

# INTERNATIONAL MIGRATION AND THE WORLD INCOME DISTRIBUTION

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**Abstract:** Emigrants moving from poor to rich countries experience large income gains on average. These gains are further augmented by remittances that allow a portion of the gains to be spent at lower sending-country prices. Taking advantage of recently available estimates of emigration-related income gains, this paper estimates the *direct* impact of international migration on the world income distribution. We find that international migration raises world income per person by just under 1 per cent, while it raises the incomes of those born in developing countries by approximately 2¼ per cent relative to the no-migration benchmark. Allowing for the remittance price effect augments these gains by about half. International migration also decreases the between-country component of world inequality (as measured by the between-country Theil coefficient) by about 2 per cent. While these aggregate income gains are significant, even small ‘brain-drain’ related adverse growth effects could quickly swamp the direct gains to migrants where rich-country immigration policies have a strong skill bias. A surer route to realising the potential of migration to increase world welfare would be to expand emigration opportunities for the less skilled. Copyright © 2009 John Wiley & Sons, Ltd.

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## 1 INTRODUCTION

For most of the past two centuries global inequality increased. There is a raging debate over whether it decreased in the last two decades of the 20th century. Global inequality comprises both *within*- and *between*-country inequality. There is little dispute that the former has continued to increase in recent decades. However, some have argued that the latter has decreased (largely because of rapid growth in China and India) enough to offset

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the former, and as a result, global inequality has declined (Firebaugh and Goesling, 2004; Sala-I-Martin, 2006). This argument rests on the fact that more people live in a few poor nations with faster-than-average income growth (especially in Asia) than in the many poor nations with slower-than-average (especially in Latin America and Sub-Saharan Africa). Others have contested this on a variety of conceptual and measurement grounds (Ravallion, 2003; Wade, 2004).

Whatever the trends in world inequality, the remaining large and often growing income gaps between rich and poor countries suggest another way to reduce world poverty—allow people to migrate from poor to rich countries. Of course, this route to higher incomes only works if the main causes of low-average incomes relate to limitations of the country (say weak institutions) rather than limitations of the people (weak human capital). A substantial development accounting literature has found that a large part of the variance in average incomes across countries is explained by differences in total factor productivity across countries; differences in human capital appear to play a relatively minor role (see Caselli, 2005, for a survey). The hope is that emigrants can leave weak institutions behind leading to substantial increases in purchasing power, even allowing for higher rich-country prices.

In this paper, we use recently available estimates of country-specific emigration-related average income gains to estimate the impact of migration on world income per person and a between-country measure of world inequality.<sup>1</sup> At the individual level, the average income gains associated with migrating from a poor to a rich country are often large. For those leaving countries with weak institutions the gains can be enormous—a staggering 1800 per cent in the Liberia. Surprisingly, however, our estimate of the total gain in world income is only about 1 per cent. The reason for the small (direct) aggregate income gains despite the large average gains for individual emigrants is that there are so few emigrants. The United Nations estimates that just 3 per cent of the world population live outside their country of birth.<sup>2</sup> Although a number of poor countries have emigration rates of 20–40 per cent, they tend to be small countries in Africa and the Caribbean. Whereas the growth route to poverty reduction has benefited many, the emigration route has been availed of by comparably few.

The rest of the paper is organised as follows. In the next section we use Clemens and Pritchett's (2008) recently available estimates of the difference in a country's GDP *per capita* and its income *per natural* (i.e. persons born in the country irrespective of where they currently reside) to infer the average income gain from emigration for all source countries.<sup>3</sup> In Section 3, we use these estimates to calculate the direct impact of emigration on world income per person and the between-country Theil coefficient measure of world inequality. Recognising that remittances allow these income gains to be spent at typically lower sending-country prices, we also provide an estimate of the effect of emigration and remittances on these world income distribution statistics. We consider possible policy implications in Section 4. The current international migration architecture is highly restrictive. Most poor-country residents do not have the legal option of living and working

<sup>1</sup>We use the between-country Theil measure.

<sup>2</sup>Moreover, many of these emigrants have moved from a rich country to another rich country or from a poor country to another poor country. The big income gains typically follow only when someone moves from a poor country to a rich country.

