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# Estimating the Short-Run Poverty Impacts of the 2010–11 Surge in Food Prices

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## Abstract

Global food prices have increased substantially since mid-2010, as have prices in many developing countries. In this study we assess the poverty impact of the price changes between June and December 2010 in twenty-eight low and middle income countries. This is done by gathering detailed information on individual households' food production and consumption levels for thirty-eight agricultural and food commodities to assess the impacts on household welfare. This study estimates that this sudden food price surge increased the number of poor people globally, but with considerably different impacts in different countries. The heterogeneity of these impacts is partly related to the wide variation in the transmission of global prices to local prices and partly to differences in households' patterns of production and consumption. On balance, the adverse welfare impact on net buyers outweighs the benefits to net sellers resulting in an increase in the number of poor and in the depth of poverty. We estimate that the average poverty change was 1.1 percentage points in low income countries and 0.7 percentage points in middle income countries with a net increase of 44 million people falling below the $1.25 per day extreme poverty line.

# Estimating the short-run poverty impacts of the 2010–11 surge in food prices

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World Bank

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Global food prices rose rapidly between June 2010 and early 2011, taking the World Bank Food Price Index above its peak of the 2008 "food price crisis" by early March. Like the 2008 price spike (Ivanic and Martin, 2008), this rise in food prices seems likely to have increased poverty substantially. There is clearly a need for timely-estimates of the severity of the impacts of such price surges on poverty as a guide for policy responses. A key purpose of this study is to explain the approach used to prepare the indicative estimate of 44 million additional people thrown into poverty first released in the World Bank's (2011) March issue of *Food Price Watch.*

A key difference from the 2008 food crisis is that the more recent price surge is much more broadly-based across food groups, which implies a different impact on poverty relative to the 2008 episode, since commodities such as rice have seen more moderate price increases while prices of items such as edible oils have increased considerably more than in 2008. Another potentially important difference between the two episodes is in the extent to which changes in world prices of key staples have been transmitted into domestic markets—an issue on which we have much better information than in 2008 (World Bank, 2011).

The poverty and nutritional implications of even short-lived price spikes can be serious as poor people spend very large fractions of their incomes on food, and hence are likely to experience large declines in their real income levels, and poor producers do not have time to increase their output in response to the price change. Even short run price spikes both reduce calorie intake and compromise dietary diversity (Skoufias, Tiwari and Zaman, 2011), and may have adverse long run consequences especially when infants are affected (Alderman, Hoogeveen and Rossi, 2006).

In 2010, a confluence of weather shocks in large producing countries, followed in some cases by export restrictions, curtailed supply and contributed to world wheat prices more than doubling between June 2010 and year end. Global maize prices rose about 73 percent in the six months after June 2010, driven by a range of factors including: a series of downward revisions of crop forecasts; the positive relationship between maize and wheat prices; and the use of maize for biofuels, which both increased demand this year and had contributed to lowering stock levels in previous years. Global rice prices have increased at a slower rate than other grains. The export price for Thai rice (5 percent broken grade) increased by 8 percent between October 2010 and

January 2011, and by 17 percent between June 2010 and December 2010. On this occasion, price rises have extended beyond staple grains. Sugar prices rose by 76 percent between June and December 2010 due to supply shortfalls from Brazil, the largest exporter, and weather shocks in Australia. Similarly, edible oil prices were up on account of a number of weather-related shocks. Prices of soybean oil and palm oil were up by 54 percent between June–December 2010.

The extent that these global food price increases affect poverty depends on a number of factors. These include the rate at which global prices are passed through to local prices, the distribution of net sellers and net buyers of food staples, the specific commodities for which prices increase, the ability of consumers to substitute into other less expensive food items; the coping strategies available to households, and policy responses by governments. The evidence from the 2008 food price spike suggests that in most countries poverty will increase when food prices rise substantially, even in rural areas, because both rural and urban poor are typically net consumers of food (Ivanic and Martin, 2008, Dessus, Herrera and de Hoyos, 2008, Wodon and Zaman, 2010). There are wide variations in the magnitudes of these impacts, which suggest that a careful analysis of the poverty impact of this more recent price spike is needed in order to inform policy responses.

Like Headey and Fan (2010) we are conscious that energy prices also rose sharply over this period, as in 2007–8, and that these price increases contributed to the changes in food prices both through supply-side and demand-side effects (e.g. the increased incentive to use food to produce biofuels). In this analysis we focus specifically on the impact of changes in food prices on poverty. This is partly because food prices are likely to have the largest direct impact on poverty given the large shares of food in the expenditures of the poor, and the importance of agricultural income for many poor households. It is also because food prices can be influenced by a range of factors, such as agricultural trade policies, stockholding policies and policies on research and extension that are quite separate from the factors affecting energy prices.

There are several reasons why global prices are only partially transmitted to domestic prices. One set of insulating factors arise from differences in remoteness, infrastructure quality and transportation costs that governments cannot readily change in the short term. Another source of differences in price transmission is trade policies, with many countries seeking to insulate themselves from increases in world prices by counteracting variations in trade measures.

To the extent that trade measures reduce the increases in domestic prices relative to world prices, they might be expected to reduce the poverty impacts of the price changes. However, this need not be the case when multiple countries use these measures. While insulation policies may appear to individual countries to be effective, they can fundamentally only redistribute price volatility, rather than reduce it.[1] This is most clear in the case where all countries attempt to insulate to the same degree. As Martin and Anderson (2011) point out, if all countries attempt to insulate through trade policies to the same degree, the policy of insulation is completely ineffective—domestic prices are exactly as volatile as they would have been in the absence of insulation. All that has been achieved is to destabilize international transfers of income by intensifying the volatility of world prices.

In reality, however, the degree of insulation differs between countries, with some countries achieving a substantial degree of stabilization and others—frequently countries either isolated from world markets or using quantitative restrictions—experience greater increases in domestic than in world prices. In this situation, the world price is increased to an extent that depends on a weighted average of protection rates, thus reducing the effectiveness of price insulation in all countries from its apparent level, and providing no insulation for countries using the weighted-average level of insulation. For the purposes of the current paper, where we observe a set of changes in world prices and a set of changes in domestic prices, the key thing for assessing the impact on poverty is to use the best available information on the changes in the domestic prices that most directly affect consumers and producers.

As Deaton and Laroque (1992) observed, prices of storable commodities are characterized by long periods in the doldrums, punctuated by intense but short-lived price spikes. These price spikes for food commodities are particularly important for poverty because the poorest people spend as much as three-quarters of their incomes on food; because even poor farmers in low-income countries are typically net buyers of food; and because the short-lived nature of the spikes provides little opportunity for households to soften the blow by increasing their output of food or augmenting their incomes. In this study, we focus on a particularly sharp increase in prices, taking into account the fact that households have only limited opportunities to adjust to such a rapid increase in prices.

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[1] This is in contrast with opening to trade, which has the potential to reduce volatility through diversification

In the next section of the paper we discuss the methodology used for the analysis. We then turn to the key features of the data used and a discussion of the results for our twenty-eight sample countries. Following this, we consider our estimates of the global poverty impacts. After this, we present robustness checks. Finally, we offer some conclusions.

**Methodology**

In this study, we assess the poverty impact of the food price increase between June and December 2010 in twenty-eight low and middle income countries. We do so by gathering detailed information on individual households' food production and consumption levels for thirty-eight agricultural and food commodities, and using a model which assesses the impacts of these commodity price changes on household welfare. The methodology is an extension of that used by Ivanic and Martin (2008) to assess the impact of the food price spike in 2008 on ten developing countries. Aside from the larger number of countries in this study, another key improvement over the earlier work is that for key consumption commodities in most countries we are able to use information on local price changes to assess the impact of higher prices. This provides a better approximation of the welfare impact as for these key items we do not have to use estimated pass-through rates between global and local prices, though we do use pass-through rates for the food items for which we do not have local price data.

To analyze the global short-run poverty impacts of changes in prices of key agricultural commodities, we use a set of observed and estimated changes in domestic agricultural and food prices in a sample of developing countries and calculate their implications for individual households' costs of living and agricultural incomes. Based on the simulated changes in individual households' welfare relative to the $1.25 extreme poverty line (Ravallion, Chen and Sangraula 2009), we determine the changes in the poverty headcount and poverty gap for each country in our sample. As the final step, we calculate population-weighted average poverty changes for the low- and middle-income countries included in our sample—which represent 40 percent of the low and middle income population—and extrapolate these to other countries in order to estimate the global poverty impact of the recent changes in food prices.

