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## The Impact of the Financial Crisis on Poverty and Income Distribution: Insights from Simulations in Selected Countries

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*As the financial crisis has spread through the world, the lack of real-time data has made it difficult to track its impact in developing countries. We use a microsimulation approach to assess the poverty and distributional effects of the crisis. In Bangladesh, Mexico, and the Philippines, we find increases in both the level and the depth of aggregate poverty. Income shocks are relatively large in the middle (and, in Mexico, the bottom) parts of the income distribution. We also find that characteristics of people who become poor because of the crisis are different from those of both chronically poor people and the general population. Our findings will be useful for policy makers wishing to identify leading monitoring indicators to track the impact of macroeconomic shocks and to design policies that protect vulnerable groups.*

As the financial crisis has spread through the world, its impacts on poverty and income distribution in developing countries have proved difficult to track because real-time data are lacking. Measuring the poverty and distributional impacts of the crisis is important not only for designing appropriate policy responses, but also for informing policies to protect poor people in the event of future economic shocks. Given that household data needed to measure impacts in real time are not available in most countries, *ex ante* methods that extrapolate impacts from pre-crisis data are useful tools.

We build on the model described in Bourguignon, Bus-solo, and Pereira da Silva (2008) and in Ferreira et al. (2008) to simulate the impacts of the crisis in several countries. (See box 1 for details on the methodology.) For this purpose, we make comparisons between scenarios *with* and *without* crisis for the same year, or in *pre-* and *post-*crisis years. Results for Bangladesh, Mexico, and the Philippines are summarized in this note.

### Aggregate Poverty and Inequality Impacts

The model predicts some increases in the level and depth of poverty as a result of the crisis in all three countries, with the extent of increase largely depending on the size of the macroeconomic impact in the country.<sup>1</sup> In Bangladesh and the Philippines, the crisis has led to a slowdown in GDP growth, which is expected to raise the poverty rate in 2010 by 1.2 and 1.5 percentage points, respectively, compared with what would have occurred *without* the crisis. The lower rate of poverty reduction resulting from the crisis translates to approximately 1.4 and 2.0 million *additional* poor people in the Philippines and Bangladesh, respectively, in 2010. In Mexico, GDP actually contracted by nearly 7 percent in 2009, and it is projected to grow by only 3 percent in 2010. The cumulative impact is projected to raise the poverty rate by nearly 4 percentage points in Mexico between 2008 and 2010.

## Box 1. Methodological Approach and Caveats

To estimate how macroeconomic impacts would translate into lower incomes for households, we use a microsimulation approach that superimposes macroeconomic projections on behavioral models built on pre-crisis household data. The macroeconomic shocks are transmitted to households through the labor market in the form of loss of (or cross-sectoral shifts in) employment and labor earnings, and loss of nonlabor income (including remittances from migrants). The model is loosely based on the approaches described in Bourginon, Bussolo, and Pereira da Silva (2008) and Ferreira et al. (2008), but simplified in the sense that it is not linked to a general equilibrium model that is not readily available for most developing countries. Instead, the simplified model takes the macroeconomic projections for a specific country and year as given, and extrapolates the microeconomic snapshot of future impacts from these projections.

To measure impacts of the crisis, comparisons are made either between scenarios *with* and *without* crisis for the same year, or between *pre-crisis* and *post-crisis* years. Beyond impacts on poverty measures, the results also shed light on how the impacts are distributed among sectors, regions, and income groups; and what are the characteristics of those who would become poor as

a *result* of the crisis. We have applied this method to Bangladesh, Mexico, and the Philippines; and similar exercises are ongoing for Egypt, Mongolia, and Poland. We find that the crisis has had important impacts on poverty levels and depth and on income distribution.

A number of caveats apply to these exercises. First, the countries studied may not be representative of the global impact. Specifically, because the model focuses on labor income and international remittances as transmission channels of impact, it may not fully capture impacts in countries that are heavily dependent on commodity exports (for example, some African countries) or those where wealth shocks play a large role (for example, some countries in Eastern Europe). However, we do find that results from other simulation exercises, such as for Latvia, are in line with the ones presented here.