<sup>3</sup>The term *native* is an obvious alternative to *natural* given its explicit invocation of (place of) birth. Clemens and Pritchett (2008) choose not to use *native* because they believe it is ordinarily used to denote someone born in country *x* and continuing to live in country *x*. For example, when it is claimed that immigrants drive down the wages of less-skilled U.S. natives, it is implicit that it is U.S.-resident natives that are at issue. On the other hand, it is not unusual for someone born in country *x* and living in country *y* to refer to themselves as being a native of *y*. The term *natural* is perfectly adequate, however.

in a rich country. It is also highly selective, with the available options significantly tilted towards the highly skilled. This leads to a central policy tension. The direct gains from a liberalisation of the international migration architecture are large, but skill-biased liberalisation can cause countries to lose their scarce innovators and institution builders, thus undermining growth prospects. Even small effects on economic growth could quickly swamp the direct income gains.

## 2 EMIGRATION: HOW LARGE ARE THE INCOME GAINS?

Is the problem of low income in poor countries primarily a function of the place or the person? This matters for the gains from emigration because a disadvantaged place can be left behind; disadvantaged human capital cannot. As noted in the introduction, recent development accounting exercises have found that total factor productivity differences explain a large share of the differences in GDP *per capita* across countries. For example, Hall and Charles (1999) find that Kenya's output per worker is 0.056 of the US level. This proportion can be decomposed product of the relative (weighted) capital to output ratio (0.747), the relative human capital per worker (0.457) and relative total factor productivity (0.165). Clearly, low total factor productivity is the most important factor explaining Kenya's relative impoverishment. Similar results are found for other poor countries. The total factor productivity differences are in turn explained by differences in the quality of institutions. In addition to the direct effect of TFP, institutional differences also affect the incentive to invest and thus the available capital per worker. Thus poor-country workers can be doubly disadvantaged—bad institutions and limited capital to work with. Both disadvantages can be left behind by a move to a rich country. Unfortunately, international moves are associated with a different form of inefficiency. Poor-country human capital might not easily transfer to rich countries; resulting in what Mattoo *et al.* (2008) have labelled 'brain waste'.<sup>4</sup> This waste typically takes the form of working below your occupational skill level, with obvious implication for the migration-related income gains that can be achieved.<sup>5</sup>

The extent of emigration-related income gains is thus an empirical question. In a series of papers, Mark Rosenzweig and co-authors have used the New Immigrant Survey to estimate the income gains to permanent immigrants to the US. For example, using a pilot version of the survey, Jasso *et al.* (2002), find an average purchasing-power-parity-adjusted income gain of over \$20 000 (from \$17,080 to \$37 989). This gain occurred despite evidence of weakly transferable skills. They measure this transferability by regressing log earnings in the US. on log earnings in the source country. The coefficient on log earnings ranges from 0.17 to 0.34, suggesting a weak correlation between how skills are rewarded at source and in the US. Rather than using longitudinal evidence on income, McKenzie *et al.*

<sup>4</sup>Jones (2008) offers a possible explanation for such waste. He argues that skilled workers in poor countries tend to be generalists. In the context of large markets and a more advanced division of labour, rich-country workers tend to be specialists. This limits emigration-related gains as generalists are poorly rewarded—and might not even secure skilled employment at all—in rich-country labour markets.

<sup>5</sup>The broader literature on the earnings of immigrants supports less than perfect transferability. In a study of immigrant earnings in Israel, Friedberg (2000), for example, finds that education and experience acquired abroad is significantly less valued than such human capital acquired in Israel. Indeed, the return to foreign experience was generally found to be negligible. More positively, foreign human capital was found to interact positively with domestic human capital, suggesting that the older investments can be made more valuable with additional investments made in the receiving country. Kapur and McHale (2006) review additional evidence.

(2006) use a unique natural experiment relating to lottery-determined emigration from Tonga to New Zealand to identify the causal effect of emigration on income. They find an average increase in income of 263 per cent, which is roughly half of the difference in GDP *per capita* between the two countries.

For our income distribution estimates, we use Clemens and Pritchett's (2008) recent estimates of income per natural. The great advantage of these estimates is that they apply to all emigrants (permanent and temporary, legal and illegal) and they are available for almost all countries of the world. Clemens and Pritchett used a three-step procedure to calculate income per natural. In the first step, they use US census data to estimate a model of the average income in the US for each sending country. Average income for emigrants for each sending country is regressed on source-country specific variables (e.g. tertiary enrollment rates) and variables relating to the bilateral relationship between the source-country and the US (e.g. distance). In the second step, this model is used to predict the average income for emigrants for each sending country to each possible receiving country. This is done by multiplying the predicted income in the US (given the sending-country and bilateral-relationship characteristics) by the ratio of the receiving-country GDP *per capita* to US GDP *per capita*. In the final step, they combine the predicted average income for emigrants from a given sending country with estimates of sending-country specific emigrant stocks from the Parsons *et al.* (2007) bilateral migrant-stock database to calculate income per natural.

