International Migration and Poverty: a Cross Country Analysis

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Abstract

The objective of the paper is to empirically investigate the effect of migration on poverty in origin countries, using data from a cross country analysis. Moreover, the research aims to indirect ascertain whether migrants are selected in terms of welfare levels, through the comparison of the effects of international migration on different income quintiles of the population. The relationship between migration and poverty is as well analysed for different sizes of the network of relatives and friends, in order to cast some light on the importance of the network effect. To proxy the level of international migration, the variable stock of migrants is computed from a new data set, personally constructed, which contains bi-lateral information on the number of migrants produced by 149 origin nations and resident in 23 OECD destinations.

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1. Introduction

The role of international migration, both as a source for development in the labour sending countries, as well as a mean for redistribution of both between and within country welfare, has been recently recognized. International migration has rapidly grown and continues to rise: in particular, according to the UN estimates (UN, 2004), the stock of migrants increased by 13.5 percent in the last 10 years; moreover, the stable increase in migration movement is accompanied by a considerable flow of remittances, which now constitute one of the largest sources of external funding for developing countries.

The potential role of remittances relies on the fact that they directly benefit the households, rather than being transferred to public institutions. Through increasing consumption, for example, they might be a valid candidate for reducing transient poverty, in particular in cases of adverse shocks affecting poor households. Moreover, they might boost investments and consequently affect structural poverty through freeing capital constraints. International migration and remittances may constitute, therefore, a visible instrument to reshape the countries of origin. In the World Development Report 2006, which extensively covers equity and development issues, international migration is listed among a range of institutions and policies for lower world inequality.

However, regardless of the high expectations attached to international migration, its effect on structural poverty and its impact on inequality are far from understood. Because of the political sensitivity of the topic, in fact, the research interest mainly focused on the impact of migration on receiving countries' economy whereas its effect on origin countries has been under-researched. There have been some empirical contributions at a micro-level, which, however, failed to provide some common view and agreement on the actual benefits of migration on labour sending economies.

The objective of the following analysis, therefore, is to empirically investigate the effect of migration on poverty in labour sending countries, using data from a cross country analysis. Moreover, the research aims to provide insights on the existence of a selective mechanism driving the migration decisions. The above concept refers to a process, which triggers people with some specific characteristics rather than others to migrate; if this selection occurs, migrants may be endowed with specific features: for example they may be mainly drawn from the upper or from the lower tail of the income and skill distribution. Understanding the selectivity of migration is quite crucial, because the specific characteristics of migrants, in terms of welfare and education in particular, determine how the potential benefits of migration distribute among

the population and how these effects spread among the non-migrants families. If only high income households sent migrants abroad, families at the bottom tail of the income distribution are likely to be excluded from the beneficial effects of migration: international migration, therefore, would fail to impact on poverty and would constitute a source of inequality for developing countries. The very poor have the most to gain by migration to high wage countries, but they are the least able to meet the resources to complete the migration process: migration in fact is a costly investment. The poor likely face credit constraints, and incur in higher borrowing expenditures than would do the well-off individuals, because of default risks. As a consequence, the high costs may constitute an impediment to the migration of the poor people. At the same time, however, the constraint induced by poverty may have declined over the first global century, due to transport revolutions, which lowered the costs for travelling and reduced the time lost in transit from home to destination and therefore foregone earnings.

To date, the extent to which migration flows are selecting individuals in a non systematic way has never been explored at a macro level, mainly because of the lack of reliable data on migrant stocks as well as migrants' characteristics at an aggregate level.

The remainder of the paper is organized as follows. Section 2 reviews the empirical findings on the effects of migration in labour exporting countries. Section 3 analyses the figures on migration, drawn from a new data set. Section 4 outlines the methodology adopted. Section 5 presents the econometric analysis and Section 6 provides summary and conclusions.

2. The Empirical Literature on the Effects of Migration

The effects of migration on poverty and income distribution depend on two factors: first, on the welfare characteristics of the migrants' families and second on the existence of spillovers effects from migrants' to non-migrants' households. First, one of the existing hypotheses is that at the beginning of the migration process only limited elite are likely to migrate, adding the effect of migration to the pre-existing inequality, whereas for a longer migration experience at a community level, a wider social spectrum might be able to move, proving a more equalizing result. Stark, Taylor and Yitzhaki (1986; 1988), confirm this prediction, comparing the experience of two Mexican villages at different stages of migration: in particular, they conclude that in the village where many households are engaged in internal migration, and only few households in Mexico-to-United States migration, internal remittances have an equalizing effect, while international remittances increase inequality. On the contrary, in the second village with longer history of international migration, external remittances dampen inequality while internal remittances worsen the Gini Coefficient. Jones (1998) finds a negative correlation between

inequality and migration in those Mexican towns where less than 30 percent of the families have long term experience in migration, whereas he finds that the relationship reverses in town with more than 30 percent of long term migrant households. From this follows that migration and inequality show an inverted U-relationship.

The importance of the network effect reveals in both the contributions: the network of family, friends or community members, in fact, helps reducing the emigration costs, which deter initially poor migrants from emigration and it represents a mean to limit the risks involved in the process. In communities which offer a high migration network, migration becomes accessible to poor people and hence remittances prove equalizing. The role of network in shaping the link between remittances and inequality is crucial in the analysis of McKenzie and Rapoport (2004), where a measure of prevalence ratio proves significant and negative in an inequality regression. In agreement with Massey et al. (1994) they compute the prevalence ratio as the proportion of community members that moved internationally and this variable is interpretable as a measure of relative network size. The authors test for the existence of nonlinearity in the inequality and network relationship, but the quadratic term in the regression did not result in a significant effect: the result, therefore, suggests that an increase in the prevalence ratio reduces inequality, with no distinction between low and high migration communities. On the contrary, McKenzie (2005) finds that migration reduces inequality only in high migration communities, whereas migration has a positive, though insignificant effect on inequality, in low migration areas.

There is a second factor influencing the effect of migration: the existence of spillovers effect from migrants' non-migrants' families; for example the remittances sent back from migrants can generate a stimulus to the economy, via the consumption multiplier, producing indirect effects which do not accrue solely to migrant's families, but do expand to non-migrant's households as well. Adelman and Taylor (1990), using a computable general equilibrium (CGE) model, quantify that for every dollar remitted to Mexico, the GDP increases by $2.9. The authors find that the multiplier effect is maximized when remittances benefit rural households because the money favours consumption of goods produced domestically. Moreover, the multiplier effect ensures that remittances not only raise incomes of migrant sending families, but they also increase incomes in non-migrant's households. Spillover mechanisms to non-migrant's households are also found in Yang and Martinez (2005) for Philippines, where the effects of an increase in remittances are transmitted to families without migrant members. Taylor, Zabin and Eckhoff (1999) applying a CGE model in rural El Salvador, quantifies the outcomes of international migration: although the short run effect of emigration on production is negative, the total village income increases. The overall higher income augments demand for nationally

produced goods, generating rural-urban linkages and encourages savings. The positive effects are transmitted in the medium-long run via the increased investment, which augments the stock of capital and raises the productivity of other factors in production, such as labour. However, it should be noted that the net effect on non-migrant household is negative, as the group is adversely affected by the contraction in local production, without being compensated through the inflow of remittances.