In our household welfare calculations, we closely follow the methodology described in Ivanic and Martin (2008) with two important modifications. Essentially, this methodology involves

estimating the impact of price changes on each household's real income by multiplying the price change experienced by the household by the quantity of the good produced and by the negative of the quantity consumed by that household (see Deaton, 1989 for a justification of this approach). The first modification involves allowing households to substitute away from commodities whose price rises. We do this by introducing a Constant Difference of Elasticities (CDE) demand system parameters (Hanoch, 1975), estimated for 112 countries and regions following the methodology of Liu, Surry, Dimaranan and Hertel (1997), to allow us to capture the second-order impacts of price changes on households' real incomes through changes in the volume of each good consumed. A second modification is to omit modeling the effects of commodity price changes on wage rates on the grounds that commodity price changes appear to take some time to affect wage rates in developing countries (Ravallion 1990). As in Ivanic and Martin (2008)—but with more justification given the speed of the 2010 price increase—we ignore the potential second-order effects of price changes on incomes through increases in output of products whose prices have risen.

Our measures of the poverty headcount and the poverty gap index follow the definition of Foster, Greer and Thorbecke (1984). Hence, our poverty headcount reflects the number of people whose daily expenditure is below the defined poverty-line income while the poverty gap measures the average expenditure shortfall of the poor as a share of the poverty-line income for the entire population.

**Data**

In this study, we use household survey information on household food production, sales and consumption of thirty-eight food and agricultural commodities for twenty-eight developing countries (Appendix table 1). This is an increase from twenty commodities and ten country-periods in the 2008 study. The agricultural commodities identified in the surveys include not only basic staples (e.g. wheat, maize and rice), but also various types of animal products (e.g. poultry, eggs, pork, beef) and a number of commodities that are important to the poor in a range of developing countries (e.g. sorghum, groundnuts, soybeans). The full list of agricultural commodities included is presented in Appendix table 2. The breadth of the product coverage is important given that the food price increases on this occasion included far more than the staple grains that were the main focus of the 2008 food price crisis.

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The countries in our sample are drawn from all World Bank regions. While the coverage reflects heavily the availability of surveys which include detailed information on the income sources—as well as the expenditure patterns—of the poor, we sought to improve the coverage of our country sample in the countries that contain the largest numbers of poor people: for example, in terms of population our sample represents 98 percent of the South Asia region, 32 percent of Sub-Saharan Africa, 41.8 percent of middle income countries and 34.5 percent of the population of low-income countries.

Where available, we used country-level data on actual changes in domestic food prices from *Food Price Watch* (World Bank, 2011) presented in Table 2. Comparison of Table 1 and Table 2 suggests that the transmission of global price increases to domestic prices has been high in many countries. For instance, between June 2010 and December 2010, the 68% increase in the international price of wheat was associated with large price increases in Kyrgyzstan (54%), Bangladesh (45%), Tajikistan (37%), Sri Lanka (31%), Azerbaijan (24%), and Pakistan (16%). The domestic price of rice rose broadly in line with the 21% increase in global prices in Indonesia (19%), Bangladesh (19%), and Pakistan (19%) during this six month period. Higher sugar prices have fed through to domestic prices quickly in many countries—for instance, sugar prices doubled in Cambodia between June and December 2010 and edible oil prices increased by 15% between September and December in Afghanistan. Several countries have intervened to temper this pass-through. In Algeria, taxes and import duties on sugar and edible oil were sharply reduced in January 2011 due to double-digit price rises. In Indonesia, the government reduced taxes on sugar and increased subsidies to local cooking oil producers.

In cases, where no domestic price data were available, we used import shares reported in version 7 of the GTAP database (Hertel 1997) to link global prices (Table 1) with domestic consumer prices. This approach is consistent with imported goods being imperfect substitutes for domestically-produced goods and the changes in domestic prices being a weighted average of the prices of imported and domestic goods.

**Results**

In Table 3, we first present the results on the poverty impact of the price changes experienced by households for the standard international extreme poverty headcount of people living below

$1.25 per day. The first column of the table shows the gross movement of people out of poverty in percentage points. The second column gives the gross movement into poverty, while the last shows the net change in the poverty rate. The results for the net change in the poverty headcount are also presented in rank order by country in Figure 1. To help interpret these measures, we present the estimated price changes by commodity and the contributions of each commodity to the overall change in poverty in Appendix table 3 through Appendix table 7.

As expected, there is enormous variation in the poverty impacts between countries. Part of this is driven by the differences in the initial poverty headcount and the distribution of incomes close to the poverty line. Another factor relates to the difference in the extent to which changes in international food prices are passed through into the country. A third difference arises from the structure of the economy. If, for instance, many poor people are net sellers of food, then an increase in food prices is likely to lower the poverty rate. If, on the other hand, more poor people are net buyers of food, then it is likely that higher food prices will increase the poverty headcount.

We find it useful to consider the countries in terms of the net impact of food prices on poverty, and hence follow the ordering in Figure 1. Higher food prices lead to increased poverty in all countries except Vietnam which is a striking exception, as it was in Ivanic and Martin (2008) and numerous earlier studies (Vu and Glewwe, 2009). The food price increases in this country translate into a reduction in poverty, despite substantial increase in poor consumers' costs of living, because many poor households are net sellers of commodities whose prices have risen most significantly. For the next nine countries in the graph (Côte d'Ivoire, Cambodia, Ecuador, Panama, Niger, Peru, Timor Leste, Nepal and Rwanda), the increases in the headcount poverty rate are very small—less than 0.20. In some cases, such as Côte d'Ivoire, the zero net change in poverty reflects significant churning around the poverty line, with 0.67 percent of net buyer households falling into poverty mainly because of higher rice prices and 0.67 percent of households escaping poverty, mainly due to the benefits of higher prices of cash crops such as cotton, coffee, tea and cocoa (table 4). A quite different dichotomy in poverty impacts is observed in Niger where the rising prices of sugar and wheat put some people in poverty, while the declining price of other grains raises a similar number of people out of poverty. Poverty in Cambodia, Peru, Timor Leste and Rwanda remain mainly unchanged because most of the price

changes were quite modest, with the exception of those commodities which are not major consumption or production items of the poor (wheat in Cambodia, Timor Leste and Rwanda, soybeans and cotton in Peru, and maize in Rwanda). In Ecuador, Panama and Nepal all agricultural commodity prices appear to be insulated from the global price changes, resulting in very small increases in poverty in these countries as well.

The next five countries in the graph—Zambia, Moldova, Indonesia, Albania and Nicaragua—have changes in the poverty headcount between 0.2 and 0.5 percentage points. In Zambia the relatively small change in domestic price of maize, which is an important consumption item, and in Moldova a large increase in the price of sugar, which is a relatively important consumption commodity too, both result in small increases in poverty. By contrast, in Indonesia local prices of key items such as rice rose by around 20 percent between June and December 2010, and the overall impact of only 0.33 percentage points is the result of a gross movement into poverty of 0.5 percentage points offset by movement of 0.27 percent of the population out of poverty.

We estimate that another set of countries—Armenia, India, Mongolia, Nigeria and Yemen had increases in headcount poverty of between 0.5 and 1.0 percentage points. In Armenia, the 0.67 percentage points among net food buyers had very little offsetting poverty reduction amongst net sellers since most of the poverty impacts come from the significantly higher prices of potatoes, sugar and oils and fats, little of which are produced and sold by the poor. There is a similar pattern in Yemen where the increase in prices was driven by higher sugar, rice and wheat prices. By contrast, in India, Mongolia and Nigeria, there were sizeable flows in each direction. For instance the 0.68 percentage point net increase in Mongolia reflects 1.37 percent of the population entering poverty mainly due to the higher prices of wheat and sugar, while 0.69 percent leave poverty as a result of lower price of meat. By contrast, in Malawi, domestic food prices—particularly of fruits, rice and cassava—fell, however most of the poverty impacts were felt through higher prices of wheat, sugar and oils and fats.

Seven countries in our sample are estimated to experience poverty headcount increases of above one percentage point due to the surge in food prices since June 2010. In Belize, the negative impact of higher wheat prices is a major factor behind the 1.15 percent increase in poverty. In Uganda, the price of vegetables rose by 38.1 percent which, along with the higher prices of sugar and oils and fats, have contributed to driving almost two percent of the population into poverty

through adverse impacts on net buyers, while nearly 0.8 percent of the population is raised out of poverty through benefits to net sellers of maize. In Sri Lanka, the rise in poverty amongst net buyers is 1.49 percent, due to the rising prices of rice, sugar and wheat, and only a minuscule 0.05 percent of the population is raised out of poverty by higher prices for products that they sell.

In Bangladesh, rice and wheat prices rose by 19 and 45 percent respectively between June and December 2010. While benefits to net sellers of higher prices reduced poverty by almost 0.5 percent, two percent of the population was thrown into poverty by the adverse impacts on net rice buyers. Similarly, in Pakistan, poverty is estimated to have been increased by almost two percentage points largely due to double digit increases in wheat prices, and partly rice and fats and oils prices. Tajikistan was the country with the largest estimated overall increase in poverty in our sample of 28 countries. The price of wheat, which constitutes 54% of calorie consumption (World Bank, 2011) rose by 37 percent. We estimate that this, along with price changes of sugar and oils and fats, led to a net increase in poverty of 3.6 percent

The increase in the number of poor, discussed above, is only one measure of the impact of higher food prices on poverty. Earlier work (Dessus, Herrera and de Hoyos, 2008) has shown that the existing poor are likely to be made worse off during such crises--a fact better measured by the impact of higher food prices on the poverty gap or severity measures. In most cases, the change in the poverty gap (given in Table 4) is smaller than the change in the poverty headcount. However, there are several cases in which changes in the headcount and the poverty gap measures give quite different interpretations. The most striking such case is Niger, where a very small increase (0.09 percentage points) in the headcount is associated with an increase of 1.16 percentage points in the poverty gap and of 13.5 percentage points in the poverty gap squared. In Rwanda, the poverty gap increases more than the headcount, but by a much smaller multiplier.