Clemens and Pritchett report estimates of both GDP *per capita* and income per natural. Using these estimates, we can calculate the mean emigration-related income gain for each sending country. To calculate this income gain, we first note that for a given sending country,  $i$ , income per natural ( $\tilde{y}_i$ ) is a weighted average of GDP *per capita* ( $y_i$ ) and income per emigrant ( $y_i^*$ ):

$$\tilde{y}_i = \left( \frac{N_i^*}{N_i + N_i^*} \right) y_i^* + \left( \frac{N_i}{N_i + N_i^*} \right) y_i, \quad (1)$$

where  $N_i$  is the (non-immigrant) domestic population and  $N_i^*$  is the number of emigrants. Rearranging Equation (1) we find the emigration-related income gain is proportionate to difference between income per natural and GDP *per capita*.

$$\frac{y_i^* - y_i}{y_i} = \left( \frac{N_i + N_i^*}{N_i^*} \right) \left( \frac{\tilde{y}_i - y_i}{y_i} \right). \quad (1')$$

Figure 1 shows the relationship between the mean emigrant income gain (expressed as a percentage of GDP *per capita*) and GDP *per capita*. The figure shows that the mean gain from emigration is large for many poor countries. For some countries it is simply enormous: Liberia (1812 per cent), Sierra Leone (1453 per cent), Madagascar (975 per cent), and Ethiopia (846 per cent).

### 3 EMIGRATION AND THE WORLD INCOME DISTRIBUTION

We next use the estimates of country-specific emigrant income gains to estimate the impact of international migration on the world income distribution. Our focus is on two measures that have undergone considerable improvement due to the fast growth in a number of large-population developing countries in recent decades: world income per person and the

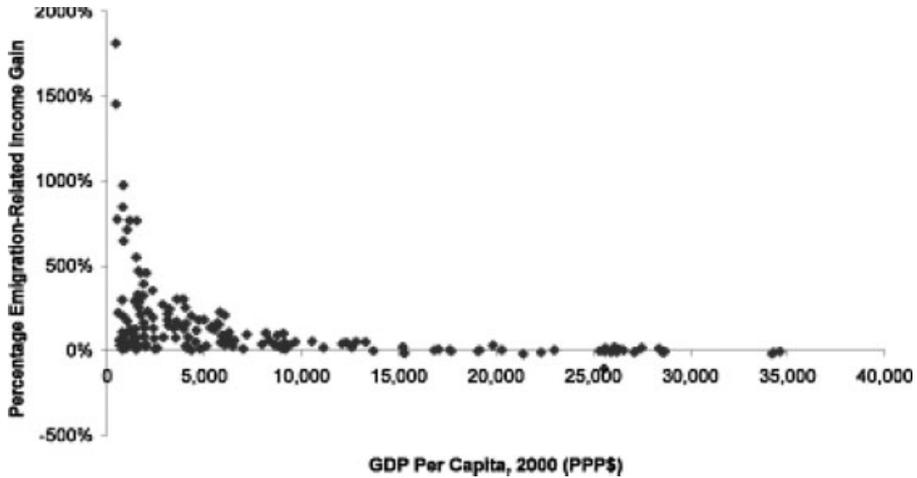


Figure 1. Percentage emigration-related income gains and sending country GDP per capita, 2000

between-country Theil (inequality) index. It is important to stress that we measure only the *direct* effect of international migration—the purchasing-power-parity-adjusted income gains to the migrants themselves. International migration also affects the incomes of those in the receiving countries and those remaining behind in the sending countries. Unfortunately, these impacts continue to be the subject of significant debate. In particular, there is ongoing controversy over the effects of immigration on native wages in the US and other receiving countries and also disagreement over the relative importance of ‘brain drain’ and ‘brain circulation’ effects for sending countries.<sup>6</sup> There seems to be general agreement, however, that the direct migrant income gain is the dominant channel through which international migration affects world income (see, e.g. Hatton and Williamson, 2005; Pritchett, 2006; World Bank, 2006). The large direct gains also make it reasonable to focus on the between-country component of world inequality. Of course, international migration is likely to affect within-country inequality measures for both sending and receiving countries. But these effects are believed to be small compared to the between-country effects.

Our approach is to estimate and compare two constructed income distributions. The first counterfactual income distribution assumes all naturals are in their country of birth earning the GDP *per capita* of that country. It follows that income per natural is equal to GDP *per capita*. The second income distribution assumes the actual distribution of emigrants and Clemens and Pritchett’s estimates of income per natural.

