

Session Number: First Poster Session
Time: Monday, August 23, PM

*Paper Prepared for the 31st General Conference of
The International Association for Research in Income and Wealth*

St. Gallen, Switzerland, August 22-28, 2010

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A Human Development Index by Internal Migrational Status

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January, 2010

Abstract

Domestic migration constitutes the largest flow of people in developing countries and is among the most important opportunities for people to improve their opportunities for improved incomes and human development. To what extent internal migrants actually have higher human development outcomes than non-migrants has not been studied systematically in the literature. This paper applies a recently developed analytical framework that allows to calculate the HDI for subgroups of a population. We use this approach to calculate the HDI by internal migrational status to assess the differences between the levels of human development of internal migrants compared to non-migrants, and also across countries as well as by urban and rural areas. An empirical illustration for a sample of 16 low and middle income countries shows that, overall, internal migrants achieve a slightly higher level of human development than non-migrants in most settings. These improvements are largely due to higher incomes of migrants while differentials in education and health are smaller. We find some evidence that some of the differentials are related to possible self-selection of migrants. Disaggregating the analysis by urban and rural areas reveals that urban internal migrants are better off than urban non-migrants and rural migrants are better off than rural non-migrants. Interestingly, rural migrants are better off than urban migrants suggesting that rural-urban migration is not always the most promising flow from a human development perspective.

Key words: Internal migration, human development index.

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We thank Michael Grimm and Mark Misselhorn for preparing the base for the calculation of the distribution sensitive HDI. We also thank Katarina Scholz and Ramona Rischke for excellent research assistance and two anonymous referees and the editors of this journal for very helpful comments. Funding from UNDP in support of this work is gratefully acknowledged.

1 Introduction

1.1 General background

Internal migration constitutes the largest flow of people in developing countries. Much of this migration is over relatively short distances and an important flow is from rural to urban areas. While also such migration over shorter distances is costly and bears high uncertainty, international migration is, on average, much more costly and often more risky. In comparison to international migration, empirical evidence on the relationship between internal migration and human well-being is still very limited although it clearly has major implications for poverty and poor people. The question of whether migration may improve the well-being of migrants and their families is important to analyze and was recently the topic of the global Human Development Report (UNDP, 2009). In this paper, an early version of which served as a background paper to the HDR 2009, we take a human development perspective to compare well-being in the dimension of health, education, and incomes, of domestic migrants to non-migrants. We do this by calculating an HDI and its sub-components for migrants and non-migrants in a sample of 16 developing countries.

Migration can play an important role for poverty alleviation. On the one hand, migration can directly widen the opportunities to increase income levels of households and individuals that would be not achievable in the case of non-migrating. On the other hand, migration can also indirectly help to reduce poverty of the household members left behind, if remittances raise their standard of living. However, while migration can offer opportunities for higher incomes, this is not guaranteed and many migrants are not successful in getting better employment at their destination and many subsist in the informal sector and live in poor conditions in slums (Asfar, 2003; Black et al., 2004; Kothari, 2002; Skeldon, 2003). Whether migrants can benefit from moving is very context specific and depends on several fac-

tors, including their means (i.e. their assets and resources), their strategies (i.e. their networks and planning), as well as on the institutional environment (Whitehead, 2002). These issues have received some attention in the labor economics literature although this literature tends to be focused on international migration and on the labor market performance of migrants in receiving countries, without necessarily making comparisons with the well-being of migrants at the place of origin (see Harttgen and Klasen, 2008 for a survey).

The relationship between migration and access to education and educational outcomes in the literature is unclear (see, e.g. De Haan, 2000; Waddington, 2003). It is often assumed that migration undermines children's educational opportunities by taking them out of school. However, the linkage between migration and education is very context specific (see, e.g. Hashim (2005)). Migration can also improve access to education and educational outcomes. Families can decide to move to provide a better life and educational opportunities for their children (see, e.g. Giani (2006)). Higher income earning opportunities in the destination may also lead to higher enrolment and literacy rates.

Migration and health can also be positively or negatively related (see, e.g. Garenne (2003), Lagarde et al. (2003), Waddington (2003)). On the one hand, migrants may increase their income-earning opportunities, allowing them to invest more in their health status. In addition, migration can also promote health-seeking behavior and the spread of knowledge on health through moving to healthier environments (IOM 2005). For example, through rural-to-urban migration, child mortality risk might decrease because mothers are better able to improve the care for their children by migrating to cities. Evidence exists that rural-to-urban migration is associated with improvement in health outcomes. For example, infant mortality rates in Ghana are significantly lower among rural-to-urban migrants compared

to rural non-migrants (IOM 2005). In addition, migrating can also promote health for those left behind through remittances, helping to increase income levels and allow a better access to drugs or investment in health insurance. On the other hand, the migration process can also have negative impacts on the health status of those who migrate, which especially is a result of the migration process itself, but also through increasing health problems in urban areas. There is in particular evidence that children of rural-to-urban migrants often continue to have a higher mortality risk than non-migrants in urban areas, even if mothers have lived in urban areas for several years (Brockerhoff 1990). Using household survey data, Brockerhoff (1995) shows that children of rural-to urban migrants in developing countries experience higher mortality risk than lifelong urban residents. Furthermore, the mortality risk increases with the size of the cities, which is related to the increased concentration of low housing quality and sanitation. Lack of adequate housing and sanitation conditions is one of the major problems of migrants in urban areas and the number of slum dwellers in developing is increasing sharply (IOM 2005). Kiros and White (2004) examine the relationship between migration and child immunization in Ethiopia. They found that children from rural-to-rural migrants have significantly lower immunization rates than children from non-migrants as a result of limited social networks of migrants within communities, which hampers their access to the health system. Furthermore, the movement of people can lead to the spread of diseases.

Thus the literature broadly suggests that migrants might be better off in terms of incomes but whether they are more educated or healthier is not clear and is likely to depend on country circumstances, the factors motivating migration, and education and health opportunities in places of origin and destination. Thus it is well worth studying this issue using a human development perspective that precisely examines these three well-being dimensions.

Before turning to our well-being measure, it is important to raise an important conceptual issue. When examining the well-being performance of migrants, the labor economics literature is particularly concerned about the selectivity of migrants. It might be the case that the more motivated and those with better unmeasured skills or human capital are more likely to migrate, as they expect greater income benefits from migrating. This is likely to be of particular relevance in international migration which is very costly and often quite risky, but it is likely to pose a problem (of somewhat smaller magnitude) in the case of domestic migration as well. This is an issue that we cannot address here as we do not have the required information to model the decision-making process that led to migration. We are instead investigating whether migrants are better off in human development terms, compared to non-migrants, which we believe to be an important research question in itself. By comparing the well-being of migrants in different dimensions of human development, we will, however, be able to make some inferences about the likely role of selectivity on our results.

1.2 The Human Development Index and the well-being of migrants

When studying the well-being of migrants versus non-migrants, we want to address two questions. The first question is to determine whether there are differences in the level of human development between internal migrants and non-migrants. The second aim is to apply the Human Development Index (HDI) to the analysis of multidimensional well-being of internal migrants versus non-migrants. In particular, the objective here is to present a methodology that allows the HDI to take into account the differences in the distribution of human development between migrants and non-migrants.

The HDI is a composite index that measures the average achievement in a country in three basic dimensions of human development: a long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the

adult literacy rate and the combined gross enrollment ratio for primary, secondary and tertiary schools; and a decent standard of living, as measured by GDP per capita in purchasing power parity US dollars (World Bank, 2008). Based on available statistics UNDP was able to provide an HDI for 179 countries in the latest Human Development Report (UNDP, 2008). The HDI is today widely used in academia, the media and in policy circles to measure and compare progress in human development between countries and over time.

Despite its popularity, which is among other things due to its transparency and simplicity, the HDI is criticized for at least four main reasons.² First, it neglects several other dimensions of human well-being, such as human rights, security and political participation (see e.g. Anand and Sen (1992), Ranis, Stewart and Samman (2006)). Second, it implies substitution possibilities between the three dimension indices, e.g. a decline in life expectancy can be offset by a rise in GDP per capita.³ Related to that critique is the third point, which charges that the HDI uses an arbitrary weighting scheme of the three components (see e.g. Kelley (1991), Srinivasan (1994) and Ravallion (1997)). Finally and fourth, the HDI is often criticized because it only looks at average achievements and, thus, does not take into account the distribution of human development within a country or achievements by certain groups such as migrants versus non-migrants (see e.g. Sagar and Najam (1998)). It is this last issue that we address in this study.

When constructing measures of human development by groups, limited data availability on the distribution of human development achievements seriously constrains the analysis. Household income surveys are today widely conducted and, hence provide data on income distribution, but it is much more difficult to get data on life expectancy, educational achievements and

²For a critical review, see e.g. Sagar and Najam (1998).