Second, the fact that the microsimulations are based on past data that reflect the preexisting structure of labor markets and household incomes necessarily implies that these structural relationships are assumed to remain constant over the time period for which the projections are made.

In contrast, the crisis has no significant impact on aggregate inequality indexes in any of the three countries. The aggregate numbers, however, mask larger changes in the underlying distribution of income and consumption. Some regions and income groups within each country suffer more losses than others, depending on which sectors and income sources are more likely to be affected in the country.

### Distributional Impacts: Who Is Affected and How

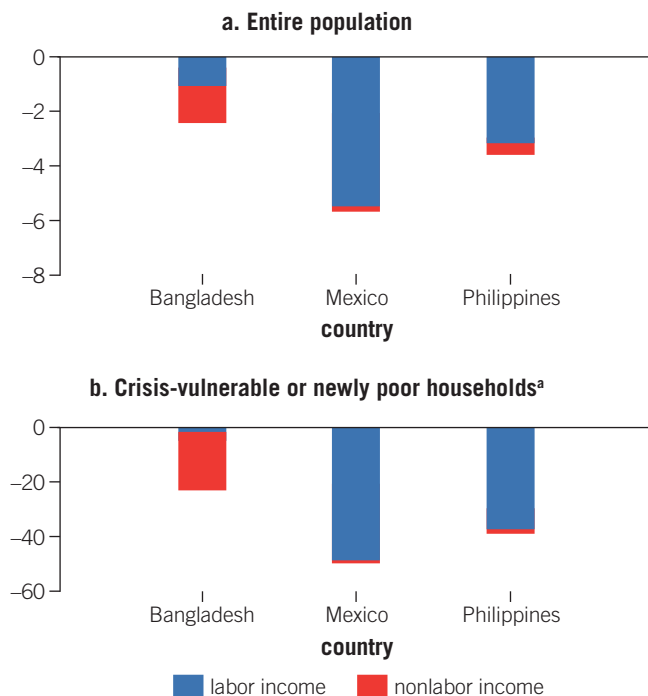
In all three countries, the impacts are relatively large in the middle (and, in Mexico, the bottom) parts of the income distribution.<sup>2</sup> Between 15 and 20 percent of households in the fourth to seventh deciles of the income distribution in Mexico and the Philippines suffer per capita income losses that push them to a lower income decile.<sup>3</sup> This number is 10 percent in the case of Bangladesh. In Mexico, where the crisis has been more severe, significant impacts are also likely among those at the bottom of the distribution. The poorest 20 percent of Mexican households suffers an average loss in per capita income of about 8 percent, compared with 5 percent for the entire population—even after existing safety-net transfers that benefit many of the extremely poor people are taken into account.

Impacts on the middle of the distribution can be attributed to significant employment shocks to urban areas and particularly the manufacturing and export sectors that employ a large number of workers in middle-income households. Urban households suffer more losses, on average, than do rural households in all countries because the manufacturing sector that bears the brunt of the losses in employment and labor earnings typically is concentrated in urban areas. The urban-rural gap is widest in the Philippines (with a 6 percent decline in the per capita income of urban households, compared with a 3 percent decline for rural households). In contrast, impacts among the poor and those in rural areas are more closely associated with lower (international) remittance flows and a decline in agricultural income.

The significant changes predicted for the middle of the distribution do not lead to higher inequality in Bangladesh and the Philippines, as measured by aggregate indexes such as the Gini coefficient. This is because overall inequality worsens only when the losses are disproportionately *high* among the poor. Only in Mexico, where a larger shock is projected at the lower end of the distribution, is there a projected increase in aggregate inequality.