**Global poverty estimates**

We take advantage of the size of our country sample which represents about forty percent of the developing countries by population and use it to extrapolate the changes observed in the sample to all developing countries. To account for possible differences between low- and middle-income countries, we calculate population-weighted poverty headcount changes separately for the two groups of countries included in our sample and apply them to their full populations. The results

of this global extrapolation are shown in Table 5. They indicate that the average poverty change among low-income countries is 1.1 percentage points and 0.7 percentage points among middle income countries. Applying the average changes to the total populations of the groups, we estimate that the recent increase in food prices raised poverty by 9.5 million people among low-income countries and 34.1 million among middle-income countries, for a total poverty increase of 43.7 million.

In addition to showing the net changes in poverty, Table 5 decomposes them further into those people who escape poverty as a result of the food price changes and those who are made poor as a result. These numbers are very illuminating because they suggest that most of the observed difference between the poverty impacts of low- and middle-income countries lies in the greater significance of net-food consumers near the poverty line in low-income countries, which results into a significantly greater number of people in this group who are pushed into poverty as a result of higher food prices. On the other hand, the role of net-sellers of food is largely similar in both groups. Extrapolating these sample averages, we estimate that 67.7 million of people became poor as a result of the recent changes in food prices while 24.0 million people were removed from poverty as a result of the same price changes.

**Robustness checks**

Our set of robustness checks aims to assess the responsiveness of our results to changes in the underlying data and our assumptions. As the first robustness check, we replicate our analysis with each country removed from the sample at a time in order to evaluate the responsiveness of our conclusions to any single country's results. Our second check involves the omission of country-level domestic price information in order to assess the role of the assumed pass-through parameters in our results. Finally, we verify the poverty impacts for a wider range of poverty lines in order to see whether the conclusions of our study are sensitive to differing definitions of poverty.

To analyze the sensitivity of our results to individual countries' results, we repeat our analysis twenty-eight times, each time omitting one country from our sample. Our plot of the distribution of the obtained global poverty changes (Figure 2) shows that our result of an increase of 43.7 million people is largely insensitive to the omission of any single country included in our sample.

The two countries that are found to impact our results most are Vietnam, whose omission from the sample would raise the estimate to 47.9 million people, and Pakistan, whose exclusion would lower the final count to 38.2 million people.

As a second robustness check, we calculate global poverty implications of higher food prices without using country-specific information on domestic price changes for selected commodities. Redoing our calculations using only the global price changes scaled by the domestic import shares, we arrive at a significantly lower estimate of poverty change of 30.9 million people, which suggests that our assumption for pass-through parameters may be conservative, and that domestic food price changes in developing countries may, in fact, be more responsive to global price changes than assumed.

As an additional check on our results, we calculate their responsiveness of our estimates to poverty lines higher or lower than the internationally standard $1.25 per day measure for extreme poverty. We repeat our calculations for four additional poverty lines in the range of the standard definition of extreme poverty. Our results (Table 6) show that while the estimates of global poverty vary depending on the poverty line chosen—the poverty estimates decline as the poverty line rises—the results are not vastly different within the range from $1 to 2 that we consider.

The observed negative relationship between the poverty impacts and the poverty line appears to arise primarily from the declining share of expenditure on food as incomes rise. While the shares of net food sales rises with income, this appears to be a less important determinant of the overall resul than the decline in the share of food in total consumption. These findings are reflected in the last two columns of Table 6 which show little relationship between gross reductions in poverty and poverty line, and a much stronger negative relationship between the poverty line and gross increases in poverty.

**Comparison with the impacts of the 2008 food price crisis**

The recent surge in food prices, which has raised the World Bank food price index above its 2008 peak, raises an important question of how the poverty impacts of this surge might relate to those of the earlier food crisis in 2008. The poverty impacts of the 2008 food crisis were extensively analyzed by Ivanic and Martin (2008), who using the price change from 2005–08 found its average impact to be an increase in extreme poverty of about 105 million additional

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people living in extreme poverty. Because this estimate is much greater than the estimate of this study which predicts an increase of extreme poverty by 44 million people as a result of the June–December 2010 food price crisis, in this section we explain the differences between these two estimates by analyzing the differences in magnitudes of the price changes as well as their composition.

Global food prices reached very similar historical highs during the period of January 2005–March 2008 considered in Ivanic and Martin (2008), and the more recent period of June 2010–December 2010 analyzed here, but the relative changes during these periods were quite different: the increase in food prices over the three years leading up 2008 represented a considerably greater relative price change from the historically low food prices observed prior to 2005 while the food price increase in 2010 occurred when the overall food prices were already at double their historical levels (Figure 3). Using the available values of the World Bank's Food Price Index during these periods, we estimate that the 2008 food price increase raised average global food prices by 118 percent, while the food price increase of 2010 raised food prices by 37 percent.

Most of the difference between the poverty changes reported in Ivanic and Martin (2008) and in this study appear to be due largely to the differing scale of the global price shocks over these two time spans. However, the poverty change of 44 million for 2008 is somewhat higher than would have predicted by applying the 2008 elasticity of the percentage increase in poverty from a change in food prices. In order to examine the possible positive or negative poverty bias of the more recent food price increase relative to the price shock observed in 2008, in Figure 3 we calculate an alternative food price index weighted by individual commodities' marginal impacts on global poverty. Using the values of this index, we find that the change in the poverty-weighted food price increase was 46 percent in the period June–December 2010 as compared with 103 percent in the period January 2005–March 2008. These values are very close to the poverty changes reported by Ivanic and Martin (2008) for the food price crisis of 2006–8 and the poverty changes calculated in this study.

**Concluding remarks**

This study concludes that the sudden food price surge in the second half of 2010 is likely to have led to an increase in the number of poor globally though with significant differences across countries. These differences are partly related to the wide variation in the extent of transmission of global prices to local prices. We show that in countries where these sharp price increases were matched by commensurate increases in local prices (e.g. Tajikistan and Pakistan) there were significant increases in poverty. Net sellers of food benefit from these higher prices but they are typically medium and large farmers, except in Vietnam where a significant share of the rural poor are net producers of rice. On balance the adverse welfare impact of the net consumers outweighs the benefits to net producers resulting in an increase in the number of poor and in the depth of poverty. A second factor behind these variations is that the prices of some cash crops have increased, thereby moving some poor farmers out of poverty e.g. cotton producers in Côte D'Ivoire. Moreover the results show that those who are already poor were disproportionately affected by the increase in prices as the share of food in their consumption basket is higher than the non-poor.

These results do not take into account supply response by producers or impacts of commodity prices on wage rates. Earlier studies which have taken these into account suggest that these effects only partially compensate for the adverse welfare impact described in this paper. Over the longer term wages and incomes will adjust but it is the impact of sudden spikes which can have serious long term consequences especially for infants and pregnant women.

The policy implications relate to the importance of cushioning poor households from sharp food price spikes. There are various aspects to this. First countries can limit their exposure to global commodity price fluctuations by entering into forward contracts and other market-based hedging mechanisms. Second, the impact of local price volatility can be mitigated if households have access to safety net programs. Third investments in domestic agricultural productivity, where it makes environmental sense, can increase domestic food supply. Fourth strengthening the management of food stocks can help smooth domestic price volatility. Fifth nutritional interventions targeting infants and pregnant mothers and the fortification of food grains can contribute to strengthening nutritional outcomes. Finally, these shocks underscore the importance

of broad-based economic growth that raises incomes, thereby reducing the vulnerability of households to sudden changes in food prices.

