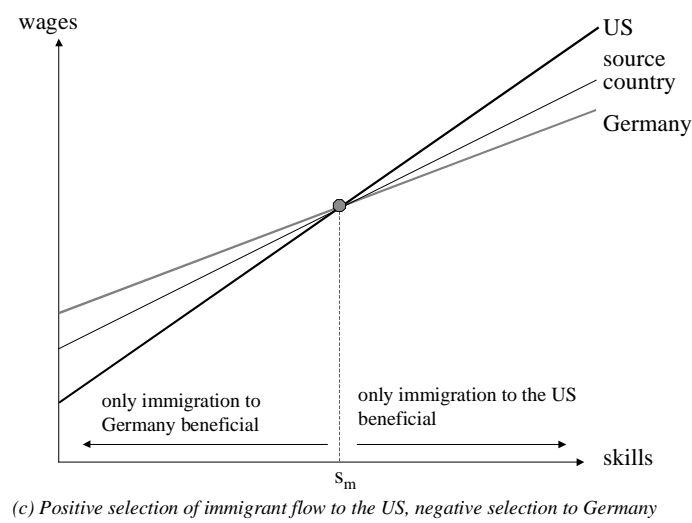
Figure 1 c): Adverse selection of immigrant flows

[1]   Source: own presentation based on Borjas (1996): 298.

Table 1: desired emigration rates (1995, in %)

	very willing	fairly willing	Neither willing nor unwilling	fairly unwilling	very unwilling	mean (std. error)	no. obs.	1995/96 Gini-values
Anglo-Saxon countries								
Canada (CDN)	12.0	17.9	15.2	20.1	34.7	2.5 (0.04)	1163	31.5
Great Britain (GB)	11.1	17.3	11.1	21.3	39.1	2.4 (0.05)	700	36.1
Ireland (IRL)	9.8	10.8	5.3	16.3	57.9	2.0 (0.05)	769	35.9
New Zealand (NZ)	7.8	20.5	17.3	19.0	53.5	2.5 (0.05)	770	43.9
United States (USA)	7.4	11.2	11.8	17.7	51.8	2.0 (0.04)	1034	40.8
Western European Countries								
Austria (A)	4.8	7.5	4.0	17.5	66.3	1.7 (0.04)	732	23.1
Germany – East (D-E)	4.5	10.7	6.0	18.4	60.4	1.8 (0.06)	402	30.0[a]
Germany – West (D-W)	8.6	17.3	8.2	26.7	39.2	2.3 (0.05)	883	30.0[a]
Italy (I)	10.2	12.6	6.9	16.1	54.2	2.1 (0.05)	851	27.3
Netherlands (NL)	9.9	18.7	11.1	28.8	31.5	2.5 (0.03)	1520	32.6
Norway (N)	5.6	15.9	17.5	20.1	40.9	2.3 (0.04)	1041	25.8
Spain (E)	11.4	15.0	11.1	16.6	45.9	2.3 (0.05)	832	32.5
Sweden (S)	14.1	19.9	13.7	17.7	34.6	2.6 (0.05)	930	25.0
Eastern European Countries								
Bulgaria (BG)	12.8	20.3	7.1	31.6	28.2	2.6 (0.05)	719	28.3
Czech Republic (CZ)	3.9	7.7	7.3	19.3	61.8	1.7 (0.04)	794	25.4
Hungary (H)	3.2	6.9	7.8	17.1	65.0	1.7 (0.04)	695	30.8
Latvia (LV)	3.4	10.4	8.2	19.3	58.7	1.8 (0.05)	647	32.4
Poland (PL)	9.6	13.5	11.4	25.3	40.3	2.3 (0.04)	1053	39.9
Russia (RUS)	4.0	9.3	6.7	18.4	61.6	1.8 (0.03)	1150	38.7
Slovakian Rep. (SK)	10.2	15.1	9.5	23.4	41.9	2.3 (0.04)	983	19.5
Slovenia (SLO)	3.9	9.2	9.3	29.7	47.9	1.9 (0.04)	774	26.8
Others								
Japan (J)	2.1	3.7	10.2	25.1	58.8	1.7 (0.03)	843	24.9
Philippines (RP)	9.4	18.7	15.6	38.2	18.1	2.6 (0.04)	970	46.2

Note: underlying question: "Would you be willing to move to another country to improve your work or living conditions?"