Beyond these common patterns, there is considerable variation in how impacts are distributed within countries because the relative importance of different transmission

**Figure 1. Changes in Household Incomes between No-Crisis and With-Crisis Scenarios, 2010**



Source: Authors' calculations.

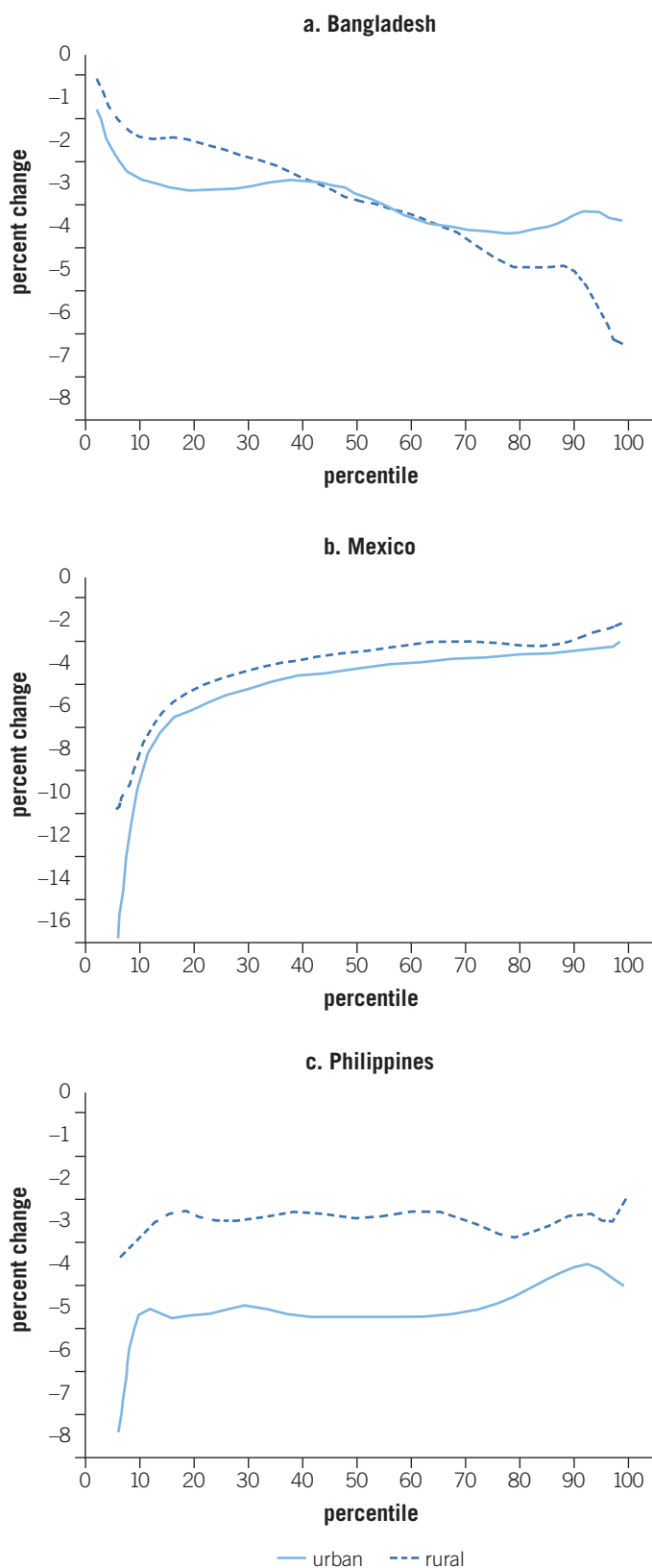
Note: For Mexico, the change is from pre-crisis to post-crisis (2008 to 2010).

a. Households projected either to fall into or to remain in poverty (rather than exit from it) as a consequence of the crisis.

channels of impact varies from country to country. Approximately 90 percent of the average loss in per capita household income in Mexico and the Philippines results from a fall in labor income, compared with 50 percent of the average loss in Bangladesh (where losses in remittances are equally important) (figure 1a). Losses resulting from lower remittances tend to be more concentrated among better-off households *within* urban and rural areas than losses in labor income, mainly because the initial (pre-crisis) distribution of remittances was skewed toward the better-off households at the beginning.