The existence of multiplier effects and the role of the network in spreading the migration opportunities to the less well off people affect as well the relationship between migration and poverty. Generally, the empirical literature which examines the effect of international migration on poverty produce optimistic results; among the studies which are based on household surveys, can be quoted Adams (1991), which predicts relief from poverty for 9.8 percent of poor households in Egypt, if they were able to acquire remittances from migration. Adams (2005) predicts household expenditure excluding and including remittances and reports that both internal and international remittances have a dampening effect on three measures of poverty, which capture the level, depth and severity of poverty in Guatemala. Moreover, a distinct effect of internal and international remittances on poverty does not reveal. On the contrary, in Mora and Taylor (2004), international remittances in Mexico dampen the three measures of poverty more than do internal remittances. Moreover, the effect of this income source on poverty is stronger in those rural areas with larger proportion of households receiving remittances. Lopez Cordova (2005) agrees with the finding that municipalities with a higher number of families with a migrant member show a lower measure of the poverty headcount. Yang and Martinez (2005), compute the effect of an increase in international remittances on poverty and it results that remittances reduce the household's likelihood of being in poverty in the Philippines. Moreover, the beneficial impacts of remittances transmit to non-migrants family, in part through gifts and in part via a general increase in the economic activity.

The first and unique attempts to address the relationship between migration and poverty at an aggregate cross-country level are represented by Adams and Page (2003a; 2003b). After controlling for the level of income and for the income inequality, the authors test the effects of the stock of migrants per capita or the level of remittances per capita on the three measures of poverty. In Adams and Page (2003b) a poverty reducing impact of both migration variables feature, though, sometimes, they are poorly determined; in particular, a 10 percent increase in the share of migrants per capita reduces the proportion of people living in poverty by 1.9 percent and decreases the depth of poverty by 1.5 percent. A 10 percent increase in the remittances variable

reduces the head count by 1.6 percent, and both the poverty gap and the severity index by 2 per cent.

3. Migration Figures

The empirical literature focusing on international migration has been historically constrained by the lack of comprehensive figures on migrants' stocks and flows, due to difficulties in collecting the data, and no big improvements have been achieved recently on the ground. The major limitation is that only a few of the main labour exporting countries accumulate evidence and publish accurate records on outflows of natives: therefore, it is impossible to establish how many international migrants are produced every year, in particular by developing countries and what is the exact stock of migrants living around the world.

A second best approach, which has been used to collect international information, is to access destination countries' registers and censuses: rather than monitoring the outflow of nationals from source countries, it has been analysed the inflow of foreigners into destination countries, classified by regions of origin. For example, it is known the exact number of immigrants living in US in various years and this information can be disaggregated according to the countries of origin: the collection of information, however, can by no means be complete, requesting details of the migration flows from every country of the world toward every other country of the world; therefore, the gathering of the information is constrained to a restricted number of destinations, typically OECD destinations (Carrington and Detragiache (1998), Adams and Page, 2003b; Docquier and Marfouk, 2005).

A similar approach has been followed and a new data set has been personally constructed: the data set contains bi-lateral information on the stock of migrants for 149 and 86 developing and transition economies in 2001 and 1991 respectively, resident in 23 destination nations; a variable measuring the stock of migrants is then computed, aggregating the information for the same country of origin. The data set shows some advantages with respect to the previous data sets available, published by Adams and Page (2003b) and Carrington and Detragiache (1998): in fact, the first includes only 42 origin countries for an irregular number of years, whereas the second provides information for 61 developing countries for 1991 only. There is another data set published by Docquier and Marfouk (2005), which comprehends 201 origin countries and details the information on the stock of migrants for different educational levels. However, the data set became available some months later the end of the personal construction.

3.1 Preliminary Analysis

Overall, in 2001 the stock of migrants from developing and transition countries and resident in OECD nations[1] corresponds to 45.6 million people. The country with the largest number of nationals abroad is Mexico, which produces more than nine millions emigrants. The figure is impressive if compared to other major labour exporting states: Mexico has three times as much migration as the second largest emigration nation. In fact, as shown in Table 1, Turkey provides 2.7 millions migrants while China and Philippines contribute to more than 2 millions each. There are some countries, such as El Salvador, Jamaica, Albania and Bosnia-Herzegovina, which rank among the main labour exporting countries, not only in absolute terms but also in relation to their home country population. With reference to Tables 1-2, it can be reported that 736 thousands individuals from Jamaica emigrate to OECD nations and this figure corresponds to nearly 30 percent of total home population; 21 percent of the Albanians reside outside the national borders and El Salvador as well as Bosnia-Herzegovina lose more than 13 percent of their citizens.

In the literature, two hypotheses have been discussed upon the relationship between migration and level of development: however, the empirical support on either the two opinions is only limited, given the lack of reliable migration data. The first view is that economic development does not act or perhaps plays a perverse role in stimulating migration and therefore, income increases and poverty relief do not itself ensure a lower rate of out-migration (Lucas, 2004). The second view, which is now replacing the former, proposes the existence of an inverted U-relationship between development and migration, and for this reason the concept of *migration hump* has been introduced: "migration pressures actually increase as development proceeds from low levels of economic development, while at higher levels of development the process is reversed" (Lucas, 2004, p.4).

A rational explanation for such a trend is that, given that migration is an expensive investment, in countries with low average incomes and low wages, few households can afford sending members abroad and therefore the level of emigration is limited. At higher income, when financial constraints are not binding, the existence of earning gaps between home and destination creates the incentives for emigration prospects. The micro level empirics, for example, provide evidence that economic opportunities abroad, though not exclusively, contribute positively to migration streams. Therefore, development process stimulates migration, while the convergence of income differentials at the end of the process leads to weaker migration

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[1] The selected destinations are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

pressure. It follows that development and migration display an initially positive and a subsequent negative relationship. Faini and Venturini (1994) provide empirical support to this relationship for southern Europe countries: in fact, they find that while in poor countries economic growth has a positive impact on emigration rates, in middle-income countries the effect is negative.

Table 1: Stock of Migrants, from Main Labour Exporting Nations, 2001 (thousands)

Code	Country	Migrants
MEX	Mexico	9246.6
TUR	Turkey	2763.1
CHN	China	2428.8
PHL	Philippines	2066.5
IND	India	1715.3
KOR	Korea, Republic of	1681.2
VNM	Vietnam	1511.0
POL	Poland	1252.7
MAR	Morocco	1242.6
CUB	Cuba	915.1
SLV	El Salvador	872.1
DOM	Dominican Republic	741.2
JAM	Jamaica	736.3
YUG	Serbia and Montenegro	714.6
ALB	Albania	650.6
RUS	Russian Federation	645.8
HKG	China, Hong Kong	618.9
BRA	Brazil	610.4
COL	Colombia	598.6
DZA	Algeria	572.2

Table 2: Stock of Migrants per Capita, from Main Labour Exporting Nations, 2001

| Code	Country	Percent of Population
GUY	Guyana	41.6
TON	Tonga	41.6
GRD	Grenada	36.2
WSM	Samoa	34.8
BRB	Barbados	33.4
ATG	Antigua and Barbuda	30.7
KNA	Saint Kitts and Nevis	29.2
DMA	Dominica	28.8
JAM	Jamaica	28.4
VCT	Saint Vincent and Granadine	26.3
TTO	Trinidad and Tobago	22.1
ALB	Albania	20.8
CPV	Cape Verde	19.0
BLZ	Belize	18.2
FJI	Fiji	15.2
SLV	El Salvador	13.8
TUV	Tuvalu	13.4
BIH	Bosnia-Herzegovina	13.3
LCA	St.Lucia	10.9
HRV	Croatia	10.2

The data available in this study provides support to the second view: in fact, it appears that the level of migration is maximized at an intermediate level of development. As it appears in Figure 1, lower middle income (LMI) and marginally upper middle (UMI) nations offer the largest contribution to migration stocks, while in low (LI) and in high income (HI) economies the stock of migrants is lower[2]. The red line underlines the average value of stock of migrants among the entire set of nations: while the sample of low middle income nations is well above the mean value, the poorest and wealthiest nations only reach the average figure and remain well above in many cases.