[a] In the corresponding World Bank (2001) statistics, the Gini-value is only depicted for Germany as a whole.

Figure 2: ranking of emigration inclination
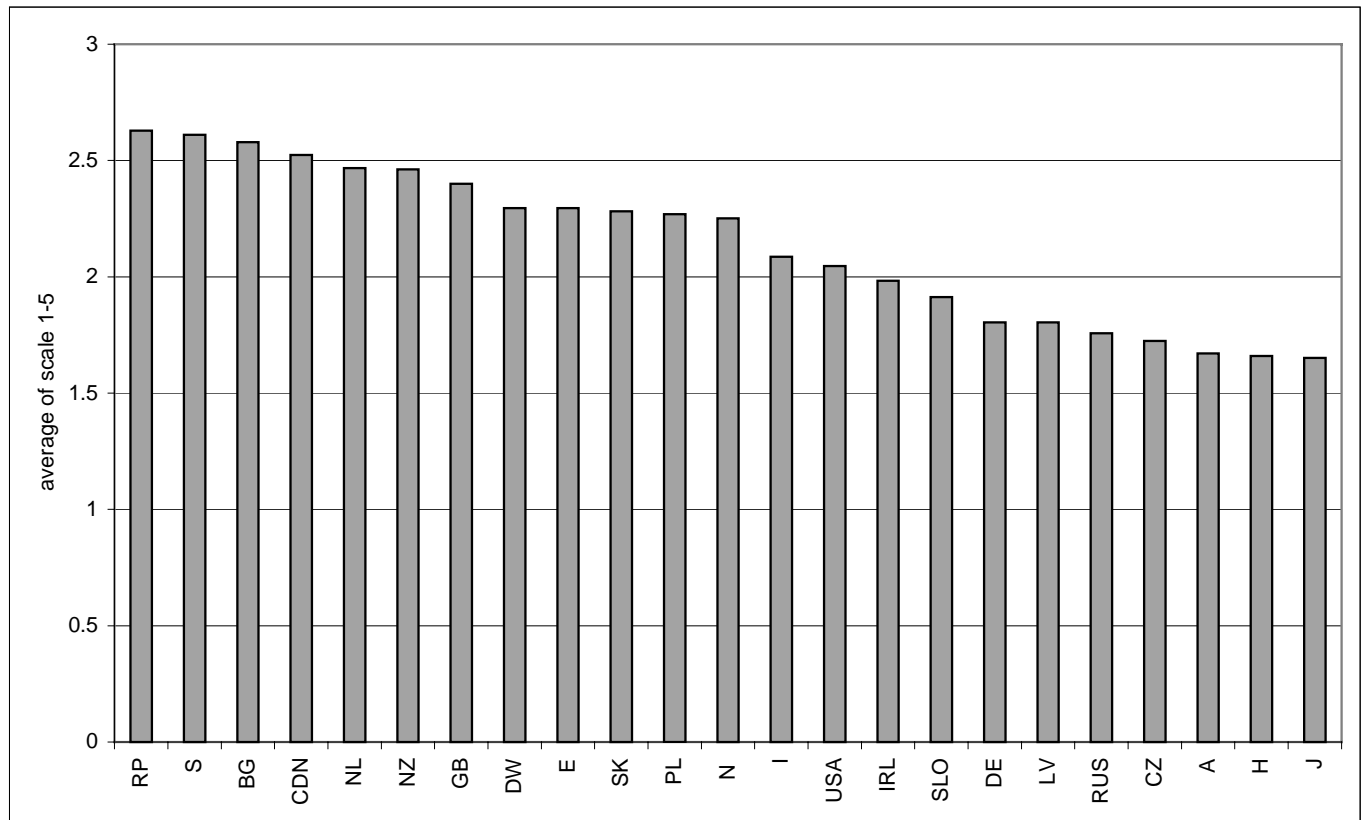
Note: average is based on the scale ranging from 1 ("very unwilling") to 5 ("very willing")

Table 2: probabilities of equal means (t-tests)