³Moreover, if poor people face higher mortality, their deaths would increase per capita incomes of the survivors, generating a further distortion, particularly in HDI trends over time.

literacy by groups. Inequality in these dimensions, at least in developing countries, also seems to be very high.⁴

In this paper, we apply a recently developed approach by Grimm et al. (2008) to calculate a distribution-sensitive HDI.⁵ Applying this approach allows us to track the progress in human development separately for ‘internal migrants’ and ‘non-migrants’ and to compare the level of human development of internal migrants and non-migrants disaggregated by urban and rural areas.

Key results of our analysis are that in most countries, the HDI for migrants is higher than that for non-migrants which is mostly driven by higher incomes of migrants relative to non-migrants; we find, however, that some of this is likely to be due to a selection effect of migration. But comparing urban migrants to rural non-migrants shows higher levels of human development in only half the countries which is related to the fact that urban migrants have worse education and health than rural non-migrants in many countries. The analysis suggests that internal migration helps to reduce human development disparities within countries and appears to be overall worthwhile for migrants from a human development perspective in most settings.

The remainder of this paper is organized as follows. Section 2 presents the methodology. Section 3 presents the sample of countries for which we illustrate it. Section 4 discusses the results. Section 5 offers a critical assessment of our methodology and mentions key shortcomings of our approach.

⁴There is also broad empirical evidence that mortality as well as educational attainment vary with income and wealth in both rich and poor countries (see e.g. Cutler, Deaton and Lleras-Muney (2006) and Filmer and Pritchett (1999)).

⁵In the past, several attempts have been made to integrate inequality into the human development index. For example, Anand and Sen (1992) and Hicks (1997) suggested to discount each dimension index by one minus the Gini coefficient for that dimension before the arithmetic mean over all three is taken. Therefore, high inequality in one dimension lowers the index value for that dimension and, hence its contribution to the HDI. The gender related development index, or GDI, was another attempt in that direction. Its motivation was the 1995 Human Development Report’s emphasis on gender inequalities. Another attempt was undertaken by Foster, López-Calva and Székely (2005). They chose an axiomatic approach to derive a distribution sensitive HDI. For a more detailed overview of existing approaches, see Grimm et al. (2008).

Section 6 concludes and highlights policy implications.

2 Methodology

2.1 General idea and overview

This section closely follows the description of the methodology of Grimm et al. (2008). The basic idea of the method is to use disaggregated data to calculate the three sub-components of the HDI by internal migrational status. This enables an analysis of the differential in human development between internal migrants and non-migrants.

As data sources we use household surveys. First, we rely on the so-called *Living Standard Measurement Surveys* (LSMS) or a lighter version of it called *Priority Surveys* (PS). Even in countries where none of these two surveys are available, there usually exist at least some other type of living standard survey. These surveys provide, apart from information on household and individual characteristics, data on educational achievement, school enrollment and household income or household expenditure. In what follows, we call this type of survey simply ‘household income survey’ or ‘HIS’. Second, there are so-called ‘Demographic and Health Surveys’ or ‘DHS’ in short. These surveys are undertaken by the *Macro International Inc., Calverton, Maryland* (usually in cooperation with local authorities and funded by USAID) and provide among other things detailed information on child mortality, health, and fertility.

We use the HIS to calculate the migration specific education and GDP indices and the DHS to calculate the migration specific life expectancy index. However, the main problem in proceeding so is that both surveys do not interview the same households (or if so, these households cannot be matched directly). Since both survey types include information on the internal migrational status, we will match both data sources by the respective migrational status of the individuals.

Once the three dimension indices are calculated, we simply calculate the migration specific HDI, which we name MHDI, by taking the arithmetic average of the three dimension indices.⁶In what follows, each step of our method is explained in detail.

2.2 Internal migrational status

To analyze differences in human development between internal migrants and non-migrants not only within countries but also across countries, we need to define the internal migration-status on which information is available in the HIS and DHS surveys.

The information of the migration-status of individuals varies from survey to survey and from country to country. To define the migration-status, we use the question that is available in each survey whether the individual was born in the current place of residence. Since the dimensions of the HDI (i.e. literacy, enrolment and expenditure/income) are estimated at the household level, we also define the migrational status at the household level.⁷ Thus, the migration dummy takes the value 1 if the household head was not born in the current place of residence and 0 if the household head still lived at the place of birth at the time of the survey.⁸

We are aware that this simple segregation has some shortcomings. In simply asking whether the individual still lives at the place of birth or not, neglects a lot of information, which could be potentially important and in-

⁶We should emphasize that the MHDI is based on household-level information and thus the aggregate results shown are weighed by households but do not take into account that these households have different sizes. We could, of course, calculate the MHDI by given larger weights for larger households. But this would hardly change the results, esp. given that we scale, as discussed below, each component of the HDI to UNDP's HDI.

⁷If we define income/expenditure per capita at the household level and then define the migrational status at the individual level, we would not be able distinguish between internal migrants and non-migrants within households.

⁸If the information is available, we specify whether the different place of residence is in a different district to avoid defining households as internal migrants although the head had come from a neighboring village within the same district. In addition, we exclude those households that have their place of birth abroad to avoid mixing up internal migrants with international migrants.

teresting to consider.

First, we fail to take into account a time dimension of migration, i.e. the length of stay in the host area and whether it is permanent or semi-permanent (whether the migrants are 'lifetime' migrants), because this information is not available in the HIS data sets, but only in the DHS.⁹

Second, we also fail to take into account the reason for migrating, which could be an important determinant for the well-being status of the individual. For instance, there might be a difference if migrants decide to move to improve incomes or education, or are pushed to migrate by poverty and destitution. In addition, differences also might exist between forced and voluntary migration. For example, in Guatemala a lot of internal migration is related to internal displacement during the conflicts of the 1980s. However, reasons of migration are not included in almost all of the surveys.

Third, we cannot fully take into account the impact of remittances in our assessment. This has to be borne in mind when interpreting the results. In particular, it may be the case that a household has sent someone away in the past who is providing remittances. In our accounting, such a household would be seen as non-migrating if the household head has not migrated. The remittances would be added to household incomes, making this household better off; in this sense the indirect benefits of migration would make non-migrants also better off.

A closely related fourth short-coming is the inability to link migrating household members with their household of origin. Migrants that still send

⁹As stated above, we cannot rely on the DHS alone for our analysis since we do not have income information in the DHS and thus cannot calculate the income component. In the next research step, we could take Zambia in which these information are available in both surveys to further disaggregate the migrational status by the time since migration. The length of stay could be an important determinant of the well-being of the individual. For instance, the chance of finding a job through a better established social network increases with the time of stay. We also do not take into account seasonal migration, which is especially important for seasonal workers in rural areas. However, this analysis could principally be done in the next step of the paper, since the household surveys in the sample also ask for how long the individual was away from the household within the past 12 months.

remittances and occasionally visit their household of origin will here be captured as separate households in their destination and the link to the household of origin cannot be made.

Therefore, in what follows, we simply compare the human well-being, measured by the HDI, between internal migrants and non-migrants within and across countries and thus cannot formally address the selectivity issue or the drawbacks of our migration definition. This can bias our results, depending on the relevance of these issues in the different countries. We will take this into account when interpreting our results for the different countries (see below).

In addition, we disaggregate our samples by urban and rural areas, which allows us to analyze differences between internal migrants and non-migrants in urban and rural areas and we also ask what the differences in human development are, for example, between migrants in urban and rural areas, or between urban migrants and rural non-migrants. The latter comparison is very interesting because it directly focuses on the effect of rural-to-urban migration on human development.

2.3 Calculating the life expectancy index by internal migrational status

To calculate a life expectancy index by migrational status, we combine information on child mortality with model life tables. As mentioned above, the HIS provides usually no information on mortality. The DHS provides only information on child mortality, but not on mortality by all age groups, which would be necessary to construct a life table and to calculate life expectancy directly.

In a first step, we calculate under-five child mortality rates for internal migrants, non-migrants and for the total sample using a simple non-parametric life table estimator to estimate the survival probability for each month after birth.

In a second step, we apply the recently provided modified logit life table systems by Murray et al. (2003) to estimate the migration specific life expectancy at birth. This model is based on a Brass logit approach. The advantages of the modified logit life tables by Murray et al. (2003), compared for example to Princeton Model Life Tables (Coale and Demeny, 1983) or the Ledermann model life tables (Ledermann, 1969), are that they are very flexible and rely on more than 1800 recently available life tables.¹⁰

Then we calculate the migration specific life expectancy index, L^M , using the usual minimum and maximum values for life expectancy employed to calculate the HDI:

$$L^M = \frac{\hat{e}_0^M - 25}{85 - 25}. \quad (1)$$

The aggregate life expectancy index L can be calculated using \hat{e}_0 instead of \hat{e}_0^M .

