

## Household Vulnerabilities

### A. Introduction

This chapter examines household vulnerabilities by analyzing how macro shocks discussed in Chapter 1, namely (i) credit market shocks, (ii) external price (food and fuel) shocks, and (iii) income shocks, impact their well-being. It treats each of these shocks separately and quantifies how the crisis is likely affecting the welfare of households, on average, and, whenever possible and drawing from country-specific examples and illustrations, how such welfare effects may be distributed across households.

The results reported in this chapter suggest that household vulnerability in ECA is widespread. There are adverse effects on both poor households and nonpoor households depending on the macroeconomic shock, the specific transmission channel, and selected household characteristics. In brief, this chapter finds the following:

- *The ongoing macroeconomic shocks will significantly expand the pool of households that are unable to service their debt.*

Interest rate shocks in Estonia, Lithuania, and Hungary, for example, can increase the share of vulnerable households or borrowers at risk (in percentage of all indebted households) by up to 20 percentage points, depending on the magnitude and severity of the shock. Household indebtedness has risen rapidly in ECA countries among both poor and nonpoor households. The nature of household debt in ECA is such that many households have likely exposed themselves to various types of risks, including exchange rate and interest rate risks, with few opportunities for hedging.

- *The food and fuel crisis may not be over and a new round of price increases will have substantial effects on household welfare.* International commodity price levels have not returned to pre-2007 levels and falling currencies in some ECA countries are resulting in a new round of price increases, depending on the share of imported food and fuel in local consumption and the degree of pass-through of

exchange rate changes in domestic prices. The net effect of a food price shock depends on whether households are net producers or net consumers of food, it depends on their intensity of food consumption and the availability of cheaper substitutes, and it depends on their livelihood strategies, access to agriculture assets and inputs, and ability to take advantage of profitable opportunities in agriculture. These multiple considerations suggest that, at least in principle, the poor are not necessarily the hardest hit. However, the food share of total household consumption typically falls with income and, in reality, the poor are also likely to be the worst hit, as many of the poor in Albania, Kyrgyz Republic, and Tajikistan, for example, are also observed to be net consumers, with limited access to agriculture assets and inputs.

- **Poverty will rise.** The region now risks a major reversal of its gains in the years of economic recovery following the 1998 Russian crisis. By 2010, about 11 million more people could fall into poverty and an additional 24 million people could find themselves vulnerable, or just above ECA's international poverty line, over the next two years. The regional simulations mask the heterogeneity of impact within countries, including the likely concentration of the poverty impact in selected economic sectors. Country studies recently completed suggest that for economic shocks transmitted primarily through the labor market, poverty will rise especially among households that have been dependent on remittance inflows and those previously employed in booming construction sectors where economic activity is now projected to decline sharply.

The rest of the chapter is organized as follows: Section B sets out the context for the analysis in terms of the trends in poverty reduction and vulnerability prior to the crisis.

Section C discusses the empirical strategy, the scope and objectives, and the key limitations of the analysis. Section D presents the results of the analysis of household indebtedness and the likely impact of credit market shocks on the household debt service burden in selected countries. Section E analyzes recent trends in food and fuel prices, patterns of food and fuel consumption among households in the region, and the likely impact on households of a new round of food and fuel prices increases. Section F assesses the impact of the regional recession and, in particular, the effect on household welfare of falling incomes in the region.

## B. Context: Poverty and Vulnerability in the Pre-Crisis Period

Over the recovery period following the 1998 Russian crisis through 2006, some 50 million people moved out of poverty in the region.<sup>14</sup> Poverty fell throughout all the sub-regions of ECA led by the middle-income countries of the CIS, which experienced the largest declines in poverty, particularly in Russia where the share of the poor and vulnerable has declined sharply in percentage of the population.

Poverty reduction in ECA has been driven largely by growth in average income. In particular, growth in mean income is calculated to have contributed close to 90 percent of the overall reduction in poverty experienced by the region. A modest improvement in the distribution of income has also helped reduce poverty. The labor market has provided an important channel for poverty reduction in the region, largely through rising real wages among the working poor. In contrast, job creation has generally not been an important factor for reducing poverty. For a number of countries, the index of employment has been flat in recent years.