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**Table 1: Changes in global prices of key agricultural commodities: June–December 2010**

|  | Change in price, % |
|---|---|
| Tobacco | 89 |
| Sugar | 76 |
| Sorghum | 69 |
| Wheat | 68 |
| Maize | 64 |
| Palm and soybean oil (proxy for oilseeds) | 64 |
| Cotton | 55 |
| Soybeans | 34 |
| Groundnut oil (proxy for groundnuts and oils) | 31 |
| Barley | 30 |
| Rice | 21 |
| Beef | 17 |
| Coffee, Tea, Cocoa | 13 |
| Bananas | 6 |
| Poultry | -2 |
| Fish | -13 |
| Oranges (proxy for fruits) | -40 |

Source: World Bank Development Prospects Group

**Table 2: Changes in domestic prices of key staple food commodities: June–December 2010**

| Country | Commodity | Change in price, % | Country | Commodity | Change in price, % |
|---|---|---|---|---|---|
| Armenia | Wheat | 11 | Nicaragua | Maize | 0 |
| | Potatoes | 82 | | Rice | -1 |
| Bangladesh | Rice | 19 | | Vegetables | 90 |
| | Wheat | 45 | Niger | Millet | -27 |
| Cambodia | Rice | 0 | Nigeria | Sorghum | -13 |
| Ecuador | Rice | 0 | | Millet | 2 |
| | Wheat | 0 | Pakistan | Rice | 19 |
| | Vegetables | 0 | | Wheat | 16 |
| | Maize | -2 | Panama | Rice | 0 |
| Guatemala | Maize | -1 | | Wheat | 11 |
| | Rice | 0 | Peru | Rice | 6 |
| | Vegetables | 2 | | Wheat | -1 |
| India | Rice | 5 | | Maize | -3 |
| | Wheat | 4 | Rwanda | Vegetables | 7 |
| | Sugar | 8 | | Maize | 19 |
| Indonesia | Rice | 20 | Sri Lanka | Rice | 12 |
| | Wheat | 1 | | Wheat | 31 |
| Malawi | Maize | 2 | Tajikistan | Wheat | 37 |
| | Rice | -16 | | Potatoes | -20 |
| | Cassava | -16 | Uganda | Maize | 67 |
| Moldova | Maize | -2 | | Vegetables | 38 |
| | Wheat | 5 | Vietnam | Rice | 46 |
| Mongolia | Wheat | 34 | Zambia | Maize | -4 |
| | Rice | 11 | | | |
| | Mutton | -38 | | | |

**Table 3: Poverty headcount changes, in percentage points measured at poverty line of $1.25 per day**

|  | Out of poverty | Into poverty | Net change |
|---|---|---|---|
| Albania | 0.00 | 0.50 | 0.50 |
| Armenia | -0.04 | 0.67 | 0.63 |
| Bangladesh | -0.49 | 2.08 | 1.59 |
| Belize | 0.00 | 1.15 | 1.15 |
| Cambodia | -0.01 | 0.05 | 0.03 |
| Côte d'Ivoire | -0.67 | 0.67 | 0.00 |
| Ecuador | -0.01 | 0.05 | 0.04 |
| Guatemala | 0.00 | 1.50 | 1.50 |
| India | -0.41 | 1.19 | 0.77 |
| Indonesia | -0.24 | 0.57 | 0.33 |
| Moldova | 0.00 | 0.32 | 0.32 |
| Mongolia | -0.69 | 1.37 | 0.68 |
| Malawi | 0.00 | 1.03 | 1.03 |
| Niger | -0.31 | 0.40 | 0.09 |
| Nigeria | -0.29 | 1.06 | 0.76 |
| Nicaragua | -1.59 | 2.09 | 0.50 |
| Nepal | -0.06 | 0.21 | 0.15 |
| Pakistan | 0.00 | 1.92 | 1.92 |
| Panama | -0.07 | 0.11 | 0.05 |
| Peru | 0.00 | 0.12 | 0.12 |
| Rwanda | -0.03 | 0.22 | 0.18 |
| Sri Lanka | -0.05 | 1.49 | 1.44 |
| Tajikistan | -0.05 | 3.68 | 3.62 |
| Timor-Leste | 0.00 | 0.12 | 0.12 |
| Uganda | -0.77 | 1.92 | 1.15 |
| Vietnam | -2.92 | 1.68 | -1.24 |
| Yemen | -0.01 | 0.81 | 0.79 |
| Zambia | 0.00 | 0.27 | 0.27 |

**Table 4: Poverty gap and squared poverty gap changes, in percentage points measured at a poverty line of $1.25 per day**

| | Change in poverty gap, % | Change in squared poverty gap, % |
|---|---|---|
| Albania | 0.08 | 0.02 |
| Armenia | 0.25 | 0.14 |
| Bangladesh | 1.28 | 0.82 |
| Belize | 0.47 | 0.32 |
| Cambodia | 0.01 | 0.00 |
| Côte d'Ivoire | 0.06 | 0.03 |
| Ecuador | 0.04 | 0.02 |
| Guatemala | 0.33 | 0.11 |
| India | 0.53 | 0.25 |
| Indonesia | 0.10 | 0.04 |
| Moldova | 0.10 | 0.04 |
| Mongolia | 0.38 | 0.25 |
| Malawi | 0.74 | 0.49 |
| Niger | 1.16 | 13.50 |
| Nigeria | 0.63 | 0.46 |
| Nicaragua | 0.24 | 0.16 |
| Nepal | 0.15 | 0.11 |
| Pakistan | 0.50 | 0.18 |
| Panama | 0.01 | 0.00 |
| Peru | 0.04 | 0.02 |
| Rwanda | 0.36 | 0.38 |
| Sri Lanka | 0.46 | 0.17 |
| Tajikistan | 0.98 | 0.41 |
| Timor-Leste | 0.05 | 0.03 |
| Uganda | 0.99 | 0.74 |
| Vietnam | -0.19 | -0.02 |
| Yemen | 0.21 | 0.09 |
| Zambia | 0.20 | 0.14 |

**Table 5: Global extrapolation of changes in poverty headcount,**

| | Population-wtd poverty change, share of population in percentage points | | | Population, in millions | Global extrapolation, in millions | | |
|---|---|---|---|---|---|---|---|
| | Escaping poverty | Entering poverty | Total change | | People escaping poverty | People entering poverty | Combined impact |
| Low income countries | -0.4 | 1.5 | 1.1 | 828 | -3.1 | 12.6 | 9.5 |
| Middle income countries | -0.4 | 1.2 | 0.7 | 4,758 | -21.0 | 55.1 | 34.1 |
| All developing countries | -0.4[*] | 1.2[*] | 0.8[*] | 5,586 | -24.0 | 67.7 | 43.7 |

[*]**These average values are not used in the calculations of the poverty headcount changes**

**Table 6: Global poverty estimates for different poverty lines**

| Poverty line, PPP USD/person/day | Net change in global poverty, millions of people | Gross reductions in poverty, millions of people | Gross increases in poverty, millions of people |
|---|---|---|---|
| 1.00 | 46.5 | -19.2 | 65.7 |
| 1.13 | 47.0 | -20.9 | 67.9 |
| 1.19 | 44.4 | -23.4 | 67.8 |
| 1.25 | 43.7 | -24.0 | 67.7 |
| 1.31 | 42.1 | -25.2 | 67.3 |
| 1.38 | 41.5 | -20.9 | 67.9 |
| 2.00 | 26.9 | -23.1 | 50.0 |