In a last step, we linearly rescale L^M and L to achieve consistency with the aggregate HDI calculated by UNDP. As rescaling factor we use the ratio between our aggregate life expectancy index L and the aggregate life expectancy index calculated by UNDP for the particular year in question.¹¹

Each sub-index of the HDI is scaled to the official values from UNDP for the respective country and year in question. This means that not only the life expectancy components but also the GDP component and education component is scaled to the respective official values. Thus, the total HDI corresponds to the official value in the Human Development Report. Using the UNDP HDI as a benchmark makes our results comparable with the official values published in the Human Development Reports, which is an

¹⁰We also compare the results with the outcome based on the Ledermann life tables and also with the outcome of a sample. In fact, we find a considerable overestimation of life expectancy using the older Ledermann approach, which especially is driven by the fact that the older model life tables do not allow to capture any effects of the HIV/AIDS epidemic, particularly in Sub-Saharan African countries.

¹¹If the DHS and HIS are from different years, we rescale to the later year. Consistency is not automatic, given that our approach and UNDP's approach are based on different data sources.

important step to make the results more transparent in a sense that readers can compare the total outcome of the Human Development Report with the results for internal migrants and non-migrants.¹²

2.4 Calculating the education index by internal migrational status

To calculate the migration specific education index, we use the information on literacy and school enrollment provided by the HIS.¹³

2.4.1 Calculating the adult literacy index

The questions providing information about adult literacy may significantly vary from one HIS to the other. Sometimes adults are simply asked whether they are able to read and write. Other surveys are much more specific in asking whether the person is able to read a newspaper and to write a letter. This is even sometimes directly tested. In addition, in some countries one has to distinguish between having knowledge of any local language or the official language of the country. Finally in some surveys, such information is completely missing. In the latter case, it is possible to use educational achievement as proxy for literacy. However, it is far from evident to determine after how many years of school a person is literate. This varies a lot from country to country or even within a country (for West-Africa, see e.g. Michaelowa (2001)). We proceeded as follows. If an adult household member declared to be able to read and write in any language (with or without proof), we considered him or her as literate. If that information was not available, we considered somebody as literate if he or she achieved at least a grade which corresponds to five years of schooling. Adults are defined to

¹²Differences between our "unscaled" values and the official values exist and could be due to measurement error in our surveys or in the official data used by UNDP. However, these differences are not very large and the scaling has no effect on the differential between the outcome of migrants and non-migrants which is the central focus of this paper.

¹³We further illustrate the approach by using information on education from the DHS data. See Section 4.1.

be persons above the age of 15.

We calculate the migration specific adult literacy index, A^M , using the corresponding usual minimum and maximum values employed in the HDI:

$$A^M = \frac{a^M - 0}{1 - 0}, \quad (2)$$

where a_M is the migration specific adult literacy rate. The aggregate adult literacy index A can be calculated using a instead of a^M .

In a last step, we linearly rescale again A^M and A to achieve consistency with the aggregate HDI calculated by UNDP for the respective year. As rescaling factor we use the ratio between our aggregate literacy index A and the aggregate literacy index calculated by UNDP.

2.4.2 Calculating the enrolment index

To calculate the migration specific gross enrolment index, we first calculate the combined gross enrolment rate by internal migrational status. Each individual attending school or university, whether general or vocational, is considered as enrolled. We define this rate over all individuals of the age group 5 to 23 years old. Age for each individual corresponds to the age at the date of the interview.

Then we calculate the migration specific gross enrollment index, G^M using the minimum and maximum values used for the calculation of the HDI:

$$G^M = \frac{g^M - 0}{1 - 0}, \quad (3)$$

where g^M is the migration specific gross school enrolment rate. The aggregate gross enrollment index G can be calculated by using g instead of g^M . Finally, we rescale G^M and G to the level of the HDI enrollment index.

2.4.3 Calculating the education index

The migration specific education index E^M is calculated using the same weighted average as the HDI:

$$E^M = (2/3) \times A^M + (1/3) \times G^M. \quad (4)$$

The aggregate education index E can be calculated by using A and G instead of A^M and G^M .

2.5 Calculating the GDP index by migrational status

To calculate the GDP index by migrational status, we use the income/expenditure variable from the HIS. One main difference to the two other dimension indices is that mean income calculated from the HIS can be very different from GDP per capita derived from National Accounts data, which is used for the GDP index in the general HDI, for two reasons: First, conceptual differences and, second, measurement error on both levels. GDP measures the value of all goods and services produced for the market within a year in a given country valued at market prices. Income in the household survey is either measured, as mentioned above, via household expenditure (including self-consumed production) or via the sum of earned and unearned household income. Therefore, non distributed profits of enterprises, property income and so on will not be included in the household income variable. Moreover, on the household survey side, there may be measurement errors, because it is difficult to get accurate responses from households concerning wages and profits (especially from self employment and in rural areas).¹⁴ On the National Accounts side, while supply-side information on output and income for some sectors is based on surveys or census data for agriculture and industry (of varying quality), information about subsistence farmers and informal

¹⁴If available, therefore, use expenditure rather than income to calculate the migration specific GDP index.

producers is harder to obtain and usually of low quality.¹⁵

We proceed as follows. First, to eliminate differences in national price levels we express household income per capita y_h calculated from the HIS, in USD PPP using the conversion factors based on price data from the latest International Comparison Program surveys provided by the World Bank (2008):

$$y_h^{PPP} = y_h \times PPP. \quad (5)$$

Second, we rescale y_h^{PPP} using the ratio between \bar{y}^{PPP} and GDP per capita expressed in PPP (taken from the general HDI), i.e. we only take the information on the distribution of income from the HIS and stick with GDP per capita as the level of income:

$$ry_h^{PPP} = y_h^{PPP} \times \left[\frac{GDPPC^{PPP}}{\bar{y}^{PPP}} \right].^{16} \quad (6)$$

Once, these adjustments are done, it is straightforward to calculate the migration specific GDP index, again using the minimum and maximum values of the HDI:

$$Y^M = \frac{\log r\bar{y}^{M,PPP} - \log(100)}{\log(40,000) - \log(100)}, \quad (7)$$

where $r\bar{y}^{M,PPP}$ is the migration specific arithmetic mean of the rescaled household income per capita.

2.6 Calculating the overall HDI and the HDI by migrational status

Once the migration specific dimension indices have been calculated, determining the MHDI is straightforward. It is the simple average of the three

¹⁵A detailed discussion of all these problems can be found in Ravallion (2001) and Deaton (2005).

¹⁶Obviously, it is rather unlikely that the income sources not captured by the household survey are distributed in the same way as the observed income sources (see e.g. Ravallion, 2003). However, we think it would be very difficult to come up with any reasonable alternative rule to correct this bias across all countries without at the same time complicating extensively our methodology.

dimension indices:

$$MHDI = (1/3) \times L^M + (1/3) \times E^M + (1/3) \times Y^M$$

To get a sense of the inequality in human development within a country, we also compute the ratio between the HDI for internal migrants to non-migrants. All these indicators can of course also be calculated for each dimension index. Hence, the MHDI cannot only be used to inform about the level of human development of internal migrants and non-migrants showing inequality in human development within a country, it allows also to further disaggregate the sample by more specific subgroups. In this paper, we further disaggregate the migration specific MHDI by region to compare the human well-being of migrants and non-migrants separately for urban and rural areas. Furthermore, we also provide the 95 percent confidence intervals for each of the estimated HDIs.

3 Sample of countries

We illustrate our approach for a sample of 16 developing countries where we aim for broad representation of all regions. The selection of the specific countries is mainly driven by data availability, since we need for each country both a DHS and a HIS data set. Our sample includes seven countries from Sub-Saharan Africa (Cameroon, Côte d'Ivoire, Ghana, Guinea, Madagascar, Uganda, and Zambia), six countries from Latin America (Bolivia, Colombia, Guatemala, Nicaragua, Paraguay and Peru), two countries from South-East Asia (Indonesia and Vietnam), and one CIS country (Kyrgyz Republic).¹⁷

¹⁷In particular, the HIS data sets are: Bolivia (2002) Living Standard Measurement Survey (LSMS), Cameroon (2001) Enquête Camerounaise auprès des Ménages (ECAM), Colombia (2003) Encuesta de Calidad de Vida, Côte d'Ivoire (1998) Enquête de Niveau de Vie des Ménages (ENV), Ghana (1999) Ghana Living Standards Survey 4, Guatemala (2000) National Survey Of Living Conditions (ENCOVI), Guinea (1995) Enquête Intégrale avec Module Budget et Consommation, Indonesia (2000) Indonesian Family Life Survey (3rd wave) (IFLS), Kyrgyz Republic (1998) Living Standard Measurement Survey (LSMS), Madagascar (2001) Enquête auprès des Ménages (EPM), Nicaragua (2001) Encuesta Nacional de Hogares sobre Medición de Nivel de Vida (EMNV), Uganda (2001)

We tried to restrict the sample to countries where a HIS and DHS were undertaken within a two-year time period. For three countries both surveys were undertaken in the same year. For four countries there is a gap of one year and for two countries a gap of two years. Only in five countries we were not able to follow this rule and have actually a gap between both surveys of three to four years.