Notwithstanding the rapid decreases in poverty, millions of people still remain poor or are just above the poverty line. More than two-thirds of the poor live in the middle-income

countries of the region, including Kazakhstan, Poland, Romania, Russia, and Turkey. Not surprisingly, low-income countries in ECA have higher rates of poverty and vulnerability compared to other countries in the region, but as a group, they account for less than a quarter of the region's poor population.

The growth slowdown will have significant adverse consequences for the region, given its poverty and vulnerability profile. Most of the poor in the ECA region are working adults and children. Together, they represent about two-thirds of the poor population across countries in the region, with the working poor accounting for anywhere from about a quarter (e.g., Turkey) to close to half (middle-income CIS) of the poor population. The working poor represent a group that is directly exposed to the fall in income and declining employment prospects projected throughout the region. In addition, because many of those currently employed have just moved out of poverty, they are just above the poverty line and highly susceptible to modest falls in mean income and economic activity.

### **C. Shocks to Household Welfare: Empirical Strategy**

The rest of this chapter examines household vulnerabilities using micro data by examining the potential impact of credit market shocks, external price (food and fuel) shocks, and income shocks on household welfare. The impact on household welfare is defined as the change in the household debt service burden, the fall in real income, or movements into poverty, as appropriate. The report presents regional overviews and simulations along with cross-country comparisons and contrasts. It also presents selected country examples, depending on data availability and relevant economic developments, to illustrate the incidence and distribution of specific vulnerabilities within countries.

The novel microeconomic analysis in the report draws on a large, cross-country database of household surveys. We use the most recent pre-crisis household data along with aggregate macroeconomic outturns to simulate the impact on households of key economic shocks already taking place. The report brings together for the first time comparable cross-country data on household indebtedness for a large group of ECA countries using the EU Survey of Income and Living Conditions (EU-SILC) and Household Budget Surveys (HBS). The report also highlights newly updated information on household consumption from the ECA Household Data Archives. Comparisons with Western Europe and other advanced economies are also used to inform the analysis when relevant data are available.

#### **Important Caveats**

The analysis is not exhaustive. First, the choice of emphasis has been guided in large part by the policy issues of the day when the project was first designed. Thus, for example, it is an analysis of food and fuel price shocks, instead of rising prices of other household consumption items, reflecting the widespread concern over the food and fuel crisis. It is an analysis of household indebtedness and the welfare consequences of rising debt burdens—rather than, for example, the analysis of the welfare effects of the continuing lack of access to credit among certain households—given the policy interest in the new vulnerabilities created by the credit boom through 2007–2008 in many countries in ECA. Second, the country examples and analyses have also been selective, depending on data availability and the relative country exposure and risk. This is a primary reason why the potential impact on household welfare of wealth changes associated with the crisis, such as those related to property and equity price falls, is not analyzed.

The analysis is not predictive. The GDP growth projections alone, on which many

of the simulations here are predicated, were updated at least *three* times during the course of the preparation of this report. The frequency of updates reflects the substantial uncertainty regarding the severity and duration of the crisis and, by extension, its impact on households. In addition, the actual poverty impact can be mitigated by private responses to the crisis and by various household coping strategies. This study is unable to account for the interactions between channels, the behavioral changes (including coping strategies to mitigate the crisis, discussed in the final chapter), and the net higher-order effects. Policy responses, meanwhile, can either mitigate or exacerbate some of these consequences.

The results are not additive. The analyses of changes in household welfare in response to three types of shocks are treated as parallel exercises. First, the shocks have not been analyzed within a common general equilibrium framework. Second, the choice of country examples and illustrations vary across shocks, depending on data availability and the relevant country risk. More generally, the data are drawn from two different household data sources. Finally, there are methodological differences in the way vulnerability was evaluated, consistent with the respective existing literature. With household indebtedness, for example, the impact of the shocks is assessed relative to indicative debt burden “thresholds” (payments in percentage of income). With respect to the fall in income, the predicted household consumption levels are compared to an international poverty line. However, the real impacts in each country may very well be multi-channeled and cumulative. Countries in Eastern Europe, for example, have to deal with financial sector shocks and labor market shocks, as well as product market shocks transmitted through currency declines. For a number of reasons, however, we treat these impacts independently using partial equilibrium analysis.