**Figure 1: Changes in the poverty headcount at $1.25 per day, percentage points**
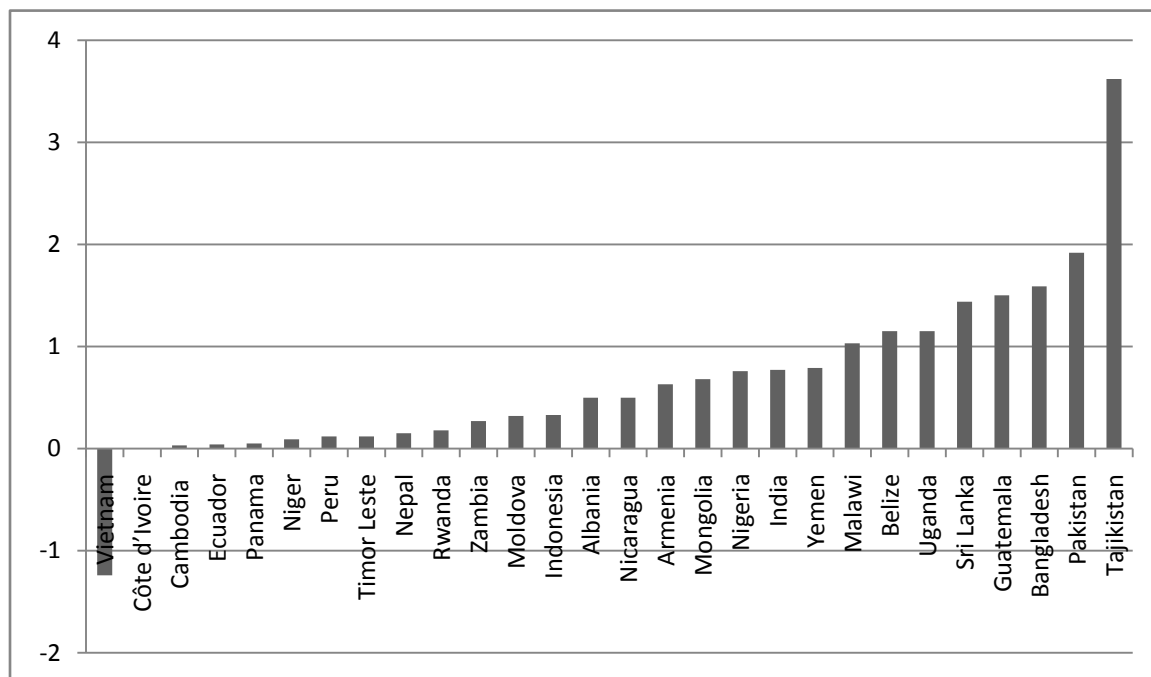
**Figure 2: Kernel-smoothed distribution of poverty impacts with individual countries removed**
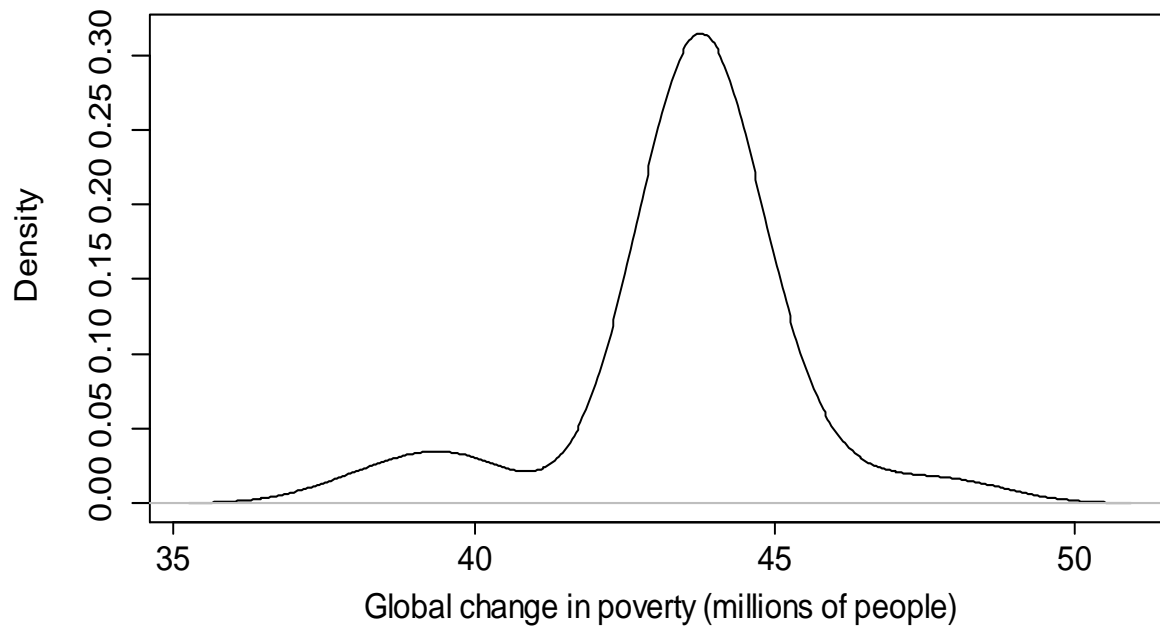
**Figure 3: World Bank Food Price Index and price index weighted by poverty impacts**
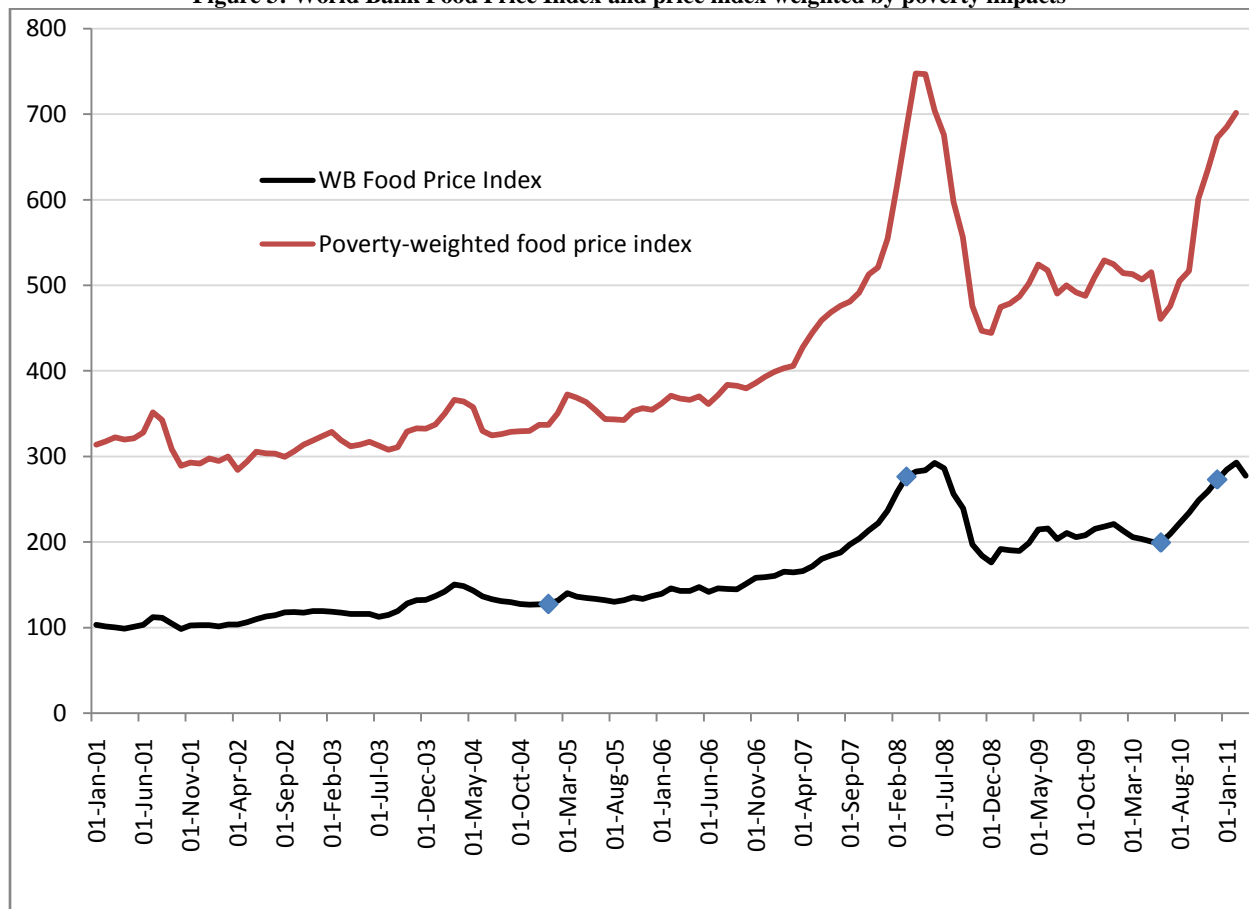
**Appendix table 1: Surveys used in the study**

| Country | Survey name | Year | Population, millions | Number of households | Number of people | Poverty rate, % |
|---|---|---|---|---|---|---|
| Albania | Living Standards Measurement Survey | 2005 | 3.2 | 1,671 | 4,814 | 0.8 |
| Armenia | Integrated Survey of Living Standards | 2005 | 3.3 | 6,815 | 28,502 | 10.6 |
| Bangladesh | Household Income-Expenditure Survey | 2000 | 150 | 7,440 | 38,518 | 40.2 |
| Belize | Household Income and Expenditure Survey | 2009 | 0.3 | 1,546 | 6,794 | 33.5 |
| Cambodia | Household Socio-economic Survey | 2003 | 13.4 | 14,984 | 74,719 | 50.5 |
| Côte d'Ivoire | Enquete Niveau de Vie des Menages | 2002 | 21.6 | 10,798 | 57,906 | 23.3 |
| Ecuador | Encuesta Condiciones de vida – Quinta Ronda | 2006 | 14.3 | 13,581 | 55,666 | 15.8 |
| Guatemala | Encuesta Nacional de Condiciones de Vida | 2006 | 14.4 | 13,686 | 68,739 | 12.6 |
| India | Socio-economic survey (schedules 33/59, 1/61 and 10/61) | 2002–4 | 1193.6 | 301,085 | 1,499,010 | 43.8 |
| Indonesia | Indonesia Family Life Survey | 2007 | 230.0 | 12,999 | 69,624 | 7.5 |
| Malawi | Second Integrated Household Survey | 2004 | 15.7 | 11,280 | 52,707 | 73.9 |
| Moldova | Cercetarea Bugetelor de Familie | 2009 | 3.6 | 5,532 | 15,066 | 8.1 |
| Mongolia | Household Income and Expenditure Survey | 2002 | 2.8 | 3308 | 14789 | 22.4 |
| Nepal | Nepal Living Standards Survey II | 2002 | 28.6 | 5,071 | 28,099 | 55.1 |
| Nicaragua | Encuesta Nacional de Hogares sore Medicion de Nivel de Vida | 2005 | 5.8 | 6,619 | 36,642 | 45.1 |
| Niger | Enquete National sur Le Budget et la Consommation des Menages | 2007 | 15.2 | 4,000 | 28,683 | 65.9 |
| Nigeria | Nigeria Living Standards Survey | 2003 | 158.3 | 19,121 | 92,501 | 64.4 |
| Pakistan | Pakistan Social and Living Standards Measurement Survey | 2005 | 171.7 | 15,453 | 79,354 | 22.6 |
| Panama | Encuesta de Niveles de Vida | 2003 | 3.4 | 6362 | 26,434 | 9.4 |
| Peru | Encuesta Nacional de Hogares | 2007 | 29.5 | 22,201 | 95,466 | 7.9 |
| Rwanda | Integrated Household Living Conditions Survey | 2005 | 10.4 | 6,900 | 34,785 | 76.6 |
| Sri Lanka | Household Income and Expenditure Survey | 2007 | 20.4 | 4,633 | 20,290 | 14.0 |
| Tajikistan | Living Standards Measurement Survey | 2007 | 7.1 | 4,644 | 29,412 | 21.5 |
| Timor-Leste | Poverty Assessment Project | 2000 | 1.2 | 1,800 | 9,113 | 52.9 |
| Uganda | Socio-Economic Survey | 2005 | 31.8 | 7,425 | 42,220 | 51.5 |
| Vietnam | Household Living Standard Survey | 2004 | 86.9 | 9,188 | 40,438 | 21.4 |
| Yemen | Household Budget Survey | 2006 | 22.5 | 13,136 | 98,941 | 17.5 |
| Zambia | Living Conditions Monitoring Survey | 2002 | 13.3 | 4,166 | 23,074 | 61.9 |
| Total | — | — | 2,272.3 | 535,444 | 2,672,306 | 38.8 |