More clear evidence in favour of the inverted U-relationship comes from the comparison of the mean and median stock of migrants for the different groups of nations, organized by

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[2] The income division follows the World Bank classification reported in the World Development Indicators-WDI, (World Bank, 2004).

development levels (Table 3), and by income quintiles (Table 4): in fact, it appears that low and high levels of development hinder migration, whereas migration pressures are strong at medium level of development. Low middle income countries, in fact, send a remarkable stock of migrants to OECD nations, as confirmed by the highest mean and median value. The mean value for upper middle income countries is as well extraordinarily high, but the figure is mainly driven by the outstanding stock of migrants from Mexico; on the contrary, the use of the median, which is not influenced by extreme values, reduces the size of the stock of migrants from upper middle income countries; nevertheless the volume remains higher than low and high income nations, which seem to be the groups less represented in the migration process. It should be noted that the use of descriptive statistics alone, cannot explain the causality of the relation: more rigorous econometric analysis should be conducted to give strength to the conclusion.

Figure 1: Major Labour Exporting Countries by Development Level, 2001 (thousands migrants)
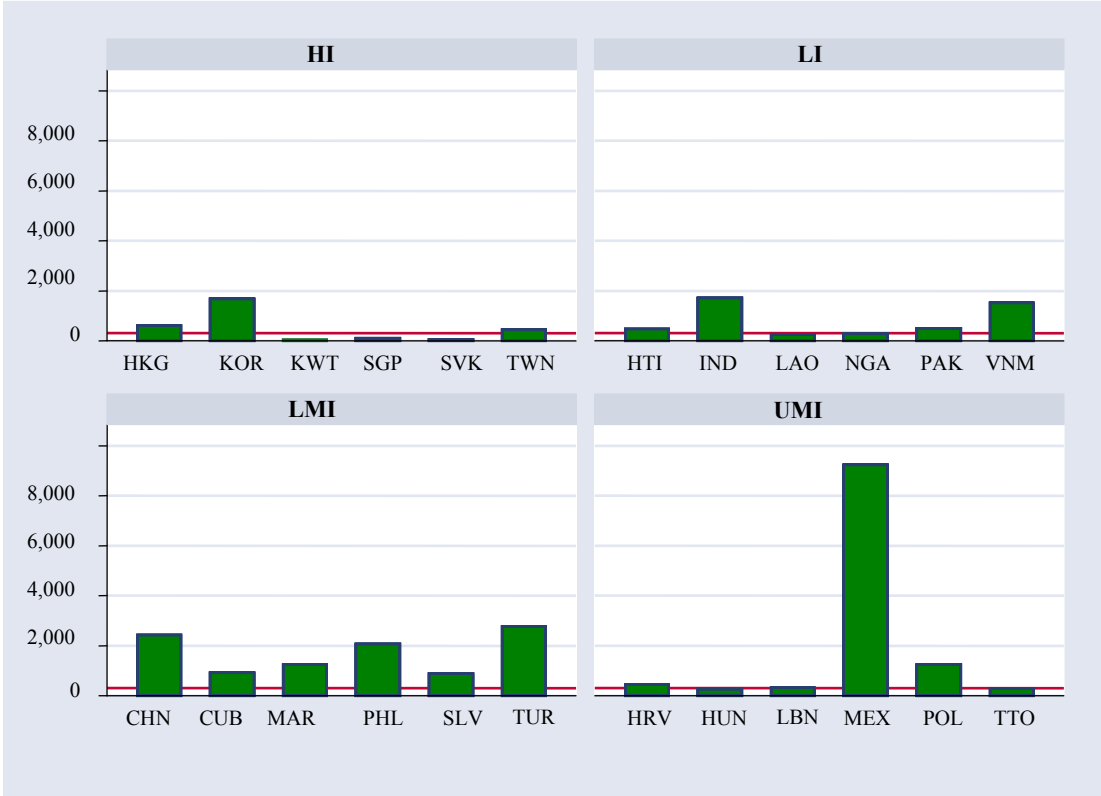
The existence of a *migration hump* is depicted in Table 4, where the total sample of countries is arranged according to income quintiles[3]. Nations at the bottom tail of the income distribution display the lowest participation to the migration process, as suggested by the low mean stock value of migrants. The mean figures increase for countries with higher income per

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[3] The income figure refers to the per capita GDP, at purchasing power parity in 1995 international dollars.

capita, suggesting that a financial constraint is potentially eased. The initial up-ward movement has a maximum among the nations of the third quintile, while after this peak the stock of migrants declines monotonically.

Table 3: Mean and Median Stock of Migrants, by Development Level, 2001 (thousands)

	HI	UMI	LMI	LI
Mean Stock of migrants	109.3	444.9	456.2	124.8
Median	19.4	53.4	303.7	25.2
Obs	12	30	48	59

Another point of analysis is the link between migration figures and geographical location. In the literature it is well established that costs do represent an important factor influencing the decision to migrate. The empirical studies on the determinants of migration within a gravity type model suggest that distance to destination and other country level characteristics such as landlocked or common borders with the host nation strongly influence migration incentives, as they proxy the cost of migrating (Karemera et al., 2000; Clark et al., 2002). Therefore, the location of the origin country may considerably matter in the outcome of a migration decision.

Table 4: Mean and Median Stock of Migrants, by Income Level, 2001 (thousands)

	Bottom Income Quintile	Second Income Quintile	Third Income Quintile	Fourth Income Quintile	Top Income Quintile
Mean Stock of migrants	43.3	152.4	551.2	305.8	243.3
Median	18.2	39.2	320.1	86.0	76.7
Obs	25	26	26	26	25

Within this perspective, it can be noted that Sub-Saharan countries are those with the lowest mean and median level of migration, as shown in Table 5 and represented in Figure 2. On the one hand, the low income of these countries may be the principal factor responsible for such low international movements. However, a more rigorous analysis can show that another region, South Asia, despite offering the lowest level of income, reports respectable out migration levels[4]. Therefore, other factors, such as weak transportation infrastructure, isolation or absence of communication and network system may contribute in the case of African countries to high costs of emigration and hence to the poor participation in migration process.

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[4] The low level of GDP per capita in 2001 may also be the consequence of the Asian financial crisis of 1997.

Table 5: Mean and Median Stock of Migrant, by Geographical Area, 2001 (thousands)

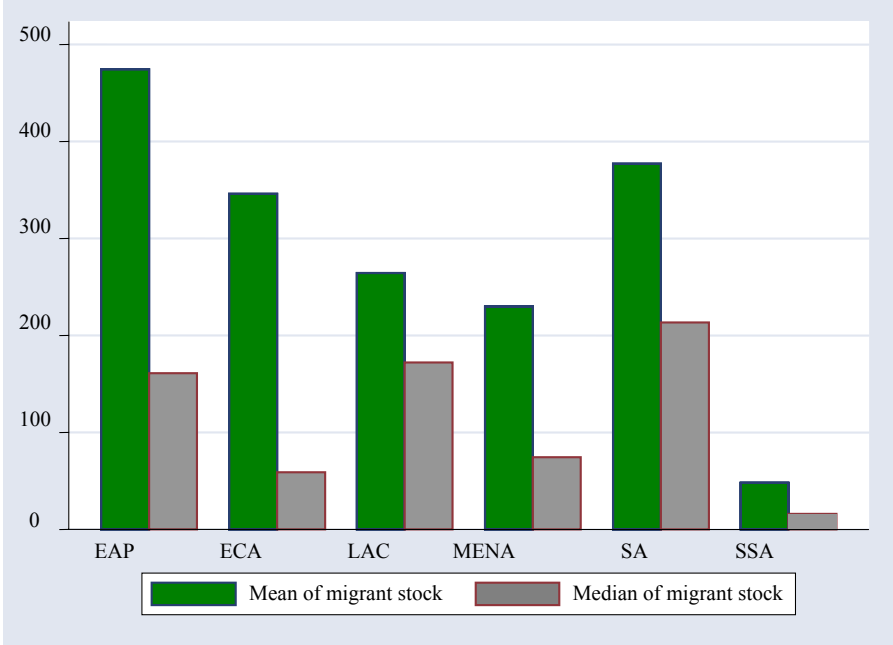|	East Asia and Pacific	Europe and Central Asia	Latin America	Middle East and North Africa	South Asia	Sub-Saharan Africa
Mean Stock of migrants	476.6	346.2	536.5	229.8	377.1	48.3
Median	161.1	58.8	172.1	74.5	213.4	16.2
Mean Gdp per capita	6658	5588	6385	6727	1971	2560
Obs	22	24	33	17	8	46