	RP	S	BG	CDN	NL	NZ	GB	DW	E	SK	PL	N	I	USA	IRL	SLO	DE	LV	RUS	CZ	A	H	J
RP		0.77	0.45	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S			0.65	0.17	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BG				0.41	0.08	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CDN					0.30	0.34	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NL						0.93	0.29	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NZ							0.39	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GB								0.14	0.15	0.09	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DW									0.99	0.84	0.68	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E										0.85	0.70	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SK											0.83	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PL												0.77	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N													0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I														0.55	0.14	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
USA															0.32	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IRL																0.28	0.02	0.01	0.00	0.00	0.00	0.00	0.00
SLO																	0.13	0.07	0.00	0.00	0.00	0.00	0.00
DE																		0.99	0.51	0.28	0.07	0.05	0.03
LV																			0.42	0.20	0.03	0.02	0.01
RUS																				0.55	0.11	0.07	0.03
CZ																					0.35	0.26	0.15
A																						0.86	0.72
H																							0.86
J																							

Table 3: determinants of desired emigration - probits

	all	high education	medium and low education	all	high education	medium and low education	all	high education	medium and low education
constant	-0.625**	0.065	-0.678**	-0.775**	-0.194	-0.814**	-1.010**	-1.771*	-0.971**
	(0.177)	(0.546)	(0.188)	(0.188)	(0.587)	(0.200)	(0.239)	(0.806)	(0.251)
male[a]	0.090**	0.155*	0.074*	0.076**	0.167*	0.052	0.104**	0.177	0.086*
	(0.027)	(0.068)	(0.029)	(0.029)	(0.072)	(0.032)	(0.036)	(0.095)	(0.040)
age	-0.029**	-0.044	-0.026**	-0.024*	-0.032	-0.023*	-0.019	0.023	-0.023
	(0.009)	(0.027)	(0.010)	(0.010)	(0.029)	(0.010)	(0.013)	(0.041)	(0.013)
$age^2 x 10^{-3}$	0.187	-0.368	-0.138	0.138	0.233	0.114	0.055	-0.478	0.105
	(0.117)	(0.343)	(0.125)	(0.125)	(0.362)	(0.133)	(0.161)	(0.506)	(0.171)
high education[a,b]	0.124**			0.124**			0.003		
	(0.038)			(0.038)			(0.051)		
low education[a,b]	-0.155**			-0.147**			-0.071		
	(0.040)			(0.041)			(0.049)		
married[a]	-0.167**	-0.211**	-0.164**	-0.148**	-0.168*	-0.148**	-0.115**	-0.219*	-0.095*
	(0.030)	(0.076)	(0.033)	(0.031)	(0.078)	(0.034)	(0.040)	(0.101)	(0.044)
full-time employed[a,c]				0.044	-0.024	0.078	0.037	-0.041	0.063
				(0.044)	(0.146)	(0.046)	(0.056)	(0.191)	(0.059)
part-time employed[a,c]				0.011	0.156	-0.013	0.017	0.239	-0.048
				(0.056)	(0.162)	(0.062)	(0.073)	(0.206)	(0.081)
student[a,c]				0.195**	0.244	-0.218**	0.151	0.177	0.158
				(0.069)	(0.201)	(0.074)	(0.088)	(0.268)	(0.093)
unemployed[a,c]				0.150*	0.288	-0.136*	0.119	0.303	0.101
				(0.061)	(0.208)	(0.065)	(0.079)	(0.268)	(0.083)
foreign parents[a]							0.137	0.081	0.145
							(0.073)	(0.168)	(0.081)
has lived abroad[a]							0.457**	0.475**	0.457**
							(0.045)	(0.099)	(0.052)
speaks English[d]							0.299**	0.264*	0.330**
							(0.047)	(0.120)	(0.051)
N	20165	2828	17337	19527	2770	16757	13172	1778	11394
log likelihood	-5317	-863	-4449	-5181	-843	-4330	-3261	-495	-2756
pseudo R^2	0.058[e]	0.062[e]	0.056[e]	0.059[e]	0.063[e]	0.058[e]	0.089[e]	0.095[e]	0.091[e]

Note: the dependent variable can have two possible values: 1 – very willing to emigrate, 0 - others. The regressions included country dummy variables. For the sake of clarity, these coefficients have not been reported here. Regressions conducted for individuals aged 20-60. Standard error in parenthesis.

[a] dummy variables

[b] reference category: middle education

[c] reference category: nonemployed

[d] all English-speaking countries were omitted (USA, Canada, Ireland, New Zealand, Great Britain). In addition, due to missing variables, Spain and Russia were excluded.