| | |
|---|---|
| Rice | Cattle |
| Wheat | Other animal products |
| Other grains | Eggs |
| Maize | Fowl |
| Sorghum | Swine |
| Cassava | Raw milk |
| Plantains and bananas | Wool |
| Potatoes | Forestry |
| Other vegetables | Fish |
| Other fruits | Other cattle meat |
| Other oil seeds | Beef |
| Peanuts | Other meat |
| Soybeans | Poultry |
| Sugar cane/beets | Pork |
| Plant based fibers | Oils and fats |
| Other crops | Dairy |
| Coffee, tea, cocoa | Sugar |
| Tobacco | Other food |
| Other bovine animals | Tobacco and beverages (consumers) |

**Appendix table 3: Estimated and observed domestic price changes for key agricultural commodities, percent**

| | Sugar cane, beets | Beef | Other bovine meat | Cattle | Fish | Maize | Other grains | Coffee, tea, cocoa | Cotton | Rice | Sugar | Fruits | Pota-toes | Vege-tables | Oils and fats | Wheat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 1.5 | 1.3 | 0 | 0.5 | -5.3 | 29.9 | 6.3 | 0.4 | 54.8 | 17.0 | 75.8 | -7.0 | 0 | 0 | 26.0 | 33.3 |
| Armenia | 0.2 | 2.2 | 0 | 0 | 0 | 7.0 | 0.3 | 2.5 | 2.5 | 14.2 | 19.8 | -3.7 | 82.3 | 0 | 23.3 | 11.1 |
| Bangladesh | 0 | 16.1 | 0 | 0 | 0 | 46.8 | 14.6 | 0.4 | 19.7 | 18.9 | 17.0 | -7.3 | 0 | 0 | 16.8 | 45.0 |
| Belize | 0 | 0.1 | 0 | 0 | 0 | 4.4 | 0.3 | 0.1 | 3.6 | 0 | 0 | -0.4 | 0 | 0 | 1.5 | 64.2 |
| Cambodia | 0.1 | 0.4 | 0 | 0.1 | -0.2 | 4.6 | 0.2 | 0.2 | 10.7 | 0 | 5.6 | -5.1 | 0 | 0 | 13.8 | 67.2 |
| Cote D'Ivoire | 0 | 1.1 | 0 | 0.1 | -0.1 | 0.4 | 0.2 | 8.3 | 46.3 | 7.5 | 75.0 | -0.7 | 0 | 0 | 15.7 | 66.9 |
| Ecuador | 0 | 0.1 | 0 | 0 | -0.2 | -2.2 | 2.6 | 0.7 | 17.2 | 0 | 2.0 | -5.1 | 0 | 0 | 8.6 | 0 |
| Guatemala | 0 | 0.9 | 0 | 0.2 | -0.3 | -0.9 | 1.0 | 1.1 | 49.7 | -0.1 | 0.8 | -2.4 | 0 | 1.7 | 11.2 | 65.5 |
| India | 0 | 0.1 | 0 | 7.5 | -0.1 | 0 | 0 | 0.3 | 4.5 | 4.5 | 7.7 | -3.7 | 0 | 0 | 13.3 | 3.7 |
| Indonesia | 0 | 3.9 | 0 | 2.0 | -0.1 | 11.5 | 2.6 | 0.4 | 5.6 | 19.5 | 18.9 | -2.7 | 0 | 0 | 1.8 | 0.6 |
| Malawi | 50.6 | 0.5 | 0 | 9.6 | 0 | 2.1 | 0.5 | 1.6 | 5.7 | -15.8 | 37.3 | -17.8 | 0 | 0 | 25.2 | 67.9 |
| Moldova | 0 | 2.6 | 0 | 0 | -1.2 | -2.0 | 7.6 | 13.0 | 46.1 | 1.5 | 37.6 | -0.1 | 0 | 0 | 7.9 | 5.3 |
| Mongolia | 0.1 | 4.1 | -37.5 | 6.8 | -0.6 | 56.0 | 26.3 | 12.5 | 54.5 | 11.3 | 28.9 | -3.5 | 0 | 0 | 7.4 | 34.4 |
| Nepal | 0 | 3.7 | 0 | 0.8 | 0 | 2.5 | 2.5 | 0.9 | 0.1 | 0.4 | 8.7 | -7.1 | 0 | 0 | 10.9 | 9.4 |
| Nicaragua | 18.7 | 1.9 | 0 | 0 | -0.4 | 0.2 | 0.5 | 5.2 | 0.3 | -1.2 | 0.3 | -5.2 | 0 | 89.6 | 27.1 | 68.0 |
| Niger | 0 | 0.1 | 0 | 0 | 0 | 0.1 | -27.3 | 6.8 | 20.6 | 1.2 | 68.1 | -0.1 | 0 | 0 | 3.2 | 59.3 |
| Nigeria | 0.2 | 2.1 | 0 | 0 | 0 | 0 | 2.0 | 12.1 | 41.0 | 14.7 | 76.0 | 0 | 0 | 0 | 15.6 | 67.8 |
| Pakistan | 12.5 | 1.3 | 0 | 0 | 0 | 60.4 | 27.5 | 2.3 | 54.5 | 18.5 | 0.5 | -1.2 | 0 | 0 | 10.1 | 16.2 |
| Panama | 0 | 0 | 0 | 3.7 | 0 | 0.1 | 0 | 0.3 | 7.1 | 0 | 0.6 | -15.3 | 0 | 0 | 0.3 | 10.8 |
| Peru | 0 | 0.4 | 0 | 0.2 | -0.1 | -2.9 | 1.9 | 0.2 | 34.4 | 5.9 | 5.1 | -2.0 | 0 | 0 | 9.8 | -0.8 |
| Rwanda | 0 | 0 | 0 | 0 | 0 | 19.0 | 0 | 0 | 0.1 | 0.5 | 3.7 | -0.1 | 0 | 6.8 | 0.7 | 25.5 |
| Sri Lanka | 0 | 0.2 | 0 | 0.1 | -0.3 | 48.3 | 14.7 | 0 | 50.4 | 11.8 | 68.6 | -2.3 | 0 | 0 | 23.2 | 31.4 |
| Tajikistan | 1.4 | 0.3 | 0 | 0 | -0.7 | 0.8 | 0.3 | 11.7 | 0.1 | 6.5 | 75.8 | -0.2 | -20.2 | 0 | 25.6 | 37.1 |
| Timor Leste | 0 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 2.7 | 0 | 0.3 | -0.3 | 0 | 0 | 4.8 | 67.7 |
| Uganda | 15.7 | 0 | 0 | 0 | 0 | 66.7 | 0.1 | 12.5 | 38.6 | 6.2 | 16.9 | -0.5 | 0 | 38.1 | 30.8 | 67.8 |
| Vietnam | 0 | 0 | 0 | 0.1 | 0 | 45.0 | 7.9 | 0.4 | 55.0 | 45.9 | 3.4 | -3.3 | 0 | 0 | 24.4 | 67.9 |
| Yemen | 0 | 0.3 | 0 | 0 | -0.1 | 2.1 | 0.1 | 0.2 | 0.1 | 15.2 | 10.8 | -0.4 | 0 | 0 | 4.6 | 3.0 |
| Zambia | 0 | 0.1 | 0 | 0.1 | 0 | -3.5 | 1.3 | 0.3 | 0.9 | 5.2 | 1.8 | -17.6 | 0 | 0 | 11.4 | 7.0 |