The aim, then, is to provide a broad overview of household vulnerabilities confronted by the region. This report seeks to assess how such vulnerabilities are distributed across countries and, within countries, across broad types of households. Some of the estimated effects may be understated, as they capture only some of the first-round effects. On the other hand, general equilibrium effects will either dampen or worsen some of these effects.

This report is also cognizant of many ongoing, decentralized efforts throughout the region to simulate the household welfare consequences of the crisis. Such efforts are able to model these effects and interactions more fully using richer, more comprehensive country-specific data. This report does not substitute for those efforts—some of whose preliminary results are also reported and referenced below—but instead provides a complementary regional overview.

## D. Households and Credit Market Shocks

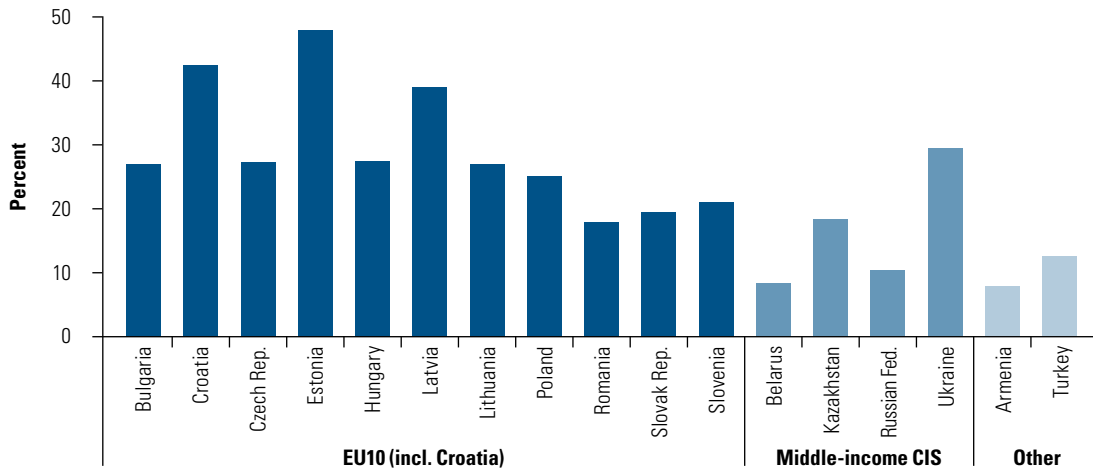
### Background

**Household debt now represents a little over a quarter of GDP in the EU10.** Though non-trivial, this level is lower than the debt level in most of the older EU member countries, which on average is about 65 percent of GDP. Within the EU10, however, there is significant variation in aggregate household debt holdings, in both their level and composition. Estonia is at the higher end of the distribution by magnitude, with household debt representing close to half of GDP. Household debt in percent of GDP in the CIS and other ECA countries, in turn, lags behind the EU10, on average. Ukraine is an exception, with household indebtedness comparable to that of the EU10 average.

**As household financial positions have grown, there has been a shift toward housing loans or mortgages on the liability side of the balance sheet and an increasing share of equities and pension and mutual funds**