[e] the pseudo-R^2 measure is that of McFadden (1973)

*/** significant at the 5%/1% level, respectively

Table 4: desired emigration and income inequality - probits

	all	high education	medium and low education	all	high education	medium and low education	all	high education	medium and low education
gini^d	*0.008***	*0.010**	*0.007***	*0.009***	*0.008*	*0.008***	*0.009***	*0.008*	*0.009***
	(0.001)	*(0.005)*	*(0.002)*	*(0.001)*	*(0.005)*	*(0.002)*	*(0.002)*	*(0.005)*	*(0.002)*
constant	-1.650**	-1.825**	-1.626**	-0.794**	-0.765	-0.779**	-1.016**	-1.073	-0.992**
	(0.047)	(0.138)	(0.050)	(0.165)	(0.507)	(0.175)	(0.178)	(0.549)	(0.188)
male[a]				0.094**	0.140*	0.082**	0.086**	0.156*	0.067*
				(0.026)	(0.066)	(0.029)	(0.028)	(0.070)	(0.031)
age				-0.029**	-0.035	-0.028**	-0.021*	-0.023	-0.021*
				(0.009)	(0.026)	(0.010)	(0.010)	(0.028)	(0.010)
age^2				-0.018	0.028	-0.015	0.009	-0.014	-0.008
				(0.011)	(0.033)	(0.012)	(0.012)	(0.035)	(0.013)
high education[a,b]				0.140**			0.140**		
				(0.037)			(0.037)		
low education[a,b]				-0.087*			-0.078*		
				(0.038)			(0.039)		
married[a]				-0.152**	-0.234**	-0.141**	-0.133**	-0.183*	-0.125**
				(0.030)	(0.074)	(0.032)	(0.031)	(0.076)	(0.033)
full-time employed[a,c]							0.028	0.005	0.055
							(0.042)	(0.141)	(0.044)
part-time employed[a,c]							0.046	0.244	0.013
							(0.055)	(0.158)	(0.060)
student[a,c]							0.230**	0.310	0.237**
							(0.068)	(0.197)	(0.072)
unemployed[a,c]							0.162**	0.350	0.148*
							(0.060)	(0.204)	(0.062)
N	20255	2839	17390	20165	2828	17337	19527	2770	16757
log likelihood	-5663	-912	-4725	-5467	-886	-4577	-5322	-863	-4453
pseudo R^2	0.003[e]	0.012[e]	0.003[e]	0.031[e]	0.037[e]	0.029[e]	0.033[e]	0.041[e]	0.031[e]

Note: the dependent variable can have two possible values: 1 – very willing to emigrate, 0 - others. The regressions included a PPP-adjusted GNP per capita variable. Regressions conducted for individuals aged 20-60. Standard error in parenthesis.

[a] dummy variables

[b] reference category: middle education

[c] reference category: nonemployed

[d] the Gini values are taken from World Bank (2001)

[e] the pseudo-R^2 measure is that of McFadden (1973)

*/** significant at the 5%/1% level, respectively

Table A1: variable definitions

variable	definition
desired emigration	equal to 1 if respondent is "very willing" to move to another country in order to improve his living conditions; 0 otherwise
low education	equal to 1 if respondent's highest education is primary schooling; 0 otherwise
high education	equal to 1 if respondent has a university degree; 0 otherwise
full-time employment, part-time employment, student, unemployment	dummy variables based on respondent's self-classification
foreign parents	equal to 1 if at least one parent is not a citizen of the country concerned; 0 otherwise
has lived abroad	equal to 1 if respondent has ever lived in a foreign country; 0 otherwise
speaks English	equal to 1 if respondent reported to speak English well and/or regularly at home; 0 otherwise
gini	country gini values for the year 1995/96 according to World Bank (2001)
PPP-adjusted gnp	country PPP-adjusted GNP values for the year 1995 according to World Bank (1998)

Table A2: summary statistics

	mean	standard error
desired emigration[a]	0.081	0.272
male[a]	0.475	0.499
age	39.108	11.263
high education[a]	0.139	0.346
low education[a]	0.190	0.392
married[a]	0.661	0.473
full-time employed[a]	0.592	0.491
part-time employed[a]	0.106	0.307
student[a]	0.046	0.208
unemployed[a]	0.074	0.261
foreign parents[a]	0.073	0.260
has lived abroad[a]	0.182	0.385
speaks English[a]	0.449	0.497
N	17399	

Note: due to the listwise deletion of variables the number of observations does not correspond to that of the regressions in tables 3 and 4. Sample restricted to individuals aged 20-60.