Moreover, we tried to include countries where both surveys are not older than the year 2000. This was however not possible for six countries (Côte d'Ivoire, Ghana, Guatemala, Guinea, Kyrgyz Republic, and Madagascar), where the HIS or the DHS (or both) were undertaken at the end of the 1990s. The survey dates should also be taken into account when comparing our unscaled MHDI with the usual HDI. The published HDI in the UNDP's Human Development Report 2008 (UNDP, 2008) refers to the year 2006. But a closer look at the data sources shows that literacy rates and life-expectancy estimates were usually based on censuses or surveys conducted between 2000 and 2004. In several countries the data sources even stem from data collected in the 1990s. Hence, time consistency between the different dimension indices and actuality of the data is not a problem specific to our approach, but rather is present for both the usual HDI and the MHDI.

4 Results

4.1 Human Development by migrational status

Table 1 shows the overall HDI, the MHDI by internal migrational status and the respective 95 percent confidence interval, the ratio of the MHDI for the internal migrants to the non-migrants, and the HDI ranking for the whole country for the 16 countries of our sample.

The results in Table 1 reveal some differences in human development

Uganda National Household Survey, Vietnam (2004) Living Standard Measurement Survey (LSMS), Zambia (2002) Living Conditions Monitoring Survey (LCMS)). See Table 1 one the respective years of the DHS data.

between the internal migrants and non-migrants. Of the 16 countries in our sample, 12 show statistically significant differences in the MHDI between migrants and non-migrants. In 14 countries (Bolivia, Cameroon, Côte d'Ivoire, Ghana, Guinea, Indonesia, Kyrgyz Republic, Madagascar, Nicaragua Paraguay, Peru, Uganda, and Vietnam) show a higher value in human development for internal migrants than for non-migrants, which is nicely illustrated by the ratio of the MHDI for the internal migrants to the non-migrants. For four of these countries (Cameroon, Colombia, Nicaragua, and Peru) the differences in human development between internal migrants and non-migrants are not very large (and not statistically significant). Here, the ratio of the MDHI value of the internal migrants to the non-migrants is very close to one. The largest within country inequality in human development between internal migrants and non-migrants is found for Guinea with a ratio of 1.324. Only for two countries (Guatemala and Zambia), the ratio of the MDHI for the internal migrants to the non-migrants is less than 1 indicating a higher human development for the non-migrating population group. The largest 'penalty' for migration is found for Guatemala, where non-migrants show a substantially higher level of human development than internal migrants (i.e. 0.780 compared to 0.679). This finding is likely to be related to the special historical situation in Guatemala. In particular, the high share of internal migrants is likely related to forced displacement during the internal conflicts in the 1980s. Hence, in Guatemala many internal migrants were internally displaced with all the hardships such a displacement involves, and probably the group of 'successful' migrants is expected to have been able to move abroad, i.e. to Mexico or to the USA. Thus a different migration reason and selectivity are likely to account for the rather different differential in Guatemala than elsewhere.¹⁸

¹⁸In the case of Zambia, the worse human development record of migrants might be related to the deteriorating economic conditions in urban areas as a result of economic crises and economic reforms of the 1980s and 1990s; migrants are likely to suffer more in such deteriorating economic circumstances.

The rank positions by migration status further illustrate inequalities between migrants and non-migrants between and across countries. When concentrating on inequalities within countries between internal migrants and non-migrants based on the HDI ranking positions, we can broadly define three different groups of countries. The first group consists of Bolivia, Colombia, Ghana, Kyrgyz Republic, Nicaragua, Peru, Uganda, and Vietnam, showing only small absolute differences in the ranking positions between internal migrants and non-migrants. For example, whereas internal migrants in Peru were ranked at position 73, non-migrants were ranked at position 75. Thus while inequality is quite large in many of these countries (particularly in the Latin American countries), this inequality does not translate into a high differential between migrants and non-migrants. The second group of countries shows sizable differences in the ranking positions, which is found for Cameroon, Côte d'Ivoire, Vietnam, and Zambia with differences close to ten rank positions. For example, whereas internal migrants in Cameroon achieve a HDI rank of 136, non-migrants were ranked at position 145. The third group of countries show quite large absolute differences of more than ten ranking positions (Guinea, Indonesia, Kyrgyz Republic, Madagascar, and Paraguay. The largest absolute differences are found for Guatemala, Paraguay, and Madagascar. Whereas internal migrants in Madagascar achieve a rank of 134, non-migrants achieve only a rank of 153. The situation in Guatemala is reversed. Here non-migrants are ranked at position 58 whereas internal migrants are only ranked at position 112.

Despite these sizable (and mostly statistically significant) differentials, one should point out that the differences in human development performance between migrants and non-migrants are substantively not very large, esp. when compared to the differences in human development by income group (see Grimm et al, 2008). There we found that the ratio in the HDI between the richest and the poorest quintile could be as much as 2 or more, while here

the difference rarely exceeds 20%. Thus the differentiation between migrants and non-migrants in terms of their human development is much smaller, but still noticeable. To some degree, this smaller differential is to be expected. Since (most) migration is a voluntary choice to seek a better life (or move away from a life of destitution), we would expect that migration flows continue as long as there are benefits to migration; these benefits are likely to decline as migration increases. In fact, in the absence of any migration costs and no barriers to mobility, we would expect that migration would equalize well-being within countries and thus reduce differences between migrants and non-migrants.¹⁹ Thus, these small differentials suggest that either this process of equalizing human development through migration is not complete (e.g. due to structural barriers to migration) or that these remaining differentials are largely due to selectivity, i.e. due to the fact that the migrants are a self-selected sample with higher human development potential. It is likely that both issues contribute here.

Further insights can be gained on these issues, however, by considering the sub-indices of the HDI to see which components drive the differential between migrants and non-migrants.

[please insert Table 1 about here]

When examining the individual components, it becomes evident that the biggest factor accounting for the differential in the migration specific HDI comes from the income component. Table 2 shows the migration-specific GDP index, education index, and life expectancy index by country. In all 16 countries where migrants have a higher HDI than non-migrants, internal migrants achieve a considerably larger GDP index than non-migrants. The largest inequality is found for Sub-Saharan African countries, namely Guinea

¹⁹In contrast, one has much less control over one's income bracket as this is heavily influenced by parental background, education, race, gender, age, ethnicity, and other factors that are beyond the control of individuals.

(1.539), Madagascar (1.397), and Uganda (1.161). Conversely, the GDP index is much lower for migrants in the same countries as was found for the overall HDI in Table 1 (Guatemala and Zambia). Thus migrants are better off than non-migrants largely because they earn higher incomes than non-migrants. This is consistent with the notion that the economic motivation is driving the migration decision and, barring selectivity, leads to higher incomes for migrants.

[please insert Table 2 about here]

The differential in the education component between the internal migrants and non-migrants are also noticeable, but generally smaller than for the GDP index. There are virtually no differences in the three Latin American countries and in the two countries (Zambia and Guatemala) where migrants have a lower HDI, the education index for migrants is also much lower, suggesting that migrants there are broadly worse off than non-migrants. The largest differences in educational achievement between internal migrants and non-migrants is found for Côte d'Ivoire, Guinea, and Uganda. Internal migrants in Guinea show a substantially higher index than the non-migrants (0.491 compared to 0.320) resulting in a ratio of internal migrants and non-migrants of 1.534. One should note, however, that education is only reflecting literacy and enrolment rates and says little about educational quality. These findings suggest that the higher education of migrants is a contributing factor to their higher human development, particularly in most African countries where migrants appear to benefit generally from better educational opportunities than non-migrants.²⁰

²⁰To verify the findings for the education index between internal migrants and non-migrants, we also provide the calculation for the education index based on information on education from the DHS data sets. This leads to a higher number of observations since the DHS surveys include more young people. We find overall broad similarities between the findings based on the DHS and based on the HIS data sets, especially for those countries for which we found the largest differences between internal migrants and non-migrants such as Guatemala. However, we also identified some differences between

Table 2 also shows the migration specific life expectancy index by country. The differential in life expectancy achievements between internal migrants and non-migrants are also present and often significant, but generally the smallest of the three components. While one reason for the smaller inequality in the life-expectancy index compared to the two other dimension indices may be related to data quality issues and the assumptions that were made in order to derive these estimates (see also Section 5), it appears that inequality in life expectancy is indeed smaller in developing countries than other forms of inequality (see also Grimm et al. 2008).