The flows of migration directed toward OECD nations can be divided according to the geographical location of the origin countries: there is one flow which groups Eastern Europe countries, as well as countries originated on the ground of the former URSS, by the newly independent states of the former Yugoslavia and by Turkey. This stream is mainly directed toward Europe and in particular to Germany where, for example, the historical introduction of the guest worker system attracted a large flow of citizens from Turkey. The short distance with the host countries largely influenced the course of this group of migrants: Albanian mainly moved to Greece and Italy; from Estonia migration was mainly directed toward nearby Finland; citizens from countries of the former Yugoslavia primarily migrated to Germany but also to Austria and Switzerland. Finally, Germany is the major destination for states of the former soviet bloc, such as Kazakhstan, Kyrgyz Republic, Tajikistan and Turkmenistan and it is the second largest destination after United States for Azerbaijan, Poland, Hungary, Romania and Republic of Moldova.

There is a second group of migrants, originally from Latin American countries, whose key destination is the United States. This host country alone absorbs the majority of the flows: for example, more than 90 percent of the outflows from Mexico, Honduras, Guatemala, Panama, Cuba, Nicaragua, Bahamas, Belize, Costa Rica and El Salvador move to US and between 80 and 90 percent from Antigua and Barbuda, Haiti, Colombia, Ecuador, Dominica and Bolivia.

A third group of migrants is drawn from Middle East and North Africa; there are different important destinations for this kind of flow. The first is the nearby Europe and in particular France, which gives residence to nearly 1.2 million citizens from North Africa. According to the census figure, in fact, in France 478'000 citizens from Algeria, more than 500'000 from Morocco and 154'000 from Tunisia are registered as foreigners. Secondly, for nationals from Yemen, Jordan, Bahrain, Kuwait, Saudi Arabia, Iran, Syria, Egypt, Lebanon and Iraq US is the main location choice. It is also known that international migration from this region is directed to the Persian Gulf area (Adams and Page, 2003a; Adams, 1991). Members of the Gulf Cooperation, in fact, after the first shock to world oil prices, introduced a system of labour

recruiting for temporary jobs. Therefore, this new regime attracted in the early stages a lot of migrants from nearby countries, though later the recruitment turned largely to South and South East Asian countries.

Figure 2: Mean and Median of Stock of Migrants by Geographical Area, 2001 (thousands)

Note: the mean value for Latin American countries have been computed without the figure from Mexico. EAP is East Asia and Pacific; ECA is Europe and Central Asia, LAC is Latin America, MENA is Middle East and North Africa, SA is South Asia and SSA is Sub-Saharan Africa.

Asian emigration is directed toward Canada and Australia, although United States represents the leading location choice. For example, 22.5 percent of the total stock of foreign born resident in US, which reached nearly 31 million in 2000, was born in South and East Asia. In particular, the largest communities are originally from Philippines and India with more than a million emigrants residing in US. There are also substantial groups from China, Vietnam and the Republic of Korea. The notable characteristic of Asian emigration is the high level of education of the movers: in fact, among the foreign students resident in US, 30 percent are from Asia, while China and India alone account for 21 percent of the foreign students registered in degree-renting institutions. Moreover, US immigration policies, after a long tradition of encouragement of permanent settlement, have been shifting toward the admission of highly skilled workers, under some form of temporary admission programs: the consequence of the recent expansion of H1 visas was the enlargement of the inflow of information technology engineers from India (OECD, 2003). After the introduction of the labour recruitment scheme in the Persian Gulf region, moreover, increasing flows of Asian migrant are also directed toward this area.

Finally Sub-Saharan countries, although being the major absentee of the international migration process, have maintained emigration flows, reflecting the past colonial links.

As already mentioned, physical as well as psychological costs influence largely the decision of migrating: for example, the mass migration occurred in the early years of the 20th century was influenced by the shift in ocean transport from sail to steam, which considerably reduced the travel time. Moreover, the drastic decline in the transport costs, resulting from the shift from sea to air travel as well as the fall in the costs of information and communication boosted international migration in the post II World War period. An important component of costs, however, is represented by psychological costs: the effort to acquire living and job information at destination, the disadvantage for moving away from friends and family, cultural change and language differences have a strong impact on migration decisions. However, the existence of a network of nationals and friends in the destination countries contribute positively to alleviate the disadvantage of moving. It is not surprising, therefore, that in many cases individuals are willing to move in countries where their ethnic group represents a big proportion of the destination area population.

The choice of location seems sometimes to follow a nationality pattern: the same ethnic group of emigrants can be concentrated in some specific states, while being completely absent in other countries: for example, nationals from Kyrgyz Republic selected Germany as principal destination while they are nearly absent in any other OECD member states and the same is true for other countries of the former soviet bloc, as well as for North Korea and Mongolia. Emigrants from United Arab Emirates and Qatar are primarily in Canada; there is a large community of people from Cote d'Ivoire in Italy, from Gambia in Spain, from Brazil in Japan and from Burkina Faso in Austria and Italy.

The concentration of migrants from one single origin can be very high so that the new entrants become a considerable fraction of the host community: as already reported, in Greece the community of emigrants from Albania represents more than 4 percent of the country population; in US Mexicans are the 3.2 percent; in Austria foreigners from Serbia and Montenegro and Bosnia-Herzegovina reach respectively the 2.5 and 1.6 percent of the population; another important community of nationals from Serbia and Montenegro is in Switzerland where they represent the 2.4 percent; citizens from Turkey are mainly concentrated in Germany, Austria and Switzerland (Table 6).

Table 6: Migrant Community Size- Proportion of Migrants from Selected Origins over total Host Country Population, 2001

Code	Country	Major Destination	Proportion
ALB	Albania	Greece	4.2
MEX	Mexico	United States	3.2
YUG	Serbia and Montenegro	Austria	2.5
YUG	Serbia and Montenegro	Switzerland	2.4
TUR	Turkey	Germany	2.4
TUR	Turkey	Austria	1.6
CHN	China	Thailand	1.4
BIH	Bosnia-Herzegovina	Austria	1.3
CHN	China	Canada	1.1
TUR	Turkey	Switzerland	1.1
MAR	Morocco	Belgium	1.0
IND	India	Canada	1.0

The perpetuation of an already existing critical mass of co-nationals can determine the location of the successive waves of migrants. But, which factors do determine the selection of the destination countries in the first place? Clearly geographical proximity is one of these elements: for example, emigrants from Central America chose to move to the US in more than 90 percent of the cases (Table 7); 68 out of 100 Albanians migrate to Greece; Australia represents the principal destination for 94 percent of the emigration flows from Papua New Guinea.

