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MIGRATION'S INCOME AND POVERTY IMPACT HAS BEEN UNDERESTIMATED

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**Migration's Income and Poverty Impact
Has Been Underestimated**

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ABSTRACT

In estimating the impact of migration on income and poverty, existing studies have typically overlooked the fact that migration changes the size of the household. The 'corrected' impact that takes the change in household size into account is presented analytically and is estimated on the basis of data from Ghana's GLSS household survey. The latter is shown to be equal to 2.6 to 4.6 times the impact obtained from standard analysis.

JEL: F22, I32, J61, O15, O19, R23

Keywords: Migration, income, poverty, underestimation, reference groups

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1. Introduction

Migration affects the income and expenditures of migrant households and consequently affects poverty. This paper focuses on the fact that empirical studies of the impact of migration on household income and poverty have overlooked an important component of this impact, namely the change in household size.¹

The impact of migration on poverty is simulated for three poverty measures and for four groups of migrant households: all migrant households, households with only internal migrants, households with only international migrants, and households with both internal and international migrants. Based on a household survey for Ghana, I show that the impact of migration on income and poverty (across all poverty measures and household groups) when the change in household size is taken into account is 2.5 to 4.5 times the impact when that change is not taken into account.

The paper is structured as follows. Section 2 examines the issue of change in household size analytically. Section 3 looks at various estimation approaches used in the past and which, if any, estimate the ‘correct’ impact on income and poverty. Section 4 simulates the impact of migration taking the change in household size into account, and Section 5 concludes.

2. The Overlooked Component of Migration’s Impact on Income and Poverty

The definition of the impact of migration on household income that is used in the better empirical analyses is equal to the difference between post- and pre-migration household, where the impact is defined as the difference between the remittances

¹ These include Taylor (1992), Adams (2005), Acosta (2006), and Adams and Page (2006). Taylor et al. (2003) only focus on income and obtain positive adjusted effects from internal migration in China.

obtained and the loss of the income the migrant earned before migrating. The latter requires the estimation of a selection equation, with a correction for selection bias.^{2 3} These studies have typically found that migration raises household income.⁴

The estimate of the impact of migration on per capita income is then obtained by dividing the estimated impact of migration on household income by the number of household members (the “household size”). The issue examined in this paper is whether this procedure provides a good estimate of the impact on per capita income.

Denote real household income in the absence of migration by Y and in the presence of migration by Y_M . Further, denote the number of migrants by m and the pre-migration household size by n . The number of household members observed by the surveyors is $n - m$. The difference between Y_M and Y per capita in a household with $n - m$ household members is:

$$\Delta Y \equiv \frac{1}{n - m} (Y_M - Y). \quad (1)$$

² The selection equation estimates income as a function of individual and household characteristics (and community ones if available). However, a migrant and a non-migrant are different even if they exhibit identical characteristics since only one of them migrated. People tend to self-select into migration so that the selection equation must be corrected for selection bias.

³ The estimated difference between remittances obtained and the income the migrant earned before leaving might underestimate (overestimate) the actual difference in household income if the migrant’s impact on the productivity of other members of the household was a positive (negative). This outcome is more likely if the migrant worked with some other household members (say on the household’s piece of land or small business). The alternative would be to estimate a household income function (with a correction for selection bias). The estimated impact of migration on household income would be equal to the difference between the actual household income (including remittances) and the estimated household income.

⁴ One of the most rigorous studies is Barham and Boucher (1998). They do not look at poverty but rather estimate the net impact of migration and remittances on income distribution. They correct the selection equation for migration and labor-force participation selection biases, and conduct a Monte Carlo experiment that enables them to provide confidence intervals for their results.

The impact ΔY as a share S of initial income, $S(\Delta Y)$, is:

$$S(\Delta Y) = \left(\frac{Y_M - Y}{n - m} \right) / \left(\frac{Y}{n - m} \right) = \left(\frac{Y_M}{Y} - 1 \right). \quad (2)$$

Using household size $(n - m)$ as a denominator enables comparability across households of different sizes. However, the measures in equations (1) and (2) do *not* represent the impact of migration on the *per capita* income of the household members because the migration-induced change in household size is not accounted for.