Two cautionary notes are important. First, to some extent, such smaller inequality can be expected given that life expectancy is effectively bounded above, i.e. there are limits to life expectancy that even high income people run up against. Second, even seemingly smaller differentials in life expectancy may be seen as just as important, or even more important, than larger differentials in the other components. After all, the chance to live and be free from the fear of premature mortality is a fundamental precondition for all other aspects of life. What is interesting to see in Table 2 is that from the 16 countries only 8 countries show a higher life expectancy index for internal migrants than for non-migrants. However, although mostly significant, these differences are quite small and, therefore, have little impact on the overall MHDI.

To further disaggregate the results, Table 3 presents child mortality rates,

the two surveys (see also Table A4 for differences in the enrolment and literacy rate by country and survey). We prefer the HIS data as the basis to calculate the education index for two reasons. First, the HIS data sets include the direct question whether the individual is literate, whereas this information is not available in the DHS data and where we define an individual as literate if she or he has at least completed five years of schooling. Second, there might also be a sampling issue when using the DHS as basis for the education index. In particular, the DHS data sets include only information on women aged 15-49 and on their respective household members. Hence, there is no information, for example, on single male households. On the other hand, there might also be sampling issue for the Indonesian HIS data which contributes to the differences between the findings, because the 3rd Indonesian Family Life Survey provided by RAND represents only about 83 percent of the total population.

estimated life expectancy, enrolment rates, literacy rates and per capita income/expenditure as well as sample sizes. Looking at the mortality rates and the estimated life expectancy helps to explain the results found in Table 2. For the countries where we found a reverse relationship between internal migrants and non-migrants, the infant mortality rates are higher for the internal migrants than for the non-migrants resulting in a higher life expectancy among the non-migrants. However, we see that the differences in the mortality rates (and thus in life expectancy) are only very small.

More interesting differences are found for the enrolment rates and the literacy rates. Enrolment rates can be seen as an ex-post aspect of migration as it usually depends on the schooling opportunities at the destination, while literacy levels are often based on educational opportunities prior to migration which frequently takes place as a young adult. Thus literacy rates might also tell us something about selectivity of migration.²¹ The results in the table are quite interesting: Adult literacy rates are higher for the 14 out of the 16 countries where migrants have a higher HDI, supporting the notion that migrants are positively selected on education in these countries. This would then also partly account for their higher incomes. In contrast, in the two countries the HDI for migrants is lower, adult literacy is also lower, suggesting negative selection on education. When considering enrolment rates, migrants only have significantly higher enrolment rates in some African countries (esp. Guinea, Madagascar, and Uganda), while they are similar or even slightly lower in most other countries. To the extent that literacy and enrolments indeed largely reflect ex ante and ex post educational opportunities of migrants, this suggests that migrants only sometimes face improved educational opportunities, while more educated adults are more

²¹Since we take average literacy rates of adults in the household, the literacy rates of young adults in a migrant household might already be related to educational opportunities in the destination as the migration took place when the now adult children were not born yet or quite young. Thus the findings of higher literacy among migrants may not only be due to selectivity.

likely to migrate in most circumstances. In that sense, the higher education index for migrants (and the impact this has directly on the HDI and possibly indirectly via the GDP index on the HDI) suggests that part of the higher HDI of migrants in the 14 countries is indeed due to a selection effect.

The relatively large income gains for migrants, compared to smaller differential in health and education is to be expected. The main reason for individuals to migrate is to improve their income-earning opportunities, which benefits those who actually migrate as well as for the left behind household members. Thus, different outcomes in the GDP index between internal migrants and non-migrants are the main result of this motivation to migrate. On the other hand, improvements in education and health status are much more difficult to achieve. For example, even if urban migrants do find jobs that improve their income situation compared to their status before migrating, they often live in urban areas where access to education and especially to health services is often low. In addition, new arrivals often suffer from worse water and sanitation infrastructure which might explain that they are not much better off than non-migrants.

Since both migrants and non-migrants are quite heterogeneous groups, it is instructive to disaggregate the results further by examining migrants and non-migrants in urban and rural areas. In particular, one might speculate that urban non-migrants are particularly well-off (and thus attract migrants to urban areas) and rural non-migrants possibly worst off (as they often are the sending region for migrants). Testing these hypotheses is taken up presently.

[please insert Table 3 about here]

4.2 Human Development by migrational status and region

In this subsection, we further disaggregate our samples by region to analyze the migration-specific MDHI and the respective sub-indices by urban and

rural areas. Table 4 shows the migration-specific HDI by country and region. We find a clear trend towards higher human development for the internal migrants than non-migrants in rural than in urban areas.

In urban areas, eight countries (Côte d’Ivoire, Ghana, Guinea, Indonesia, Madagascar, Paraguay, Uganda, and Vietnam) show a higher MHDI value for internal migrants than for non-migrants, resulting in a ratio of migrants to non-migrants of greater than one. However, the differences between the MHDI values of internal migrations and non-migrants are rather small. Hence, urban migrants are, as expected, not much better off than non-migrants and sometimes worse off. In contrast, in rural areas, 12 countries show a higher MHDI value for the internal migrants than for the non-migrants. Besides Guatemala and Zambia, only in Nicaragua and Côte d’Ivoire, the rural non-migrants show a higher MDHI than the rural internal migrants, a somewhat surprising finding. When examining the individual components, it is the income and the health component which is particularly favorable for rural migrants suggesting that migration to rural areas combines higher incomes with a better health situation. As a result migrants to rural areas are considerably better off than migrants to urban areas. While some of this might again be related to selectivity issues, it is an interesting finding worth exploring further.

[please insert Table 4 about here]

Additional to the comparison between internal migrants and non-migrants within urban and rural areas, we can also analyze differences in human development between urban migrants and rural non-migrants, addressing the effect of rural-to-urban migration on human development. The last column in Table 4 shows the ratio of the MHDI values of the urban migrants to the rural non-migrants. Urban migrants are better off in 10 of the 16 countries, compared to rural non-migrants. The largest difference is found for

Madagascar, where the ratio is 1.289.²²

Besides analyzing differences between urban migrants and rural migrants, Table 4²³ allows to compare outcomes in human development between rural non-migrants, urban non-migrants with the total values of migrants (or urban migrants, rural migrants and total non-migrants, respectively). When comparing rural and urban non-migrants with total internal migrants two findings emerge. First, comparing rural non-migrants with urban non-migrants, Table 4 shows that non-migrants in urban areas achieve a slightly higher level of human development than non-migrants in rural areas, reflecting the overall urban-rural differences in human development. Second, both rural and urban non-migrants show, on average, lower levels in human development than internal migrants.

To summarize the results in section 4, several findings emerge. First, the majority of countries show a significantly higher overall MHDI for internal migrants than for non-migrants. The differences are sometimes sizeable but generally much smaller than the differences in the HDI by income groups analyzed in Grimm et al. (2008). This suggests that migration appears to reduce human development disparities within countries. Second, this is reflected by each sub index of the MHDI, while the largest effect on the overall MHDI comes from the GDP index and the lowest effect comes from the life expectancy index. Third, some of this effect might be related to selectivity issues as we find some evidence that migrants are positively selected on education. Fourth, on average, urban internal migrants are better off than urban non-migrants and rural migrants are better off than rural non-migrants. Fifth, on average, urban migrants are worse off than rural migrants in most

²²Tables A1, A2, and A3 show the migration specific HDI sub indices by region. Both, for the life expectancy index and for the education index, internal migrants achieve, on average, slightly lower values of the indices than the non-migrants in both in rural and in urban areas. Again, the GDP index is higher for the internal migrants than for the non-migrants in almost all countries for rural and urban areas (see, e.g. Williamson, 1990). In almost all countries, urban migrants are richer than rural non-migrants.

²³And also Tables A1, A2, A3.

countries suggesting particular benefits to rural migration, while urban non-migrants are also better off than rural non-migrants. Barring selectivity, this suggests the important role of migration to rural areas as particularly beneficial from a human development perspective. Thus migrants (most of which are likely to originate from rural areas) find that settling in other rural areas to be often more beneficial in terms of income, education, and health opportunities. Possible policy implications arising from these implications are discussed below.

5 Limits and shortcomings of the suggested approach

Computing an aggregate index of well-being for different population sub-groups is a serious challenge. The exercise is first of all constrained by data availability. In addition, there is clearly a trade-off between transparency, simplicity and an intuitive interpretation on the one hand and accuracy and computational complexity on the other hand. In our approach we tried to elaborate an index which is relatively transparent, simple to calculate and easy to interpret. In consequence, we were forced to make many simplifications. The most important ones are discussed in the following.