Table 7: Network Size- Stock of Migrants toward the Most Important Destination over total Migration Stock, 2001

Code	Country	Major Destination	Proportion
MEX	Mexico	USA	99.3
HND	Honduras	USA	97.5
GTM	Guatemala	USA	96.7
PAN	Panama	USA	96.3
CUB	Cuba	USA	95.4
NIC	Nicaragua	USA	94.7
BHS	Bahamas	USA	94.7
BLZ	Belize	USA	93.9
CRI	Costa Rica	USA	93.7
SLV	El Salvador	USA	93.7

Historical connections and cultural ties are a second important factor: 91 percent of emigrants from Malawi move to United Kingdom; 83 percent of Algerian chose France and 63 percent of Tunisian chose the same destination; 96 percent of foreigners coming from Guinea-Bissau reside in Portugal. Germany is the main goal for 86 percent of migrants from Togo.

4. Methodology

The broad purpose of the paper is to study whether there is a relationship between migration and poverty in the origin countries. The literature has well emphasized the importance of absolute as well as relative poverty indices: according to the former, the definition of poor people depends on an absolute poverty line, which has a "fixed purchasing power, determined so as to cover physically and socially essential needs" (Bourguignon, 2004, p.1); this definition emphasizes the intuition that the amount of goods required for a basic survival does not vary around the world. On the contrary, according to the latter definition, the poor are those owing a fixed proportion of the mean or median country income and therefore, their well being is measured relative to the whole society. Poor are identified not on the basis of a cut-off point, which is the poverty line, but on the basis of the entire resources of the population.

In the present analysis, in line with the seminal study from Dollar and Kraay (2002) and Gallup et al. (1999), a relative rather than absolute index is applied and the poor are defined as the bottom 20 per cent of the population, ranked according to the country income distribution. Across nations, poor people are identified in a fixed proportion, and what varies is how much they share of the country income. The dependent variable in the first equation is the average per capita income of the bottom 20 percent of the population and it is calculated by applying the following formula:

$$\ln(Y_i^p) = \ln\left(\frac{share_i^p * Y_i}{0.2}\right) = y_i^P \qquad\qquad i=1,\dots,I \qquad\qquad (1)$$

where $share^p$ is the income share of the bottom quintile of the population, Y is the GDP per capita, based on purchasing power parity (PPP), measured in constant 1995 international dollars[5] and $ln\ (.)$ is the natural log operator.

The poverty equation includes the variable stock of international migrants, resident in OECD member states[6] and it enlarges the matrix of the covariates with the determinants of the income of the poor, as specified in the literature (Klansen, 2003; Lopez, 2004; Dollar and Kraay, 2002; Gallup et al. 1999; Mosley et al., 2004; Lundberg and Squire, 2003). The effect resulting is the average and *ceteris paribus* impact of the stock of migrants on the average income of the poor.

$$y_i^p = f(Income_i, Migrant_i, X_i) \qquad\qquad i=1, \dots, I \qquad\qquad (2)$$

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[5] The adjustment for the population share, which represents no more than a rescaling of the income of the poor, is done for comparable reasons with the previous literature. See Gallup et al. (1999) and Dollar and Kraay (2002).
[6] A variable which measures the volume of official remittances, published in the IMF Balance of Payment Yearbooks is alternatively used, but it did not exert a significant effect on poverty.

The poverty impact of migration is not unambiguous, given the dubious participation of the poor households to the migration investment. The empirical, micro-level literature, for example, suggests that members of well educated households are over represented in the migration process: provided that education and income are often highly correlated, it can be expected that migration selects mainly upper income individuals. The existence of an empirical relationship between international migration and poverty, on the contrary, would represent evidence that the less well off people are not excluded from the migration process or at least from the migration benefits.

Moreover, a more distinct picture of the welfare characteristics of migrants can be presented applying a joint analysis of the effect of migration on different income quintiles of the population: given that the welfare effect of emigration is highly influenced by the participation of the households' members in the process, namely by the selectivity of migration, any statistically distinct relationship between the migration variables and the income of different quintiles can indirectly inform upon the existence of a selection process in migration. An analysis of the variation of the coefficients in two alternative estimations, using the average income of the bottom and top quintile of the population is computed. Given the average per capita income of the top quintile, y_i^q:

$$y_i^q = f(Income_i, Migrant_i, X_i) \qquad\qquad q=1,5 \qquad i=1, \dots, I \qquad\qquad (3)$$

5. Data and Estimation

5.1 The Poverty Equation

Cross-country data are used to estimate how international migration affects poverty. The poverty equation is:

$$\ln(Y_i^P) = \alpha + \beta \ln(Y_i) + \delta G_i + \phi \ln(MIG_i) + \varphi EDU_i + \gamma GOV_i + \pi ROAD_i + \vartheta INST_i +$$
$$+ \psi DEMO_i + \xi \sum_{g=1}^{5} A_{g,i} + \varepsilon_i \qquad\qquad (4)$$

According to the literature, a poverty equation should include the overall country average income (Y) and level of the initial inequality (G). The specification, moreover, allows the identification of specific policy variables which affect poverty over and above their effect on overall growth. As stated in the empirical literature (Klansen, 2003; Dollar and Kraay, 2002; Lopez, 2004; Kraay 2004; Gallup et al. 1999; Mosley et al., 2004; Lundberg and Squire, 2003) the decline in poverty can be achieved through policies that promote growth and policies that improve the income distribution: high level of education (EDU), public spending (GOV), good level of infrastructure (ROAD), good governance and institutional quality (INST), and high level

of democracy may ensure a type of growth which benefits the poor. It would be expected, for example, that on average, in countries which provide a more generalized primary education, a higher public spending, a greater level of democracy, a better institutional quality and a higher level of infrastructure, the poor would benefit more from economic growth. Regional dummies (A) are introduced to control for possible regional effects on poverty[7]. In order to proof the robustness of the coefficients to alternative definitions of income, both the per capita GDP and the per capita expenditure are included. Table A.1 in the Appendix details the sources of the variables.

Ordinary least squares are applied on a sample of 61 countries, which comprises each major area of the developing and transition world: 7 countries are drawn from East and South Asia (ESA), 18 from Eastern Europe and Central Asia (ECA), 6 from Middle East and North Africa (MENA), 11 from Sub-Saharan Africa (SSA) and 19 from Latin America (LAC).

Table 8 reports the outcome of the regression. First of all, the stock of international migrants exerts a significant effect on poverty reduction, through increasing the income of the poor. The coefficient, in fact, appears to be robust to the alternative specifications both in terms of magnitude and in terms of significance: controlling for the level of expenditure, a 10 percent increase in the stock of migrants resident in OECD states, augments the income of the poor by 1 percent on average and *ceteris paribus*, whereas, controlling for GDP per capita, a 10 percent rise in the stock of migrants increases the income of the poor by 0.65 percent.

The income coefficients are well determined and positive; the effect of the expenditure variable is half the size of the effect of GDP: a 1 percent increase in expenditure per capita is augmenting the dollar value of the poor by 0.3 percent on average and *ceteris paribus*, while the same increase in the GDP per capita is affecting the income of the poor by nearly 0.6 percent. This would suggest that the growth in overall income is ensuring a growth rate in the income of the poor, which is positive but less than unitary. In agreement with Dollar and Kraay (2002), government consumption has a negative effect on the income of the poor, though the effect is not statistically significant. This may be due to the inability of government spending in developing countries to target the less well off people. Mosley et al. (2004), on the contrary, find that an indicator, comprising public spending in primary education, health care, housing and agriculture,

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[7] Other variables have been recognized as determinants of poverty through their effect on growth or inequality: the relative productivity in agriculture, for example, is responsible for reducing inequality: however, the variable was constraining the regression sample size. Financial development may exert a positive impact on growth; fiscal and monetary policies that act to stabilize the macroeconomic environment may contribute to long-run growth. International trade openness is another factor which could be positively related to growth. However, the three variables did not exert any impact on the level of poverty and were therefore excluded from the equation.

is highly significant as a mean for poverty reduction as well as for curtailing infant mortality. In Gallup et al. (1999), it appears a positive relationship between growth of the income of the poor and social spending in health and education.