Migrants' expenditures on food, clothing and other consumption items take place in the country or region of destination, not in the source (home) country or region. Migrants' income is first used for living expenses, and only then is (part of) the remainder remitted to the migrant's household. Thus, the household members remaining in the source country enjoy an additional benefit because household income is spent on fewer people.

Similarly, migrants use housing space in the destination country or region rather than at home. This implies a benefit for those household members remaining in the source country because of the increase in housing space or because of the possibility of renting one or more rooms out.

Thus, an important -- and possibly the most important -- element of the impact of migration on per capita income is missing from the definition. Ignoring the migration-induced change in household size is likely to substantially underestimate the impact of migration on per capita income and poverty reduction. Existing analyses have typically ignored this important effect.

Consequently, it is incorrect to divide both Y_M and Y by the same number of household members ($n - m$) in order to obtain an estimate of the impact of migration on per capita income. The impact ΔY^* of migration on per capita income that takes the change in household size into account is:

$$\Delta Y^* = \frac{Y_M}{n - m} - \frac{Y}{n} . \quad (3)$$

The impact ΔY^* as a share S of initial income $S(\Delta Y^*)$ is:

$$S(\Delta Y^*) = \left\{ \left(\frac{Y_M}{n - m} \right) - \left(\frac{Y}{n} \right) \right\} / \frac{Y}{n} = \left(\frac{n}{n - m} \right) \left(\frac{Y_M}{Y} \right) - 1 > S(\Delta Y) .^5 \quad (4)$$

3. Simulation of the Impact of Change in Household Size

The data used in Tables 1, 2a and 2b are based on the Ghana Living Standard Survey 4 (GLSS4) conducted by the Ghana Statistical Service over a twelve-month period from April 1998 to March 1999. Table 1 presents information on the absolute and

⁵ The estimation based on equation (4) may provide a lower bound of the impact of migration on per capita household income because it assumes that migrants' expenditures are identical to those of the other household members. For many countries, men constitute the bulk of international economic migrants and they tend to consume more than the household average. Assume first that all household members are given the same weight in the household welfare function. This does not necessarily imply the same level of expenditures for each household member because needs and activities are likely to differ. Young men tend to require more sustenance than, say, a small child, especially if their occupation entails strenuous physical activity such as farm work. Moreover, a large number of societies favor males over females, with even greater expenditures going to male household members. These considerations imply that the per capita income gain due to the reduction in household size is likely to be larger than under the assumption that consumption is identical for all household members. A contrary argument is that household consumption might be characterized by economies of scale, and some of these will be lost under migration because it reduces household size. One way the issue of different expenditure levels has been dealt with is to adjust household size by weighting household members in terms of their adult equivalence, with those under the age of twelve assigned a weight of 1/2 and the others a weight of 1 (see Barham and Boucher 1998, p. 313).

relative size of the group of non-migrant, internal-migrant and international-migrant households. It shows that 59% are non-migrant households and 41% are migrant households. Among the latter, 33% of households have internal migrants, 6% have international migrants and 2% have both. The table also shows the average household size and number of migrants for the various groups. The average household size is 4.51 for non-migrant households or over 10% larger than the 4.02 size for migrant households. The average number of migrants is 1.56 migrants for internal-migrant households, which is over 20% larger than the 1.28 migrants for international-migrant households.

The GLSS survey does not provide information on the identity of the sender or senders of the remittances. I assume for simplicity that remittances obtained are sent by a household member, i.e., by someone who lived under the same roof as the household members remaining in the source country or region. That person may be a direct member of the family (e.g., a household head or his/her child or sibling), a more distant family member (e.g., cousin, nephew) or not a family member (e.g., a close friend).

Tables 2a and 2b show, respectively, the uncorrected and the corrected impact of migration on three measures of poverty -- the level of poverty (poverty headcount), the depth of poverty (average poverty gap), and the severity of poverty (average squared poverty gap), as well as on per capita income.⁶ The results in Table 2a are from Adams (2006). These show that migration led to an increase in average income of 7% for the entire sample (column 9), with 4.2% coming from internal migration (60% of the total increase).

⁶ The level of poverty is the share of all households that are below the poverty line. The depth of poverty measures the gap that exists on average between the poverty line and household income. The severity of poverty uses the square of the weights used in the depth-of-poverty measure. Consequently gives more weight to the poorer households.