First, as already discussed in Section 2.2, the definition of internal migration is mainly data-driven and lacks some important information. Related to the data availability, the results should also be treated with caution in the sense that they are driven by the matching by migrational status of the HIS and DHS data sets, which could be misleading if the share of internal migrants to non-migrants differs substantially in the two surveys. Table A5 shows the respective surveys means for internal migrants and non-migrants. For most of the countries, the differences are quite small, but for some countries (e.g. Indonesia and Peru) the means differ quite a lot.²⁴

²⁴One reason for the difference is that most of the DHS data sets include the question about the number of years the individual lives in the place of residence, whereas most of

Second, household income has obviously a different temporal dimension than our indicators for life expectancy and education. Household income as measured in household surveys is clearly a period estimate, even if it is approximated by household expenditure, which could be seen as a rough measure of permanent income. Hence, assuming that people stay at this level throughout life, which is implicitly done the way we use it, is probably false and is likely to overstate lifetime income inequality. Whether this also leads to an overestimation in the differentials of life expectancy and education is unclear.

Third, and finally, the method used here is a comparison of two different population subgroups, internal migrants and non-migrants. Internal migrants constitute a non-random sample of the population. The endogeneity of the migration decision demands for taking into account a possible selection bias in the empirical analysis of the effect of migration on human well-being. We saw some evidence of self-selection when examining adult literacy rates and this might overstate gains of migration to movers. Thus we cannot infer clear causal effects of migration from our findings and just show how migrants and non-migrants fare in different settings.

Hence, the paper should first of all be seen as an illustrative exercise which hopefully enhances the discussion and sensitizes policy makers for the role of migration in affecting human development differentials within countries.

6 Conclusion and Policy Issues

Migration within countries continues to be one of the most important strategies for poor people in developing countries to improve and diversify their income sources. Thus, analyzing the well-being of migrants is important for

the HIS data sets include the question whether the individual was born in the place of residence, which we took to generate the internal migrational status. See Table A4 for the information in migration available by survey and country.

the understanding of the socioeconomic impact of migration on human development, which could contribute to a better informed and focused policy debate to improve the well-being of migrants, also in the face of interventions to promote or restrict migration. This paper contributes to the debate on the differences in well-being between internal migrants and non-migrants by calculating the Human Development Index separately for internal migrants and non-migrants within and across countries and between rural and urban areas.

The illustration for a sample of 16 low and middle income countries showed that differences in human development between internal migrants and non-migrants within countries can be substantial, although generally much smaller than differences in human development by income groups. This suggests that migration is one way to equalize human development within countries and as such is an important way to improve opportunities for people with poor human development prospects.

Internal migrants generally experience higher human development than non-migrants. From 16 developing countries in our sample 14 show a higher value of the HDI for internal migrants than for non-migrants. This is reflected by each sub index of the MHDI, while the largest effect on the overall MHDI comes from the GDP index and the lowest effect comes from the life expectancy index. We find some evidence that this is partly related to selectivity, at least in the education dimension. Disaggregation of the analysis by urban and rural areas reveals that urban internal migrants are better off than urban non-migrants and rural migrants are better off than rural non-migrants. In addition, on average, urban migrants are worse off than rural migrants in most countries while urban migrants are better off than rural non-migrants.

We believe three policy implications are of particular relevance arising from our study. First, allowing and facilitating internal migration is an

important way to improve opportunities for people facing poor human development prospects. Our results suggest that migration 'works' for most migrants in terms of their human development. Most notably, they appear to be able to improve their income situation, while gains in education and health are much less certain. Policies to restrict and constrain migration are likely to increase and solidify human development disparities within countries. Second, the relatively lower performance of particularly urban migrants in health and education suggests that migrants are often not treated equally in terms of access to services and educational opportunities. Surprisingly, the situation appears to be more favorable for migrants in rural areas where the income and health situation appears more favorable. Third, in some situations migrants fare very badly. The examples of Guatemala and Zambia show that migrants can be worse off than non-migrants in all human development dimensions. This is likely due to the forced migration and internal displacements in the case of Guatemala and the economic crisis and poor economic prospects pushing migrants into situations with poor human development prospects in Zambia. In these cases, migrants need much more support from the state to provide them with educational opportunities, health services, and income-generation activities.

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Tables and figures

Table 1
Migration specific HDI by country

	Total	Lower CI (95)	Upper CI (95)	Non- Migrants	Lower CI (95)	Upper CI (95)	Migrants	Lower CI (95)	Lower CI (95)	Ratio Migrants/ Non-migrants	Ranking Total	Ranking Non- migrants	Ranking Migrants
Bolivia (2002/2003)	0.690	0.674	0.702	0.681	0.658	0.699	0.697	0.675	0.714	1.023	112	114	109
Cameroon (2004/2004)	0.523	0.515	0.531	0.511	0.494	0.526	0.529	0.520	0.538	1.035	139	145	136
Colombia (2003/2005)	0.790	0.785	0.795	0.778	0.770	0.786	0.800	0.793	0.806	1.028	76	77	74
Cote d'Ivoire (1998/1999)	0.430	0.425	0.434	0.421	0.413	0.428	0.433	0.428	0.438	1.030	142	149	138
Ghana (1999/1998)	0.533	0.519	0.544	0.520	0.498	0.540	0.542	0.523	0.559	1.042	123	123	118
Guatemala (2000/1995)	0.706	0.695	0.715	0.780	0.757	0.800	0.679	0.667	0.690	0.870	104	58	112
Guinea (1995/1999)	0.467	0.447	0.475	0.398	0.378	0.417	0.527	0.506	0.547	1.324	134	148	123
Indonesia (2000/2003)	0.701	0.697	0.707	0.692	0.686	0.697	0.729	0.719	0.738	1.053	110	114	96
Kyrgyz R. (1998/1997)	0.694	0.682	0.703	0.683	0.669	0.696	0.731	0.708	0.751	1.069	105	108	94
Madagascar (2001/1997)	0.488	0.465	0.510	0.458	0.429	0.486	0.549	0.515	0.582	1.200	148	153	134
Nicaragua (2001/2001)	0.667	0.659	0.674	0.664	0.654	0.673	0.672	0.660	0.683	1.011	115	117	114
Paraguay (1997/1990)	0.752	0.744	0.762	0.740	0.727	0.752	0.768	0.754	0.781	1.038	68	82	56
Peru (2001/2000)	0.770	0.764	0.776	0.768	0.757	0.779	0.770	0.762	0.778	1.003	73	75	73
Uganda (2002/2001)	0.497	0.482	0.498	0.462	0.449	0.474	0.534	0.520	0.548	1.157	142	154	137
Vietnam (2004/2002)	0.713	0.694	0.729	0.703	0.677	0.725	0.727	0.698	0.752	1.035	108	113	100
Zambia (2002/2002)	0.426	0.420	0.432	0.458	0.448	0.468	0.404	0.396	0.411	0.881	160	156	162

Note: The years in brackets refer to the respective survey years. The first year refers to the HIS data set, the second to the DHS data set. All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Table 2
Migration specific HDI components by country

	GDP index			Education index			Life expectancy index					
	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants
Bolivia (2002/2003)	0.548	0.526	0.567**	1.079	0.870	0.863	0.876*	1.015	0.651	0.654	0.648*	0.991
Cameroon (2004/2004)	0.513	0.480	0.527**	1.098	0.713	0.704	0.716**	1.017	0.344	0.346	0.344*	0.992
Colombia (2003/2005)	0.711	0.683	0.733**	1.073	0.863	0.853	0.870**	1.020	0.797	0.809	0.789*	0.976
Cote d'Ivoire (1998/1999)	0.483	0.470	0.489**	1.042	0.443	0.429	0.448**	1.043	0.364	0.364	0.363*	0.997
Ghana (1999/1998)	0.421	0.386	0.444**	1.150	0.605	0.588	0.614**	1.044	0.574	0.557	0.584*	1.049
Guatemala (2000/1995)	0.659	0.773	0.616**	0.797	0.709	0.791	0.676**	0.855	0.750	0.777	0.744*	0.959
Guinea (1995/1999)	0.514	0.397	0.611**	1.539	0.410	0.320	0.491**	1.534	0.479	0.477	0.480	1.005
Indonesia (2000/2003)	0.593	0.576	0.627**	1.089	0.814	0.809	0.826**	1.021	0.697	0.690	0.732*	1.062
Kyrgyz R. (1998/1997)	0.484	0.470	0.539**	1.147	0.919	0.915	0.938*	1.025	0.678	0.664	0.713*	1.072
Madagascar (2001/1997)	0.370	0.330	0.461**	1.397	0.593	0.564	0.655**	1.162	0.500	0.480	0.530**	1.104
Nicaragua (2001/2001)	0.599	0.584	0.626**	1.072	0.665	0.665	0.665	0.999	0.735	0.748	0.715*	0.955
Paraguay (1997/1990)	0.617	0.595	0.643**	1.081	0.864	0.869	0.859	0.988	0.775	0.746	0.815**	1.093
Peru (2001/2000)	0.666	0.657	0.669**	1.018	0.894	0.897	0.893	0.995	0.749	0.749	0.750	1.001
Uganda (2002/2001)	0.444	0.405	0.471**	1.161	0.693	0.624	0.783	1.255	0.353	0.356	0.349**	0.980
Vietnam (2004/2002)	0.543	0.540	0.551**	1.019	0.831	0.827	0.840**	1.017	0.764	0.705	0.841**	1.193
Zambia (2002/2002)	0.366	0.403	0.343**	0.850	0.704	0.750	0.672**	0.895	0.208	0.217	0.200*	0.918