Under each distribution, total income for each country is determined by multiplying the total number of naturals (which is the same for both distributions) by the level of income per natural. World income follows from an aggregation of total country incomes. And world income per natural is simply aggregate world income divided by the total number of naturals (i.e. world population).

<sup>6</sup>See Kapur and McHale (2006) for a survey of both literatures. In its *Global Economic Prospects 2006*, the World Bank does attempt to estimate the comprehensive impact on world income using a global general equilibrium model.

Country-level income and population data are also sufficient to calculate the between-country Theil index. This index is calculated using the standard formula  $T_{bc} = \sum_{i=1}^C s_i^Y \ln(s_i^Y s_i^N)$ , where  $s_i^Y$  is the share of world income,  $s_i^N$  is the share of world population and  $C$  is the number of countries.

Our measure of direct income gain from migration does not include remittances. The reason is that remittances are funded out of the direct income gain, so that to simply add them would be to double count. Yet remittances allow a portion of the rich-country incomes of migrants to be spent at often much lower poor-country prices. Remitting income back to sending countries can thus be a source of additional migration-related gains in purchasing power. To calculate this remittance effect, we use World Bank data to measure remittances in both US dollars and international (i.e. PPP-adjusted) dollars. The latter is found by multiplying the dollar value of remittances (World Bank, 2008b) by the PPP conversion factor (World Bank, 2008a). The difference between the value of remittances in international dollars and in US dollars is the remittance effect. We report our results with and without the remittance effect.

We are fortunate that the needed data to generate these distributions has recently become available. Unfortunately, however, we do not have coverage for the complete world population for all necessary variables. Our sample of countries is determined by the availability of data on five variables for the year 2000: income per natural (Clemens and Lant, 2008); emigrant and immigrant stocks (Parsons *et al.*, 2007); GDP *per capita* (PPP\$) (World Bank, 2008a); total population (World Bank, 2008a); and remittances (World Bank, 2008b). We are able to obtain all five variables for 134 countries, of which 101 are developing countries.

The results are summarised in Table 1. We record these results both with and without the remittance effect and for both the full 134-country sample and the sample of

Table 1. Impact of emigration on selected world income distribution statistics, 2000

	All naturals at home	Actual distribution of naturals	Percentage change
134-Country sample (includes high-income countries)			
Without remittance effect			
World income per person	6681	6740	0.88%
Between-country Theil index	0.6761	0.6645	-1.72%
With Remittance Effect			
World income Per capita	6681	6768	1.30%
Between-country Theil index	0.6761	0.6595	-2.46%
101-Country sample (excludes high-income countries)			
Without remittance effect			
World Income Per Person	3051	3,121	2.28%
Between-country Theil index	0.2640	0.2621	-0.70%
With Remittance Effect			
World income per capita	3051	3,152	3.30%
Between-country Theil index	0.2640	0.2606	-1.29%

Note: sample size is determined by data availability for year 2000 for: (i) inferred emigrant average income gain (Clemens and Pritchett, 2008); (ii) emigrant stocks (Parsons *et al.*, 2007); (iii) GDP *per capita* (World Bank, 2008a); (iv) total population (World Bank, 2008a); and (v) remittances (World Bank, 2008b).

101 developing countries. Looking first at the full sample without the remittance effect, we see that international migration has a relatively minor impact on the world income distribution statistics examined. We estimate that world income per person has increase by just less than 1 per cent (less than one 30th of what was achieved through economic growth during the 20-year period from 1980 to 2000). The between-country inequality measure has decreased by just less than 2 per cent. The inclusion of the remittance effect scales up both the percentage increase in income per person and the percentage decrease in between-country inequality by roughly half.

As our interest is primarily in how international migration can raise the incomes of those born in poor countries, we next look at the impact on the income distribution of the subset of developing countries. Not surprisingly given the income gains that result from the move from a poor to a rich country, we find a bigger effect on income per person, with the percentage increase rising from 0.88 per cent in the full sample to 2.28 per cent in the developing-country sample. Including, the remittance effect again scales up the percentage income gain by roughly half.<sup>7</sup>

#### 4 DISCUSSION

The data we have reviewed reveal large migration-related income gains for migrant households. But the impact on world income per person and the between-country component of world inequality is modest compared to dramatic changes that have occurred as a result of economic growth. The emigrant income gains we have observed show that migration could make a substantial contribution to an improved world income distribution. But this potential is being only weakly realised due to an international migration architecture that heavily restricts the poor- to rich-country migration options of all but the highly skilled. Controls on international movement are the dominant feature of international labour markets. Despite the massive potential income gain from poor- to rich-country migration, just 3 per cent of the world's population lives outside their country of birth. The international migration architecture is characterised by restrictiveness, selectivity favouring the highly skilled, a rigidity-inducing bias against temporary labour movements, and (often) ambivalence towards less skilled illegal movements.