The poverty level fell by 4.1%, the poverty gap by 5.8% and the severity of poverty by 7.4%, with over 80% due to internal migration. Thus, the average distance of household income from the poverty line, as measured by the average poverty gap, fell by more than the poverty headcount, implying that the reduction in the poverty gap was stronger for the poorest households. Consequently, the average severity of poverty fell by more than the average poverty gap.

The results corrected for the change in household size are presented in Table 2b. It is clear that the corrected figures are much larger than the uncorrected ones. For instance, when the impact of migration on households with internal migrants is the only one taken into account (column 6), the corrected reduction in the level of poverty is equal to 14.2% while the uncorrected one is 3.3%.

Columns (6) to (9) in Table 2b also show bold figures. These represent the ratio of the corrected impact (Table 2b) to the uncorrected one (Table 2a). The bold figures indicate that the ratio of the corrected to the uncorrected impact of migration on household per capita income is 3.9 when the impact on all migrant households is taken into account, while the corresponding ratio for poverty is between 3.8 and 4.2. The corrected impact on income and on the three poverty measures for the four groups is between 2.6 and 4.4 times larger than the uncorrected impact.

4. Conclusion

The analysis presented in this paper has shown that abstracting from migration-induced changes in the size of households results in a negative bias in the estimates of the impact of migration on income and poverty. It has also shown that the bias can be

extremely large, with the impact in this case between 2.6 and 4.4 times larger when the change in household size is taken into account than when it is not.

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Table 1. Summary statistics

Indicators	All households	Without migrants	With internal migrants	With international migrants	With both internal and international migrants	With internal and/or international migrants
	(1)	(2)	(3)	(4)	(5)	(6)
Absolute size of sample	5998	3517	1993	342	146	2481
Relative size of sample	100%	59%	33%	6%	2%	41%
Average size of household (net of migrants)	4.31	4.51	3.97	4.19	4.21	4.02
Average number of migrants	0.66	0.00	1.56	1.28	2.93	1.61
Average size of household (including migrants)	4.97	4.51	5.53	5.47	7.14	5.63

Table 2. Migration and Poverty in Whole Sample

Indicators	Without migrants	With internal migrants	With international migrants	With both internal and international migrants	With internal and/or international migrants	Internal vs. no migrants	Percentage change *		
							International vs. no migrants	Both internal and international vs. no migrants	Internal and/or international vs. no migrants
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Not Accounting for Change in Household Size									
Level: Poverty headcount (percent)	41.0	39.7	40.9	40.8	39.3	-3.3%	-0.4%	-0.5%	-4.1%
Depth: Poverty gap (percent)	14.6	13.9	14.5	14.5	13.8	-4.8%	-0.5%	-0.5%	-5.8%
Severity: Squared poverty gap (percent)	6.9	6.5	6.8	6.8	6.4	-6.2%	-0.7%	-0.5%	-7.4%
Mean per capita household expenditure (including remittances in Ghanaian Cedis)	1,435,879	1,496,292	1,457,579	1,454,330	1,470,042	4.2%	1.5%	1.3%	7.0%
Panel B. Accounting for Change in Household Size									
Level: Poverty headcount (percent)	47.6	40.8	46.9	46.7	39.3	-14.2% (4.4)	-1.5% (3.8)	-1.8% (4.0)	-17.3% (4.2)
Depth: Poverty gap (percent)	17.9	14.4	17.7	17.6	13.8	-19.6% (4.1)	-1.5% (3.1)	-2.1% (4.3)	-23.3% (4.0)
Severity: Squared poverty gap (percent)	8.9	6.8	8.7	8.7	6.4	-23.8% (3.8)	-1.9% (2.6)	-2.3% (4.6)	-28.1% (3.8)
Mean per capita household expenditure (including remittances) in Ghanaian Cedis)	1,207,116	1,438,042	1,263,125	1,249,508	1,536,444	19.1% (4.5)	4.6% (3.1)	3.5% (2.7)	27.3% (3.9)
Sample size	5998	5998	5998	5998	5998				
* 6=(2-1)/1; 7=(3-1)/1; 8=(4-1)/1; 9=(5-1)/1									
Note: Bold figures in parenthesis are ratios of percentage changes in Part B of the table to percentage changes in Part A of the table.									