Note: The stars refer to a significance test for the difference between the outcomes for internal migrants and non-migrants. *(p-value<0.05). *(p-value<0.1). The years in brackets refer to the respective survey years. The first year refers to the HIS data set, the second to the DHS data set. All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Table 3
Descriptive Statistics

Country	Child Mortality (190)			Life expectancy (e_0)			Enrolment (age 5-23)			Adult Literacy (aged 15+)			Income/Expenditure (per capita PPP)		
	Migrants	Non-Migrants	Total	Migrants	Non-Migrants	Total	Migrants	Non-Migrants	Total	Migrants	Non-Migrants	Total	Migrants	Non-Migrants	Total
Bolivia	72	69	71	63	62	63	0.846	0.839	0.843	0.880	0.845	0.863	5045	3623	4233
Cameroun	155	151	154	53	54	53	0.762	0.773	0.766	0.888	0.792	0.860	2106	1740	1937
Colombia	27	33	30	68	67	67	0.711	0.719	0.715	0.948	0.929	0.940	6051	3498	4864
Cote d'Ivoire	33	34	33	67	68	67	0.752	0.717	0.742	0.533	0.387	0.487	1633	1535	1596
Ghana	122	106	116	57	58	57	0.792	0.809	0.799	0.572	0.490	0.539	948	847	902
Guatemala	60	74	72	63	62	62	0.509	0.617	0.535	0.719	0.858	0.756	4040	5826	4360
Guinea	162	157	159	52	53	53	0.549	0.336	0.458	0.183	0.120	0.152	872	825	835
Indonesia	54	68	67	64	63	63	0.573	0.573	0.573	0.925	0.831	0.867	2747	2287	2416
Kyrgyz Republic	51	75	68	64	61	62	0.653	0.599	0.608	0.990	0.985	0.986	1576	1141	1210
Madagascar	141	176	161	55	51	52	0.707	0.652	0.670	0.816	0.693	0.734	1270	382	693
Nicaragua	57	48	51	64	65	64	0.355	0.356	0.355	0.767	0.767	0.767	2178	2248	2227
Paraguay	35	51	45	67	64	65	0.707	0.729	0.719	0.903	0.892	0.897	3570	3452	3497
Peru	52	57	55	64	63	64	0.555	0.577	0.560	0.898	0.890	0.896	4054	3892	3988
Uganda	154	145	149	53	54	54	0.742	0.616	0.680	0.689	0.609	0.651	814	669	732
Vietnam	16	31	27	70	67	68	0.624	0.710	0.696	0.866	0.772	0.778	1776	1637	1645
Zambia	178	163	171	51	52	51	0.556	0.628	0.583	0.729	0.735	0.734	867	1213	981

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS); calculations by the authors.

Note: Household income/expenditure per capita is rescaled by the ratio between \bar{y}^{PPP} and GDP per capita expressed in PPP (taken from the general HDI).

Table 4
Migration specific HDI components by country

	Urban										Rural									
	Total	CI (95)	Non-migrant	CI (95)	Migrant	CI (95)	Ratio Mig/Non-mig.	Total	CI (95)	Non-migrant	CI (95)	Migrant	CI (95)	Ratio Mig/Non-mig.						
Bolivia	0.707	0.674-0.703	0.695	0.671-0.714	0.685	0.663-0.703	0.986	0.685	0.662-0.710	0.690	0.652-0.717	0.691	0.647-0.722	1.002						
Cameroon	0.539	0.476-0.516	0.540	0.408-0.515	0.521	0.479-0.522	0.965	0.509	0.491-0.515	0.523	0.476-0.520	0.526	0.493-0.522	1.006						
Colombia	0.806	0.741-0.751	0.795	0.739-0.755	0.788	0.740-0.753	0.991	0.761	0.742-0.759	0.769	0.714-0.738	0.809	0.761-0.783	1.053						
Cote	0.435	0.406-0.416	0.420	0.392-0.410	0.432	0.408-0.420	1.029	0.420	0.406-0.420	0.430	0.397-0.420	0.430	0.407-0.424	0.998						
Ghana	0.577	0.487-0.522	0.527	0.445-0.516	0.534	0.487-0.535	1.013	0.518	0.492-0.521	0.516	0.484-0.531	0.545	0.491-0.534	1.057						
Guatemala	0.750	0.693-0.717	0.760	0.737-0.780	0.679	0.663-0.692	0.893	0.677	0.696-0.715	0.746	0.731-0.761	0.706	0.687-0.722	0.946						
Guinea	0.528	0.445-0.484	0.453	0.414-0.486	0.473	0.447-0.496	1.045	0.427	0.437-0.481	0.450	0.422-0.476	0.533	0.483-0.582	1.186						
Indonesia	0.729	0.692-0.710	0.690	0.678-0.701	0.720	0.709-0.731	1.044	0.686	0.695-0.708	0.698	0.691-0.705	0.714	0.698-0.730	1.023						
Kyrgyz R.	0.726	0.662-0.701	0.693	0.656-0.703	0.693	0.643-0.717	0.999	0.686	0.664-0.689	0.684	0.654-0.685	0.724	0.674-0.725	1.059						
Madagascar	0.547	0.446-0.496	0.487	0.438-0.498	0.491	0.430-0.519	1.008	0.408	0.428-0.520	0.381	0.310-0.425	0.668	0.590-0.714	1.754						
Nicaragua	0.715	0.628-0.644	0.669	0.622-0.644	0.665	0.628-0.654	0.994	0.630	0.626-0.647	0.676	0.633-0.658	0.645	0.597-0.633	0.953						
Paraguay	0.783	0.708-0.732	0.735	0.693-0.727	0.769	0.713-0.746	1.047	0.731	0.712-0.736	0.752	0.711-0.741	0.753	0.702-0.742	1.002						
Peru	0.780	0.727-0.742	0.787	0.728-0.756	0.761	0.721-0.739	0.967	0.763	0.734-0.757	0.769	0.730-0.765	0.773	0.728-0.761	1.006						
Uganda	0.552	0.451-0.472	0.478	0.458-0.495	0.511	0.493-0.527	1.070	0.497	0.481-0.499	0.472	0.458-0.485	0.529	0.513-0.544	1.120						
Vietnam	0.711	0.602-0.703	0.680	0.499-0.680	0.752	0.670-0.752	1.107	0.761	0.653-0.683	0.703	0.641-0.681	0.727	0.657-0.702	1.034						
Zambia	0.456	0.409-0.425	0.451	0.431-0.456	0.407	0.386-0.407	0.902	0.397	0.408-0.425	0.455	0.430-0.458	0.410	0.390-0.411	0.901						