Table 8: The Determinants of the Income of the Poor: Stock of International Migrants

| Variables | Dependent variable: ln (income of the poor) | |
	GDP	Expenditure
ln (per capita GDP)	0.631	
	(0.101)***	
ln (per capita Expenditure)		0.307
		(0.134)**
ln (Migrants)	0.065	0.101
	(0.021)***	(0.027)***
Inequality	-0.007	-0.007
	(0.010)	(0.015)
Government Consumption	-0.011	-0.010
	(0.007)	(0.009)
Primary Education	-0.002	0.008
	(0.004)	(0.004)*
Democracy	0.084	0.153
	(0.073)	(0.093)
Policy Effectiveness	0.207	0.407
	(0.107)*	(0.133)***
Paved Road	0.004	0.006
	(0.002)***	(0.002)**
Constant	1.366	3.963
	(0.652)**	(0.606)***
N	61	61
R-squared	0.94	0.90
Diagnostic		
Skewness/Kurtosis tests: P-Value	0.66	0.04
Breusch-Pagan / Cook-Weisberg test: P-Value	0.32	0.68
Ramsey test: P-Value	0.11	0.07

Notes: Standard Errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include regional dummies

Controlling for the level of expenditure, primary education has a positive and significant influence on the income of the poor. This result supports some previous findings, for example from Lopez (2004) and Lundberg and Squire (2003), who report that education is good for the poor. The measure capturing the degree of democracy has no impact on the well being of the poor at conventional statistical levels: Dollar and Kraay (2002) on the contrary, report that this variable enters positively and significantly in a poverty equation. The coefficient of institutional quality strongly confirms that better policies ensure lower levels of poverty. Previous findings show that good governance is boosting growth, with no disproportional effect on the poor (Dollar and Kraay, 2002); on the contrary in Lopez (2004) better quality governance seems to lead to more unequal societies. The importance of infrastructure for the well being of the poor is

proved by the coefficient of paved road: in fact, the variable enters positively and the effect is statistically significant. The same result appears in Lopez (2004), where public infrastructure benefits the poor more than other groups in the society.

Diagnostic tests were conducted suggesting, overall, adequate specifications and a satisfaction of the core assumptions of OLS.

The previous finding suggests that the poorest people in the society are not excluded from the overall benefits of migration, despite the greater hurdles introduced by poverty constraints: this result, in fact, establishes the well determined role of international migration in poverty alleviation. It may be the case that the information and the assistance provided by pioneer migrants and the establishment of a social network may later limit the migration risks and reduce the costs, making successively the movement accessible to individuals in lower part of the income distribution. However, it is still not clear, whether the poor people benefit directly or only indirectly from the migration process. In fact, the overall effect of international migration can be decomposed into the short term, direct effect, resulting in particular from the transfer of remittances to the migrants' families, and the medium-long term indirect effect originated by the specific use of remittances: because consumption of domestic goods and services has a multiplicative impact on the national economy, any first round effect of migration can be transmitted through consumption into the entire local economy, despite the original beneficiary of remittances. Moreover, the more the pattern of consumption favours the expenditures of domestically produced goods, with relatively labour intensive production technologies rather than imports, the higher is the income multiplier effect and the higher is the link between migration and poverty alleviation. Unfortunately, the direct effect cannot be disentangled from the indirect effect, and the observed outcome is the combination of the two mechanisms: in other words, it cannot be sharply asserted that poor people participate in the migration flows, but only that poor people share the positive outcomes of the migration flows.

However, one possible way to examine the source of the relationship between international migration and poverty, involves the introduction of a variable proxing the level of network. The existence of a network at a community level is found to increase the emigration chances: for example, in Mora and Taylor (2005) the network variable, *ceteris paribus*, increases the probability of migrating, with a stronger effect in a context of international migration than in internal migration. The network, in fact, favours the diffusion of migration opportunities throughout the community and provides additional insurance in case of unanticipated events: therefore it plays as a catalyst in easing the costs and the risks of moving, augmenting the likelihood of migration. Moreover, it is likely that large migrants' networks benefit particularly

poor migrants, because the presence of credit constraints binds more for the poor than for the rich households. For example, McKenzie (2005) finds a stronger impact of migration network on the probability of emigration for the poor than for the wealthy people, when the network size is already big. Munshi (2003) finds that the network is disproportionately valuable for less skilled individuals. These findings have evident implications in terms inequality as well as poverty: in fact first, in some studies, the relationship between migration and inequality is found to follow an inverted U-shape because of the network effect, and second this patter it is likely to translate into a specific dynamic between migration and poverty. Therefore, it is expected that the effect of migration on poverty varies according to the size of the network.

To test this hypothesis, different attempts are conducted. First, an interaction term between the stock of migrants and a measure of the network is added. In agreement with Massey et al. (1994), the network is proxied by the prevalence ratio, computed as the number of people who migrated internationally over the total number of people alive, which in turn defines the stock of migrants per capita. The estimated equation becomes:

$$\ln(Y_i^P) = \alpha + \beta \ln(Y_i) + \delta G_i + \phi \ln(MIG_i) + \zeta \ln(MIG_i) * \ln(NETWORK_i) + \varphi EDU_i +$$
$$+ \gamma GOV_i + \pi ROAD_i + \vartheta INST_i + \psi DEMO_i + \xi \sum_{g=1}^{5} A_{g,i} + \varepsilon_i$$

(5)

If the hypothesis is correct, it would be expected $\phi > 0$ and $\zeta > 0$, suggesting that the higher the network size, the stronger the (direct) effect of international migration on poverty. The results, however, are disappointing being the coefficients of the interaction term statistically insignificant in all the specifications, as reported in Table A.2.

The second method is performed distinguishing the sample into high and low network: the prevalence ratio is divided according to the median value and two regressions are run, for low and high values of the variable. According to the hypothesis, it would be expected a frail relationship between migration and poverty in the low network sample and a strong and positive link in the high network sample. However, the results are counterintuitive and opposite to the predictions, as shown in Table A.3. In fact the coefficients of the migration variable in the high sample network are non-statistically significant; on the contrary, in those countries with relatively low network, the effect of migration on poverty is stronger and well defined.

It should be noted, however, that the size of the international migration experience captured by the prevalence ratio and by the variable stock of migrants is the same, given that both variables are computed on the basis of international migration. The similarity between the two measures, therefore, is likely to make the prevalence ratio inadequate to capture the effect of the network in this analysis.

5.2 The Quintile Analysis

The overall impact of international migration highly depends on where migrants are drawn with respect to the wealth distribution, and this has clear implications in terms of who benefits the most from the process. The following analysis, therefore, widens the inspection beyond the bottom quintile of the population and access the effect of migration on the income of the richest group as well. Equation (4) is estimated applying the average incomes of the fifth quintile, as dependent variable, maintaining an identical set of covariates: this allows us a direct comparison of the effects of migration on different income groups, through the analysis of the estimated coefficients in the alternative equations.

Even if the alternative inclusion of both the level of Gdp per capita and the expenditure per capita represents a way to test the robustness of the findings to different definitions of income, for statistical reason, expenditure should be preferable to Gdp. In fact, given that the dependent variables are computed as shares of the country Gdp per capita, the existence of a well defined effect of Gdp on the average income of different quintiles would not come as a surprise. Therefore, the following specifications include only the level of expenditure as control.