**Appendix table 4: Poverty impacts of 10 percent changes in prices for key commodities, percentage points**

| | Sugar cane, beets | Other bovine meat | Cattle | Maize | Other grains | Sor-ghum | Coffee, tea, cocoa | Other oil seeds | Soy-beans | Cotton | Rice | Sugar | Fruits | Pota-toes | Vege-tables | Oils, fats | Wheat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 0 | 0 | -0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.10 | 0 | -0.02 | 0.08 | 0 |
| Armenia | 0 | 0 | -0.02 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0.03 | 0.03 | -0.04 | 0.03 | 0.04 | 0.05 | 0.08 |
| Bangladesh | -0.03 | 0.01 | -0.01 | 0 | 0 | 0 | 0.05 | 0 | 0 | -0.01 | 0.67 | 0.05 | 0.07 | 0 | 0.25 | 0.14 | 0 |
| Belize | 0 | 0 | -0.25 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0 | 0.24 | 0 | 0 | 0.18 | 0.29 | 0.03 | 0.29 |
| Cambodia | -0.01 | 0 | -0.18 | -0.04 | 0 | 0 | -0.14 | -0.05 | -0.05 | 0 | -1.37 | 0 | -0.08 | 0 | -0.12 | 0 | 0 |
| Côte D'Ivoire | 0 | 0 | 0 | 0.08 | 0 | 0 | -0.37 | 0 | 0 | -0.18 | 0.42 | 0.02 | -0.06 | 0.03 | 0.17 | 0.02 | 0.03 |
| Ecuador | 0 | 0 | -0.02 | -0.11 | 0 | 0 | -0.06 | 0 | 0 | 0 | 0.11 | 0.04 | -0.01 | 0.03 | 0.09 | 0.06 | 0.01 |
| Guatemala | 0 | 0 | -0.01 | 0.07 | 0.07 | 0 | 0.02 | 0 | 0 | 0 | 0.03 | 0.19 | 0 | 0.03 | 0.16 | 0.05 | 0.26 |
| India | -0.06 | 0.06 | 0 | -0.02 | 0.01 | 0 | 0.14 | -0.06 | -0.02 | -0.05 | 0.45 | 0.16 | 0.02 | 0.05 | 0.49 | 0.33 | 0.10 |
| Indonesia | 0 | 0 | -0.01 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0.04 | 0.07 | 0.04 | 0 | 0.08 | 0.07 | 0 |
| Malawi | 0 | 0.01 | -0.01 | 0.16 | 0 | 0 | 0.01 | 0 | 0 | -0.01 | 0.02 | 0.12 | 0 | 0 | 0.16 | 0.09 | 0.07 |
| Moldova | 0 | 0 | 0 | 0 | 0.01 | 0 | 0.02 | 0 | 0 | 0 | 0.07 | 0.09 | 0.05 | 0.10 | 0.14 | 0.15 | 0.18 |
| Mongolia | 0 | 0.57 | -0.14 | 0 | 0.05 | 0 | 0.10 | 0 | 0 | 0 | 0.16 | 0.16 | 0.05 | 0.09 | 0.03 | 0 | 0.43 |
| Nepal | -0.05 | 0.11 | -0.11 | 0.02 | 0 | 0 | 0.02 | -0.05 | 0.04 | 0 | 0.16 | 0.08 | 0.01 | 0 | 0.04 | 0.10 | -0.03 |
| Nicaragua | 0 | 0.02 | 0 | -0.14 | 0 | 0 | -0.10 | 0 | 0 | 0 | 0.09 | 0.03 | 0 | 0.01 | -0.08 | 0.04 | 0 |
| Niger | -0.01 | 0.02 | -0.05 | 0.06 | 0.02 | 0 | 0.05 | 0 | 0 | 0 | 0.22 | 0.04 | -0.02 | 0.01 | 0 | 0.09 | 0 |
| Nigeria | -0.02 | 0.01 | -0.04 | -0.01 | -0.07 | 0 | -0.03 | 0.01 | 0 | -0.05 | 0.17 | 0 | 0.13 | 0 | 0.04 | 0.16 | 0.08 |
| Pakistan | 0 | 0.02 | -0.03 | 0 | 0.01 | 0 | 0.10 | 0 | 0 | 0 | 0.17 | 0.33 | 0.06 | 0.11 | 0.37 | 0.30 | 0.71 |
| Panama | 0 | 0 | 0.03 | -0.02 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0.20 | 0.13 | 0 | 0 | 0.06 | 0.09 | 0.06 |
| Peru | 0 | 0.01 | -0.05 | -0.03 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0.07 | 0.03 | -0.03 | -0.01 | 0 | 0.04 | 0.10 |
| Rwanda | 0 | 0 | -0.05 | 0.03 | 0 | -0.02 | -0.02 | 0 | 0 | 0 | 0.01 | 0.03 | 0.01 | 0.06 | 0.11 | 0.04 | 0.02 |
| Sri Lanka | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.13 | 0 | 0 | 0.40 | 0.20 | 0.27 | 0.11 | 0.26 | 0.11 | 0.12 |
| Tajikistan | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.03 | 0 | 0 | -0.02 | 0.11 | 0.14 | 0.18 | 0.10 | 0.21 | 0.37 | 0.21 |
| Timor Leste | 0 | 0 | -0.26 | 0.24 | 0 | 0 | 0.18 | 0.19 | 0 | 0 | 0.92 | 0.26 | -0.05 | 0 | 0.54 | 0.24 | 0 |
| Uganda | -0.02 | 0.02 | -0.04 | 0 | 0 | -0.03 | -0.04 | 0.01 | 0 | -0.03 | 0.01 | 0.13 | -0.13 | 0 | 0.16 | 0.03 | 0 |
| Vietnam | -0.07 | 0 | -0.33 | -0.15 | 0 | 0 | -0.07 | -0.01 | 0.05 | 0 | -0.29 | 0.12 | -0.13 | -0.01 | -0.01 | 0.12 | 0.01 |
| Yemen | 0 | 0.04 | 0 | 0.01 | -0.01 | 0 | 0.05 | 0 | 0 | 0 | 0.16 | 0.20 | 0.03 | 0.06 | 0.29 | 0.07 | 0.69 |
| Zambia | 0 | 0 | -0.04 | 0.12 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.17 | 0 | 0 | 0.18 | 0.17 | 0.09 |

**Appendix table 5: Gross reductions in the poverty headcount for key commodities, percentage points**

| | Sugar cane, beets | Beef | Other bovine meat | Cattle | Fish | Maize | Other grains | Coffee, tea, cocoa | Cotton | Rice | Sugar | Fruits | Pota-toes | Vege-tables | Oils and fats | Wheat | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Armenia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | 0 | 0 | -0.02 | -0.04 |
| Bangladesh | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | -0.52 | 0 | -0.04 | 0 | 0 | 0 | -0.11 | -0.49 |
| Belize | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cambodia | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 |
| Côte D'Ivoire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.27 | -0.5 | -0.01 | 0 | -0.01 | 0 | 0 | 0 | 0 | -0.67 |
| Ecuador | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | -0.01 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | -0.01 |
| Guatemala | 0 | 0 | 0 | 0 | 0 | -0.03 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | -0.02 | 0 | 0 | 0 |
| India | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | -0.02 | -0.23 | 0 | -0.02 | 0 | 0 | 0 | -0.12 | -0.41 |
| Indonesia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.25 | 0 | -0.01 | 0 | 0 | 0 | 0 | -0.24 |
| Malawi | 0 | 0 | 0 | -0.01 | 0 | -0.01 | 0 | 0 | -0.01 | -0.07 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 |
| Moldova | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.69 |
| Mongolia | 0 | -0.1 | -2.18 | -0.14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nepal | 0 | 0 | 0 | -0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | 0 | 0 | -0.02 | -0.05 | -0.06 |
| Nicaragua | 0 | 0 | 0 | 0 | 0 | -0.02 | 0 | -0.05 | 0 | -0.02 | 0 | 0 | 0 | -1.65 | 0 | 0 | -1.59 |
| Niger | 0 | 0 | 0 | 0 | 0 | 0 | -0.42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.31 |
| Nigeria | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | -0.06 | -0.09 | -0.16 | 0 | 0 | 0 | 0 | 0 | 0 | -0.29 |
| Pakistan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | 0 | 0 | 0 | 0 | 0 |
| Panama | 0 | 0 | 0 | -0.03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | 0 | 0 | 0 | 0 | -0.07 |
| Peru | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | -0.01 | 0 |
| Rwanda | 0 | 0 | 0 | 0 | 0 | -0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.04 | 0 | 0 | -0.03 |
| Sri Lanka | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.11 | 0 | -0.05 | 0 | 0 | 0 | 0 | -0.05 |
| Tajikistan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.02 | 0 | 0 | -0.37 | 0 | 0 | -0.02 | -0.05 |
| Timor Leste | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Uganda | -0.04 | 0 | 0 | 0 | 0 | -0.74 | 0 | -0.13 | -0.13 | -0.05 | 0 | 0 | 0 | -0.2 | 0 | 0 | -0.77 |
| Vietnam | 0 | 0 | 0 | 0 | 0 | -0.7 | 0 | 0 | -0.03 | -2.14 | 0 | -0.01 | 0 | 0 | 0 | 0 | -2.92 |
| Yemen | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 |
| Zambia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Appendix table 6: Gross increases in poverty headcount for key commodities, percentage points**