The combination of these factors generates distributional patterns that are different across urban and rural areas in different countries. The Philippines is characterized by a high level of urbanization and a concentration of manufacturing and service sectors in urban areas, along with a relatively limited role for remittances (figure 2). These translate into much larger income losses for urban areas, compared with rural areas, but a relatively equitable distribution of losses *within* each area. In contrast, significant distributional changes *within* urban and rural areas of Bangladesh and Mexico are predicted, but with important differences (figure 2). In Bangladesh, relatively better-off households suffer the greatest losses, mainly because of lower remittances resulting

**Figure 2. Growth Incidence Curves: Percent Change in per Capita Income/Consumption between No-Crisis and With-Crisis Scenarios**



Source: Authors' calculations.

Note: For Mexico, the change is from pre-crisis to post-crisis (2008 to 2010); for the other countries, the change is from no-crisis to with-crisis scenarios for the same year (2010).

from the crisis—with the largest losses predicted for the top 40 percent of the urban and rural areas alike. In Mexico, the losses are high among the poor because of a substantial projected fall in labor income.

### The “Crisis Vulnerable”: A New Challenge

To understand who are affected most by the crisis, it is useful to examine the characteristics of households that are projected to be poor as a result of the crisis, but who otherwise would not have been poor. These “crisis-vulnerable” or “newly poor” households are quite different from chronically poor households and from the general population. On average, the newly poor appear to be more skilled and urban than the chronically poor, but less so than the general population. They also are more likely to be economically active than the chronically poor, indicating that the crisis would have had a sizable effect on the number of “working poor.”

As shown for all three countries in figure 1.b, newly poor households suffer much larger income losses (25–50 percent) than average households (3–5 percent). The sources of these income losses are significant: in Bangladesh, a loss in remittances appears to be a good leading indicator of poverty; in Mexico and the Philippines, “new” poverty is driven almost entirely by losses in labor income (figure 1b).

### Relevance for Policy

The results have a number of potential uses for policy design and monitoring. First, they help identify a list of possible “leading indicators” that can be monitored rapidly to gauge the likely welfare impacts of a crisis, in the absence of real-time information on household income/consumption. Although the appropriate choice of indicators would depend on the main transmission channels in a specific country, manufacturing employment, wages, remittance flows, and relative food prices emerge as potential candidates for monitoring in all three countries. Second, the identification of the people likely to suffer the most losses can inform the design of policy responses. In this context, the fact that the newly poor and the chronically poor differ significantly in their characteristics suggests that expanding *existing* safety-net programs (targeted toward the chronically poor) to mitigate the losses of the newly poor may not be effective or practical. Instead, (new) interventions that address increased levels of vulnerability and that protect households against risk may be required.

The results also can have useful political economy implications: the substantial losses suffered by the urban middle-income and poor households, for example, are important

because of the influence these groups can have on public perceptions and, consequently, on policy choices.

### Notes

1. These results are consistent with the impact of the crisis on global poverty estimated by Chen and Ravallion (2009).

2. This is not surprising, given the literature on the vulnerability of the “middle class.” For example, Ravallion (2009) argues that middle-income groups in developing countries are more exposed to crisis shocks than is the rest of the population.

3. Each decile is equivalent to 10 percent of the country’s population, when households are ranked in terms of per capita income or consumption. The bottom and top deciles are the poorest and richest 10 percent of the population, respectively.

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*All authors are part of the Poverty Reduction and Equity Group in PREM. Ambar Narayan and Carolina Sanchez are senior economists in the unit; Bilal Habib and Sergio Olivieri are consultants. To learn more about the Poverty Reduction and Equity Group, please visit <http://www.worldbank.org/poverty>.*

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