The estimated results of the quintile analysis are reported in Table 9. A clear fall in the coefficient of the migration variable results between the bottom and the top quintile: in fact, while the effect of international migration on the income of the top group is not statistically different from zero, it is well defined and positive in the bottom quintile. Different interpretations of the result can be provided. First of all, if the richest people do not migrate, the effect of international migration on the income of the top quintile would be null or at least minimum. This interpretation is consistent with the theoretical finding of McKenzie and Rapoport (2004), where people above a certain wealth threshold, do not migrate because of the high opportunity costs of migration: in fact, the higher the level of wealth, the greater the returns to domestic production and the greater the loss in terms of decline in household production. Moreover, greater wealth makes migration less attractive, because the earning gaps between origin and destination countries are smaller. The finding in Faini and Venturini (1994), that growth represents a disincentive to emigration in relatively richer nations, suggests that lower income gaps reduce the migration participation, and this can be read as evidence that rich people might not migrate.

The second interpretation, on the contrary, would suggest that rich people migrate, but they either do not remit or they remit a part of their earning, such that the effect on their families' income is only marginal. In Faini (2002) for example, it results that the higher the share of migrants with tertiary education, the lower the level of remittances. In fact, despite earnings are

positively correlated with skills, which would suggest greater transfers, highly educated migrants tend to move more permanently abroad and are often accompanied by their families, being the reunification easier for these migrants: this lower attachment to home country is likely to diminish remitting. On the contrary, Rodriguez (1996) reports that remittances from contract workers increase for higher level of education, both in absolute terms and as a share of predicted earnings: however, this is not true for university graduates, who remit less than migrants with college education.

Table 9: Stock of International Migrants and the Incomes of Different Quintiles

	Dependent variable: ln income of the 1st and 5th quintile	
Variables	ln(Q1)	ln(Q5)
ln (per capita Expenditure)	0.307	0.695
	(0.134)**	(0.139)***
ln (Migrants)	0.101	0.044
	(0.027)***	(0.028)
Inequality	-0.007	0.013
	(0.015)	(0.016)
Gov. Consumption	-0.010	0.005
	(0.009)	(0.010)
Primary Education	0.008	0.016
	(0.004)*	(0.004)***
Democracy	0.153	0.101
	(0.093)	(0.097)
Effectiveness	0.407	0.245
	(0.133)***	(0.137)*
Paved Road	0.006	0.001
	(0.002)***	(0.002)
Constant	3.963	4.070
	(0.606)***	(0.627)***
Observations	61	61
R-squared	0.90	0.88
Diagnostic		
Skewness/Kurtosis tests: P-Value	0.04	0.28
Breusch-Pagan / Cook-Weisberg test: P-Value	0.68	0.66
Ramsey test. P-Value	0.07	0.09
Hausman Test: P-Value	0.60	0.27
Sargan Test: P-Value	0.55	0.23
Shea Partial R2 Test: P-Value	0.00	0.00

Notes: Standard Errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include regional dummies.

While unambiguous support to the first hypothesis comes from the literature, it remains unclear whether the highly educated (rich) migrants remit less or nothing, casting some doubts on the second hypothesis. Moreover, even if they tend to remit a lower share of their earnings, the transfer from skilled migrants can still remain greater, in absolute terms, than what low skilled migrants would remit.

What is clear, on the contrary, is that poor people are not excluded from migration opportunities. The existence of direct and indirect effects, with the latter coming from spillovers to non migrants' households in terms of gifts but also and in terms of general increases in economic activities, ensures that international migration is positively associated with the income of the poor.

A brief comment is required on the coefficients of the other covariates: the initial level of expenditure follows an up-ward pattern from the bottom to the top quintile and the size of the coefficients more than double. The inequality among the poor, as well as the government consumption and the level of democracy has no effect on the income of both quintiles. Enrolment rate in primary education boosts disproportionately the income of the top quintile, as it is proven by the increase in the elasticity: human capital, even if at minimum levels, enhances growth and consequently benefits those quintiles which gain from growth more than proportionately. On the contrary, the bottom quintile is the one benefiting the most from good governance and institutional quality: the elasticity, in fact, decrease moving between the fifth and the first quintile. Good infrastructures fail to impact on the income of the richest group, whereas they exert a positive effect on the income of the bottom quintile. Finally, the equations are well specified and pass almost all the relevant diagnostic tests.

The above results are robust to the use of a different migration variable, which is aggregated using the data set from Docquier and Marfouk (2005). The estimated coefficients of this second migration variable are perfectly in line with the coefficients reported in Table 9, both in terms of sign and in terms of magnitude.

5.2.1 Emigration toward non-OECD Nations

The data set used in this analysis takes into account only a limited proportion of the global migration stock, which is the fraction moving to OECD member nations, whereas another important portion of emigration directed to non-OECD states remains excluded. In order to test whether the existence of an un-captured flow of migrants toward non-OECD destinations has some critical consequences on the previous outcome, the regression residuals, standardized residuals and leverage have been under scrutiny. In fact, if for some emigration countries, the captured figures dramatically understate the true stock of movers, the residuals for these observations can turn quite large. This can be true, in particular, for those countries which send migrants to Arab Gulf States, which are known to collect considerable stocks of labour force from neighbouring African states, but also from East Asian countries (Lucas, 2005; Adams and Page, 2003a).

Scatter plot, density plot, standardized normal probability plot as well as the quantiles plot of the residuals show no indication of non-normality of the error terms and no indication of problematic outliers. Moreover, the analysis of the leverage suggests that no observations are particularly influential, and the number of high standardized residuals which exceeds the critical interval of -2 and +2 do not exceed the tolerance percentage. Finally an investigation of the residuals for cluster of observations has been performed: in fact, if the truncation is particularly relevant for some geographical area, the mean of the residuals of some cluster of countries may differ from the one of another group. To compute statistical tests on the mean, first the observations are listed according to their geographical location and their proximity with the Gulf-States and secondly the mean of the estimated residuals are calculated by cluster of observations. The average values computed for each cluster, however, do not statistically differ, and this casts some confidence on the validity of the study. In fact, even if the analysis focuses only on a limited part of international migration, the outlier analysis shows that the reported link between poverty and emigration toward OECD member states is not biased by critical truncation.

5.2.2 The Endogeneity Problem

An important aspect that deserves particular attention is the assumption of exogeneity of the migration variable: in fact, it may be true that some factors triggering migration are also likely to be affected by it. The micro level empirics, for example, show that earnings gaps between origin and destination countries contribute positively to migration streams, whereas macro level analysis suggests that migration pressures increase as development shifts from low to higher level: therefore, poverty and low development may represent push factors in migration decisions, introducing an endogeneity problem in the poverty and migration estimation: if the error distribution cannot be considered independent from the regressors' distribution, the OLS coefficients turn inconsistent.

However, since poverty is measured with data for a single year, while the migration variable includes subsequent flows of migrants, which adds in a plurality of years, the endogeneity issue might not occur. It is also true however that the economic gap between developing countries and OECD member nations was quite persistent in time and this is also true for the level of poverty of origin countries if compared to destinations. Only relevant test can cast some light on this point.

To test for the presence of endogeneity and to correct for potential limitations of the OLS estimation, the IV technique is called for, using an appropriate set of instruments. The validity of the IV technique relies on the respect of two conditions: first, the instruments have to be

correlated with the endogenous, instrumented variable, which is the stock of migrants in this specific case and second, the instruments have to be orthogonal to the error process. The instruments selected for the first stage estimation are: a measure of openness, a measure of financial development and a dummy variable capturing if a country is land-locked. The empirical literature which studies the determinants of migration highly emphasizes the link between emigration rates and political, economic as well as demographic and geographical characteristics of the source countries (Clark et al., 2002; Karemera et al. 2000).