The selectivity of the international migration architecture raises another concern: how does the emigration of the highly skilled—individuals most likely to play the critical roles of innovators and institution builders—affect the growth prospects of the countries they are leaving? The literature has made strides in understanding a range of effects of skilled migration. These effects include induced human capital investment as a result of the prospect of emigration, the economic value of enduring connections to the diaspora, and benefits of skill-enhanced returnees. But we are still at an early stage in understanding the balance between the costs of absence and the benefits of a dynamic international migration system.<sup>8</sup> Although migration is unlikely to match the contribution of recent economic

<sup>7</sup>The between-country inequality measure is of less interest for the developing-country sub-sample, though we again see migration reducing this measure of inequality.

<sup>8</sup>Even a small reduction in growth would swamp the observed gain to developing countries from international migration if sustained over a relatively short time period. To give a concrete example, the estimated 2.28 percent increase in the income of developing-country nationals due to migration would be fully offset by just a 0.1 percentage point reduction in growth sustained over a 20-year period. On the other hand, we can be reasonably confident that world welfare would improve if there were a significantly expanded opportunities for the less skilled to take advantage of often massive emigration-related income gains.

growth in reducing world poverty, a less restrictive and selective international migration architecture surely offers some low-hanging fruit.

Lant Pritchett (2006) has recently made a proposal for large-scale bilateral migration programs aimed at those who are shut out of rich-country labour markets.<sup>9</sup> With income gains as the primary motivation, much of the design detail in Pritchett's 'Plan B' is aimed at overcoming political opposition in potential receiving countries while protecting basic labour rights.<sup>10</sup> The basic principle underlying the program is simple: *If you can't bring good institutions to the poor, allow the poor to move to the good institutions.* Since permanent moves of any significance will be politically unacceptable, Plan B proposes a pragmatic middle-ground: allow labour circulation from poor to rich countries which will modestly increase the labour supply in industrialised countries without the attendant concerns of permanent settlement.

Our estimate of the impact of migration on the world income distribution is clearly just a first step. As already noted, we abstract from the impact of migration on growth in both sending and receiving countries.<sup>11</sup> We also abstract from potentially important impacts on within-country inequality, which has been a major focus of the rich-country immigration literature.<sup>12</sup> While we believe that the large average income gains in moving between countries is a first-order effect, the next step is to incorporate growth and within-country inequality effects into an overall estimate of the impact of migration on the world income distribution.

<sup>9</sup>Kapur and McHale (2006) provide a detailed examination of Pritchett's proposal.

<sup>10</sup>Pritchett recommends programs with the following elements: (i) the program should be based on an explicit bilateral agreements between the receiving and sending country; (ii) it should be explicitly temporary and separate from normal immigration channels; (iii) there should be numerical quotas for specific occupational categories; (iv) development impacts should be enhanced through cooperation with the sending country (e.g. to encourage diaspora connections); (v) sending-country cooperation on enforcement should be achieved by imposing penalties on the sending country if participants overstay (this is in addition to penalties on receiving-country employers); (vi) the fundamental labour rights of migrants should be respected.

<sup>11</sup>In Kapur and McHale (2005), we examine the multiple channels through which migration can affect development.

<sup>12</sup>There is now overwhelming evidence that the lowest deciles of the native-born in the United States have seen relatively little gains from the economic expansion over the last quarter century. But to what extent is that explained by inflows of less-skilled foreign-born workers as distinct from other important factors, be it changes in fiscal policies, skill-biased technical change, or increases in labour-intensive imports? The most influential findings of harm to less-skilled natives come from George Borjas (see, e.g., Borjas, 2003). An important assumption in Borjas's analysis is that immigrants and natives are perfect substitutes within a given skill class. Ottaviano and Peri (2005) show that relaxing this assumption can lead to significantly different results. The empirical challenge in identifying the wage effects of immigration is to find plausibly exogenous source of variation in the level of immigration. The source of this variation for the previous two studies is differences in the immigrant share by narrowly defined skill class. A different approach is to use variation in immigration level by geographic area (usually in addition to broad skill level). Using this approach Card (2005) argues that the evidence suggests that "the new immigration" may not really be so bad? On the question of how less-skilled immigration has affected less-skilled wages, his empirical work points to "a surprisingly weak relationship between immigration and less-skilled native wages" (Card, 2005, p. 11).

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