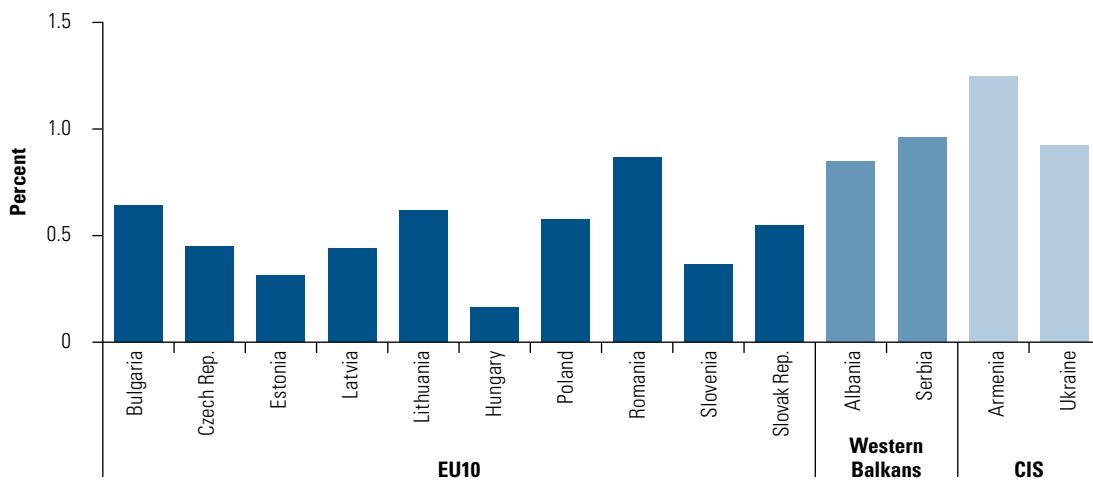
**FIGURE 2.1**  
**Household Debt: Selected ECA Countries, 2008**

In percent of GDP, end-period



Sources: European Central Bank, National Central Banks, IMF, and UniCredit.

**FIGURE 2.2**  
**Growth in Mortgage Debt: Selected ECA Countries, 2007**



Source: European Mortgage Federation.

**on the asset side.** For many of the countries in ECA, rising mortgage and housing loans have accounted for much of the growth in household liabilities and now, for example, account for around 40 percent of total household liabilities in Bulgaria, Croatia, and Hungary and up to 60 percent in the Czech Republic. However, for some notable exceptions, such as Romania and Bulgaria, consumer credit remains the primary

form of household loans. Elsewhere, such as in the CIS, housing loans are a much smaller share of all household loans compared to the EU10. Mortgage debt has increased multiple times over the period 2002–2007 both in per capita terms and relative to disposable income. Some have suggested that government initiatives, such as construction or mortgage-related subsidy and tax schemes, have contributed to this growth.

The growth in mortgages can also be viewed in terms of longer-term convergence toward the financial norms of Western Europe. Indeed, as would be expected, the most rapid annualized growth over the period 2002 to 2007 was seen in those economies with relative low initial levels of mortgages per capita. At 2007, housing loans

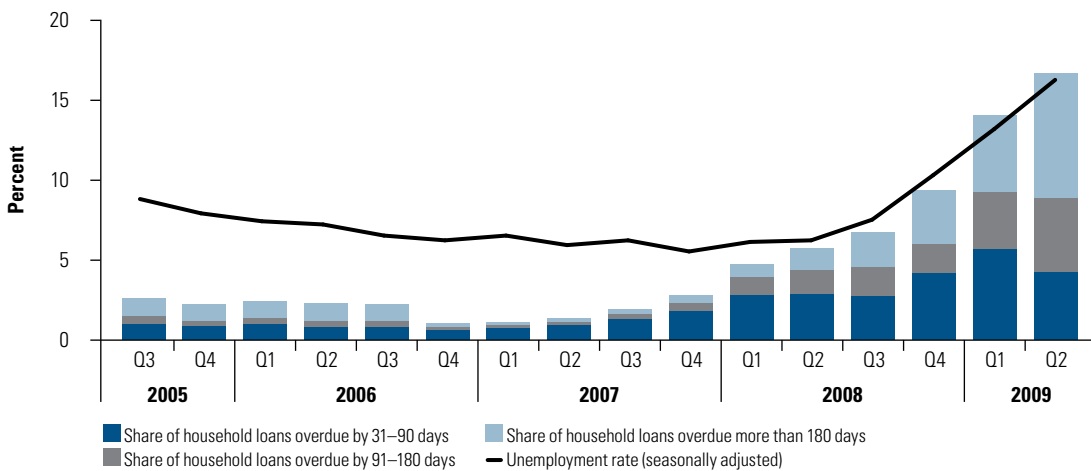
accounted for close to 60 percent of all household loans. Mortgage debt in Serbia, for example, grew at an astonishing rate of 96 percent in 2007 while growing by 86 percent in Albania. In Russia, the Central Bank reports that mortgage lending grew by a factor of 2.6 in 2007.<sup>15</sup> CIS mortgage lending also grew very sharply.