The instrumental variable regression is used in both the bottom and top quintile analysis: as it is shown in Table 9, it results that the instruments satisfy the two essential requirements, as proved by the partial R^2 measure proposed by Shea (1997), which tests the explanatory power of the variables, and by the Sargan statistics (1958), which tests whether the instruments are independent from the error process. Finally, the Hausman test (1978) for the endogeneity of the stock of migrants is conducted: the Durbin-Wu-Hausman test cannot reject the null hypothesis that the instrumented variable is exogenous in both the regressions and the OLS coefficients are consistent[8].

Given that the variable stock of migrants does not result endogenous, the estimated coefficients of the OLS estimation can be considered consistent; moreover, the use of the instruments does not yield particular distinctions in the estimated coefficients of the migration variable.

6. Conclusions

This paper aims to analyse the capability of international migration to reach the poor and increase their income levels in a cross country analysis. To date, the extent to which migration has a dampening effect on poverty has been under-researched at a macro level, mainly because of the lack of reliable data on migrant stocks as well as migrants' characteristics at an aggregate level. The existing micro-level evidence on the link between migration and poverty seems to suggest that migration and in particular remittances, reduce both the level and the severity of poverty: this paper aims to provide confirmation upon this finding, extending the analysis to a macro level.

Given no previous reliable information on the stock of migrants a data set was personally constructed: the final outcome comprises bilateral information on the stock of migrants from 149 source countries to 23 OECD destinations. Exploring the information contained in the data set,

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[8] Pagan-Hall general tests for heteroskedasticity are performed: Chi-sq(15)=8.77 and Chi-sq(15)=13 suggest that the hypothesis of homoskedastic disturbance is supported by the data. Provided that the residuals are homoskedastic, IV would be preferable to GMM, as GMM can have poor small sample properties.

some conclusions can be drawn: first, the data available in this study highlights the existence of an inverted U-relationship between development and migration: in fact, it appears that the level of migration is maximized at an intermediate level of development, whereas low and high income economies marginally participate in the migration process. Second, the existence of a network of nationals and friends appears: in fact, the choice of location of successive waves of migrants seems to be influenced by a pre-existing critical mass of co-nationals; for example, some nationalities are concentrated in some specific states, while being completely absent in other countries; in some cases the community of migrants represent a large fraction of the home country population and sometimes more then 90 per cent of the emigration flow is directed toward the same destination country.

The econometric analysis is conducted aggregating in a single variable the bi-lateral information on the stock of migrants relative to the same labour exporting country. A poverty equation is estimated in order to assess the effect of the stock of migrants on a country poverty measure. What appears is that the stock of migrants has a well determined, dampening effect on poverty, and the relationship is robust to alternative specifications. The departure of labour force can potentially produce detrimental consequences to the countries of origin, reducing production and decreasing the overall income, but this effect results only if there is no surplus of labour. On the contrary, if there is surplus of labour, and this is quite likely in developing countries, the labour resource has zero opportunity cost and the production loss due to emigration approaches zero. The results seem to be in line with this scenario, at least among the poor: emigration, therefore, may proxy the opportunities generated by new investment and greater economic activities, which overcome and compensate for the reduced input of labour. The empirical finding, in fact, shows that, controlling for the level of expenditure, a 10 percent increase in the stock of migrants resident in OECD states augments the income of the poor by 1 percent on average and *ceteris paribus*. This result might be the combination of direct as well as indirect spillover effects from migrants' to non migrants' households.

The importance of the network has been as well assessed, although the analysis provides poor results: this may be due to the lack of adequate measure of the network.

Finally, the comparison of the effect of migration on the bottom and top quintile of the population might suggest that rich people do not migrate, given the low emigration incentives consequent to smaller wage differentials between origin and destination and eventually to the high opportunity costs of migration for the well-off people.

The policy implication of this result is straightforward: the higher the level of migration from developing to developed countries, the lower the level of poverty in labour sending nations;

therefore, allowing a higher degree of mobility into OECD nations can be an efficient instrument to poverty reduction.

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Appendix 1

Table A.1: Sources and Description of the Variables

Variables	Source	Description
First and Fifth Quintile Share	World Development Indicators, 2004	
Real GDP per Capita	World Development Indicators, 2004	PPP constant, 1995 international dollars
Real Expenditure per Capita	Global Poverty Monitoring Database	PPP constant, 1993 international dollars
Inequality	Global Poverty Monitoring Database	Squared Poverty Gap
Education	World Development Indicators, 2004	Primary School Enrolment
Public Spending	World Development Indicators, 2004	General government final consumption expenditure as a percent of GDP
Infrastructure	World Development Indicators, 2004	Proportion of paved roads
Institutional Quality	Kaufmann, Kraay and Mastruzzi, 2003	Index of Government Effectiveness
Democracy	Kaufmann, Kraay and Mastruzzi, 2003	Degree of Democracy
Stock of Migrants	Author's compilation	

Table A2: Elasticity of Poverty with Respect to the Stock of International Migrants: Interaction with Network

Variables	Dependent variable: ln (income of the poor)	
	GDP	Expenditure
ln (per capita GDP)	0.649 (0.103)***	
ln (per capita Expenditure)		0.307 (0.136)**
ln (Migrants)	0.041 (0.034)	0.105 (0.042)**
ln(Mig)*ln(Prevalence Ratio)	0.005 (0.006)	-0.001 (0.007)
Inequality	-0.004 (0.011)	-0.007 (0.016)
Government Consumption	-0.013 (0.007)*	-0.009 (0.010)
Primary Education	-0.003 (0.004)	0.008 (0.005)*
Democracy	0.075 (0.073)	0.155 (0.095)
Effectiveness	0.207 (0.108)*	0.405 (0.134)***
Road	0.004 (0.002)***	0.006 (0.002)***
Constant	1.352 (0.653)**	3.947 (0.622)***
Observations	61	61
R-squared	0.94	0.90
Diagnostic		
Skewness/Kurtosis tests: P-Value	0.58	0.04
Breusch-Pagan / Cook-Weisberg test: P-Value	0.24	0.67
Ramsey test: P-Value	0.12	0.06

Notes: Standard Errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include regional dummies

Table A3: Elasticity of Poverty with Respect to the Stock of International Migrants: Low Network and High Network

Variables	Dependent variable: ln (income of the poor)			
	Low Network Sample		High Network Sample	
ln (per capita GDP)	0.507		0.265	
	(0.130)***		(0.232)	
ln (per capita Expenditure)		0.366		-0.066
		(0.177)*		(0.158)
ln (Migrants)	0.092	0.143	0.017	0.025
	(0.030)***	(0.034)***	(0.035)	(0.035)
Inequality	-0.023	-0.028	-0.041	-0.051
	(0.013)	(0.017)	(0.023)*	(0.031)
Government Consumption	-0.018	-0.017	0.001	-0.00003
	(0.010)*	(0.013)	(0.010)	(0.010)
Primary Education	0.007	0.018	0.005	0.009
	(0.006)	(0.006)***	(0.006)	(0.006)
Democracy	-0.280	-0.282	0.114	0.135
	(0.127)**	(0.160)*	0.092)	(0.093)
Effectiveness	0.341	0.331	0.402	0.612
	(0.144)**	(0.182)*	(0.193)*	(0.132)***
Road	0.007	0.010	0.005	0.006
	(0.003)**	(0.003)***	(0.002)**	(0.002)***
Constant	1.818	3.159	3.473	5.445
	(0.725)**	(0.706)***	(1.564)**	(0.798)***
N	30	30	31	31
R-squared	0.96	0.93	0.96	0.96
Diagnostic				
Skewness/Kurtosis tests				
P-Value	0.40	0.11	0.02	0.03
Breusch-Pagan / Cook-Weisberg test				
P-Value	0.85	0.93	0.28	0.03
Ramsey test				
P-Value	0.31	0.72	0.34	0.40

Notes: Standard Errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include regional dummies