Note: All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Appendix

Table A1
Migration specific life expectancy indices by country and region

	Urban				Rural				
	Overall	Non-migrants	Ratio		Overall	Non-migrants	Ratio		
			Migrants	Non-migrants			Migrants	Non-migrants	
Bolivia (2002/2003)	0.651	0.654	0.648*	0.991	0.651	0.675	0.625**	0.926	0.961
Cameroon (2004/2004)	0.344	0.427	0.327**	0.766	0.344	0.360	0.340*	0.944	0.909
Colombia (2003/2005)	0.797	0.820	0.784*	0.957	0.797	0.798	0.796	0.997	0.982
Cote d'Ivoire (1998/1999)	0.364	0.367	0.361**	0.984	0.364	0.376	0.357*	0.949	0.962
Ghana (1999/1998)	0.574	0.603	0.556**	0.923	0.574	0.544	0.592*	1.088	1.022
Guatemala (2000/1995)	0.750	0.771	0.743*	0.964	0.750	0.745	0.778*	1.044	0.998
Guinea (1995/1999)	0.479	0.482	0.47*7	0.989	0.479	0.483	0.471*	0.974	0.986
Indonesia (2000/2003)	0.697	0.691	0.706	1.022	0.697	0.694	0.723*	1.041	1.016
Kyrgyz R. (1998/1997)	0.678	0.686	0.659*	0.960	0.678	0.657	0.732**	1.114	1.002
Madagascar (2001/1997)	0.500	0.502	0.497	0.990	0.500	0.472	0.541**	1.146	1.053
Nicaragua (2001/2001)	0.735	0.761	0.702*	0.922	0.735	0.743	0.722*	0.972	0.945
Paraguay (1997/1990)	0.775	0.733	0.820**	1.119	0.775	0.755	0.807*	1.070	1.087
Peru (2001/2000)	0.749	0.804	0.720**	0.896	0.749	0.735	0.768*	1.045	0.980
Uganda (2002/2001)	0.353	0.373	0.341*	0.913	0.353	0.358	0.346*	0.965	0.952
Vietnam (2004/2002)	0.764	0.679	0.850**	1.251	0.764	0.740	0.796*	1.076	1.149
Zambia (2002/2002)	0.208	0.225	0.198	0.878	0.208	0.216	0.200	0.927	0.918

Note: The stars refer to a significance test for the difference between the outcomes for internal migrants and non-migrants. *(p-value<0.05). *(p-value<0.1). The years in brackets refer to the respective survey years. The first year refers to the HIS data set, the second to the DHS data set. All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Table A2
Migration specific education indices by country and region

	Urban				Rural			
	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants
Bolivia (2002/2003)	0.870	0.872	0.869	0.996	0.870	0.872	0.867	0.994
Cameroon (2004/2004)	0.713	0.703*	0.716	1.019	0.713	0.719	0.708**	0.984
Colombia (2003/2005)	0.863	0.861	0.864	1.003	0.863	0.856	0.869	1.015
Cote d'Ivoire (1998/1999)	0.443	0.430**	0.446	1.038	0.443	0.435	0.447	1.029
Ghana (1999/1998)	0.605	0.585	0.611*	1.045	0.605	0.604	0.605	1.001
Guatemala (2000/1995)	0.709	0.755	0.684**	0.907	0.709	0.779	0.692**	0.889
Guinea (1995/1999)	0.410	0.386	0.420**	1.089	0.410	0.365	0.570**	1.565
Indonesia (2000/2003)	0.814	0.806	0.830**	1.030	0.814	0.817	0.803*	0.984
Kyrgyz R. (1998/1997)	0.919	0.919	0.918	0.999	0.919	0.920	0.912	0.991
Madagascar (2001/1997)	0.593	0.589	0.602*	1.022	0.593	0.419	0.870**	2.076
Nicaragua (2001/2001)	0.665	0.663	0.669	1.009	0.665	0.684	0.621*	0.908
Paraguay (1997/1990)	0.864	0.871	0.859	0.987	0.864	0.881	0.839*	0.953
Peru (2001/2000)	0.894	0.889	0.896	1.008	0.894	0.913	0.881	0.964
Uganda (2002/2001)	0.693	0.640	0.741**	1.159	0.693	0.624	0.783**	1.255
Vietnam (2004/2002)	0.831	0.816	0.866*	1.061	0.831	0.830	0.832	1.003
Zambia (2002/2002)	0.704	0.730	0.681**	0.934	0.704	0.752	0.677**	0.900

Note: The stars refer to a significance test for the difference between the outcomes for internal migrants and non-migrants. *(p-value<0.05). *(p-value<0.1). The years in brackets refer to the respective survey years. The first year refers to the HIS data set, the second to the DHS data set. All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Table A3
Migration specific GDP indices by country and region

	Urban				Rural			
	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants	Overall	Non-migrants	Migrants	Ratio Migrants/Non-migrants
Bolivia (2002/2003)	0.548	0.559	0.540**	0.965	0.548	0.522	0.581**	1.114
Cameroon (2004/2004)	0.513	0.490	0.520**	1.061	0.513	0.491	0.531**	1.082
Colombia (2003/2005)	0.711	0.705	0.716**	1.015	0.711	0.652	0.763**	1.170
Cote d'Ivoire (1998/1999)	0.483	0.464	0.489**	1.056	0.483	0.480	0.485	1.010
Ghana (1999/1998)	0.421	0.392	0.433**	1.104	0.421	0.399	0.439**	1.102
Guatemala (2000/1995)	0.659	0.755	0.608**	0.806	0.659	0.714	0.647**	0.906
Guinea (1995/1999)	0.514	0.490	0.523**	1.067	0.514	0.501	0.558**	1.115
Indonesia (2000/2003)	0.593	0.573	0.625**	1.090	0.593	0.584	0.617**	1.058
Kyrgyz R. (1998/1997)	0.484	0.474	0.501**	1.057	0.484	0.475	0.530**	1.115
Madagascar (2001/1997)	0.370	0.369	0.373	1.011	0.370	0.251	0.592**	2.362
Nicaragua (2001/2001)	0.599	0.583	0.625**	1.073	0.599	0.603	0.592**	0.982
Paraguay (1997/1990)	0.617	0.602	0.629**	1.045	0.617	0.619	0.613**	0.990
Peru (2001/2000)	0.666	0.667	0.666	0.998	0.666	0.659	0.672	1.020
Uganda (2002/2001)	0.444	0.420	0.451**	1.075	0.444	0.434	0.458*	1.054
Vietnam (2004/2002)	0.543	0.544	0.540**	0.994	0.543	0.540	0.553*	1.024
Zambia (2002/2002)	0.366	0.398	0.341**	0.859	0.366	0.396	0.351**	0.888

Note: The stars refer to a significance test for the difference between the outcomes for internal migrants and non-migrants. *(p-value<0.05). *(p-value<0.1). The years in brackets refer to the respective survey years. The first year refers to the HIS data set, the second to the DHS data set. All indices are rescaled to UNDP's reported HDI value of the second survey year.

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS), Human Development Reports; calculations by the authors.

Table A4
Descriptive Statistics by Country and Region

		Total		Urban		Rural	
		migrants	Non-migrants	migrant	Non-migrant	migrant	Non-migrant
Bolivia	DHS	52.56	47.44	59.62	40.38	42.82	57.18
	HIS	50.87	49.13	52.47	47.53	46.92	53.08
Cameroon	DHS	70.43	29.57	75.78	24.22	56.80	43.20
	HIS	75.74	24.26	77.52	22.48	74.12	25.88
Colombia	DHS	57.26	42.74	52.37	47.63	65.20	34.80
	HIS	55.55	44.45	57.57	42.43	49.39	50.61
Cote	DHS	68.42	31.58	70.56	29.44	67.51	32.49
	HIS	59.89	40.11	59.69	40.31	60.47	39.53
Ghana	DHS	57.03	42.97	66.30	33.70	52.30	47.70
	HIS	59.30	40.70	60.82	39.18	58.58	41.42
Guatemala	DHS	72.63	27.37	62.58	37.42	81.47	18.53
	HIS	36.99	63.01	83.49	16.51	16.49	83.51
Guinea	DHS	53.25	46.75	72.79	27.21	20.67	79.33
	HIS	46.06	53.94	63.87	36.13	39.45	60.55
Indonesia	DHS	37.29	62.71	42.87	57.13	32.34	67.66
	HIS	21.44	78.56	48.85	51.15	9.84	90.16
Kyrgyz R.	DHS	26.80	73.20	43.59	56.41	19.20	80.80
	HIS	34.65	65.35	30.30	69.70	37.45	62.55
Madagascar	DHS	30.56	69.44	29.17	70.83	33.33	66.67
	HIS	36.59	63.41	35.88	64.12	36.90	63.10
Nicaragua	DHS	34.24	65.76	37.90	62.10	29.59	70.41
	HIS	35.27	64.73	38.03	61.97	32.20	67.80
Paraguay	DHS	46.81	53.19	55.13	44.87	38.60	61.40
	HIS	43.94	56.06	48.00	52.00	40.13	59.87
Peru	DHS	74.98	25.02	78.83	21.17	57.18	42.82
	HIS	51.62	48.38	57.89	42.11	43.17	56.83
Uganda	DHS	57.20	42.80	76.81	23.19	43.10	56.90
	HIS	60.69	39.31	59.98	40.02	39.88	60.12
Vietnam	DHS	45.02	54.98	40.86	59.14	46.33	53.67
	HIS	44.99	55.01	55.33	44.67	42.01	57.99
Zambia	DHS	68.86	31.14	65.02	34.98	72.44	27.56
	HIS	52.36	47.64	61.90	38.10	48.28	51.72

Source: Household Income Survey (HIS) and Demographic and Health Surveys (DHS); calculations by the authors.