| | Sugar cane, beets | Beef | Other bovine meat | Cattle | Fish | Maize | Other grains | Coffee, tea, cocoa | Cotton | Rice | Sugar | Fruits | Pota-toes | Vege-tables | Oils and fats | Wheat | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.08 | 0 | 0 | 0 | 0.35 | 0.06 | 0.5 |
| Armenia | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0.11 | 0.03 | 0.17 | 0 | 0.25 | 0.08 | 0.67 |
| Bangladesh | 0 | 0.13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.8 | 0.05 | -0.02 | 0 | 0 | 0.24 | 0.09 | 2.08 |
| Belize | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.15 | 1.15 |
| Cambodia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0 | 0.05 |
| Côte D'Ivoire | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.36 | 0.19 | 0.04 | 0 | 0 | 0.02 | 0.16 | 0.67 |
| Ecuador | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0.04 | 0 | 0.05 |
| Guatemala | 0 | 0 | 0 | 0 | 0 | 0.03 | 0.01 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0.07 | 0.02 | 1.4 | 1.5 |
| India | 0 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0.37 | 0.15 | 0.01 | 0 | 0 | 0.47 | 0.19 | 1.19 |
| Indonesia | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.47 | 0.08 | 0.02 | 0 | 0 | 0.02 | 0 | 0.57 |
| Malawi | 0 | 0.01 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0.01 | 0.32 | 0 | 0 | 0 | 0.25 | 0.53 | 1.03 |
| Moldova | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.03 | 0 | 0.03 | 0.16 | 0 | 0 | 0 | 0.11 | 0.04 | 1.37 |
| Mongolia | 0 | 0.05 | 0.82 | 0.09 | 0 | 0 | 0.09 | 0.05 | 0 | 0.16 | 0.22 | 0 | 0 | 0 | 0 | 1.55 | 0.32 |
| Nepal | 0 | 0.04 | 0 | 0.04 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.04 | 0.02 | 0 | 0 | 0.07 | 0.04 | 0.21 |
| Nicaragua | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0.01 | 0.01 | 0.01 | 0 | 1.89 | 0.28 | 0 | 2.09 |
| Niger | 0 | 0 | 0 | 0 | 0 | 0 | 0.12 | 0 | 0 | 0.07 | 0.15 | 0 | 0 | 0 | 0.01 | 0.15 | 0.4 |
| Nigeria | 0 | 0.03 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0 | 0.39 | 0 | 0 | 0 | 0 | 0.21 | 0.43 | 1.06 |
| Pakistan | 0 | 0.02 | 0 | 0 | 0 | 0.02 | 0.02 | 0.04 | 0 | 0.24 | 0.02 | 0.03 | 0 | 0 | 0.31 | 1.29 | 1.92 |
| Panama | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0 | 0 | 0.11 |
| Peru | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0.03 | 0.02 | 0.03 | 0 | 0 | 0.04 | 0.01 | 0.12 |
| Rwanda | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.14 | 0 | 0.04 | 0.22 |
| Sri Lanka | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.53 | 0.63 | -0.02 | 0 | 0 | 0.1 | 0.32 | 1.49 |
| Tajikistan | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0.09 | 1.69 | 0 | -0.07 | 0 | 1.17 | 1.11 | 3.68 |
| Timor Leste | 0 | 0 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0 | 0.12 |
| Uganda | 0 | 0 | 0 | 0 | 0 | 0.89 | 0 | 0.05 | 0.02 | 0.05 | 0.23 | 0 | 0 | 0.79 | 0.25 | 0.15 | 1.92 |
| Vietnam | 0 | 0 | 0 | 0 | 0 | -0.06 | 0 | 0 | -0.07 | 1.86 | 0.02 | 0.06 | 0 | 0 | 0.13 | 0.04 | 1.68 |
| Yemen | 0 | 0.01 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.27 | 0.25 | 0.01 | 0 | 0 | 0.07 | 0.2 | 0.81 |
| Zambia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0.02 | 0 | 0 | 0 | 0.16 | 0.07 | 0.27 |

Appendix table 7: Net change in the poverty headcount for key commodities, percentage points

| | Sugar cane, beets | Beef | Other bovine meat | Cattle | Fish | Maize | Other grains | Coffee, tea, cocoa | Cotton | Rice | Sugar | Fruits | Pota-toes | Vege-tables | Oils and fats | Wheat | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.08 | 0 | 0 | 0 | 0.35 | 0.06 | 0.5 |
| Armenia | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0.11 | 0.03 | 0.14 | 0 | 0.25 | 0.06 | 0.63 |
| Bangladesh | 0 | 0.12 | 0 | 0 | 0 | 0 | 0 | 0 | -0.03 | 1.28 | 0.05 | -0.06 | 0 | 0 | 0.24 | -0.02 | 1.59 |
| Belize | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.15 | 1.15 |
| Cambodia | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0 | 0.03 |
| Côte D'Ivoire | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | -0.27 | -0.50 | 0.35 | 0.19 | 0.03 | 0 | 0 | 0.02 | 0.16 | 0 |
| Ecuador | 0 | 0 | 0 | 0 | -0.01 | 0.01 | 0 | -0.01 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.04 | 0 | 0.04 |
| Guatemala | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | -0.01 | 0 | 0 | 0.02 | 0 | 0 | 0.05 | 0.02 | 1.40 | 1.5 |
| India | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | -0.02 | 0.14 | 0.15 | -0.01 | 0 | 0 | 0.47 | 0.07 | 0.77 |
| Indonesia | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.22 | 0.08 | 0.01 | 0 | 0 | 0.02 | 0 | 0.33 |
| Malawi | 0 | 0.01 | 0 | -0.01 | 0 | 0.04 | 0 | 0 | -0.01 | -0.06 | 0.32 | -0.01 | 0 | 0 | 0.25 | 0.53 | 1.03 |
| Moldova | 0 | 0 | 0 | 0 | 0 | -0.01 | 0.01 | 0.03 | 0 | 0.03 | 0.16 | 0 | 0 | 0 | 0.11 | 0.04 | 0.68 |
| Mongolia | 0 | -0.05 | -1.36 | -0.05 | 0 | 0 | 0.09 | 0.05 | 0 | 0.16 | 0.22 | 0 | 0 | 0 | 0 | 1.55 | 0.32 |
| Nepal | 0 | 0.04 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.04 | -0.01 | 0 | 0 | 0.05 | -0.01 | 0.15 |
| Nicaragua | 0 | 0.02 | 0 | 0 | 0 | -0.02 | 0 | -0.02 | 0 | -0.01 | 0.01 | 0.01 | 0 | 0.24 | 0.28 | 0 | 0.5 |
| Niger | 0 | 0 | 0 | 0 | 0 | 0 | -0.30 | 0 | 0 | 0.07 | 0.15 | 0 | 0 | 0 | 0.01 | 0.15 | 0.09 |
| Nigeria | 0 | 0.03 | 0 | 0 | 0 | 0 | 0 | -0.05 | -0.09 | 0.23 | 0 | 0 | 0 | 0 | 0.21 | 0.43 | 0.76 |
| Pakistan | 0 | 0.02 | 0 | 0 | 0 | 0.02 | 0.02 | 0.04 | 0 | 0.24 | 0.02 | 0 | 0 | 0 | 0.31 | 1.29 | 1.92 |
| Panama | 0 | 0 | 0 | -0.02 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 |
| Peru | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 | 0 | 0.03 | 0.02 | 0.02 | 0 | 0 | 0.04 | 0 | 0.12 |
| Rwanda | 0 | 0 | 0 | 0 | 0 | 0.04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.10 | 0 | 0.04 | 0.18 |
| Sri Lanka | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.42 | 0.63 | -0.07 | 0 | 0 | 0.10 | 0.32 | 1.44 |
| Tajikistan | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0.07 | 1.69 | 0 | -0.44 | 0 | 1.17 | 1.09 | 3.62 |
| Timor Leste | 0 | 0 | 0 | 0 | 0 | 0.05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0 | 0.12 |
| Uganda | -0.04 | 0 | 0 | 0 | 0 | 0.15 | 0 | -0.08 | -0.11 | 0 | 0.23 | 0 | 0 | 0.59 | 0.25 | 0.15 | 1.15 |
| Vietnam | 0 | 0 | 0 | 0 | 0 | -0.76 | 0 | 0 | -0.10 | -0.28 | 0.02 | 0.05 | 0 | 0 | 0.13 | 0.04 | -1.24 |
| Yemen | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.26 | 0.25 | 0.01 | 0 | 0 | 0.07 | 0.20 | 0.79 |
| Zambia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0.02 | 0 | 0 | 0 | 0.16 | 0.07 | 0.27 |