**FIGURE 2.3**  
**The Composition of Household Debt**  
In percent of total



Source: European Central Bank.

**FIGURE 2.4**  
**Latvia Household Loan Delinquency Rates and Unemployment Rate**



Sources: Eurostat and the Financial and Capital Market Commission, Latvia.

The welfare consequences of rising household indebtedness in the ECA region can be significant. Rising indebtedness reflects the benefits of financial sector development, allowing households to smooth their consumption over time and acquire home ownership without significant savings. In fact, there exists a growing literature on the welfare impact of credit *constraints* among households, particularly in a downturn when households are unable to meet their consumption needs.<sup>16</sup> On the other hand, rapidly growing household indebtedness and the exposure of the financial sector to vulnerable households (or borrowers at risk) may have important consequences for financial stability. At the same time, the welfare and distributional implications for households themselves can be large, particularly in a worsening macroeconomic environment.

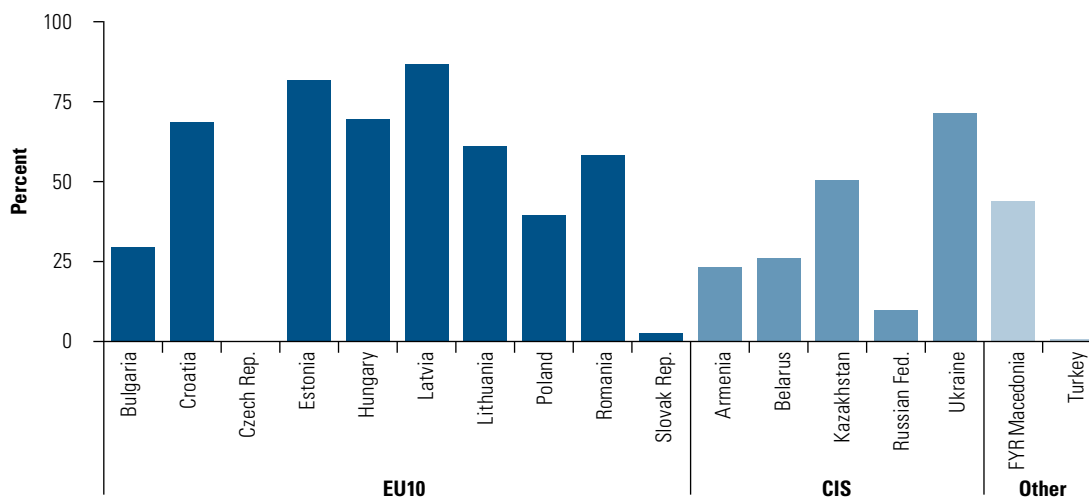
Some characteristics of household debt in ECA expose these households to a number of macroeconomic shocks. Given these characteristics, household debt service burdens may increase in a difficult macroeconomic environment, and this in turn may lead to higher default and delinquency rates. These in turn

adversely affect the health of financial sector balance sheets with second-round implications for households in terms of the availability and cost of credit. Already, rising household loan delinquency ratios are being observed in some countries, as unemployment rates have risen.

First, a large share of household debt is denominated in foreign currencies or is indexed to foreign currencies, which has exposed households to recent exchange rate depreciations to the extent that the currency composition of their assets, particularly their labor income flows, leaves them unhedged. Where foreign currency loans became popular in recent years, borrowers were typically obtaining loans in Euros and Swiss francs, attracted to relatively lower nominal interest rates compared to loans denominated in local currency.<sup>17</sup> On the banks' side, at the height of the expansion in household credit, there appeared little interest in reducing their exposure to foreign-currency-denominated loans because default rates were low and because of the ease of access, at the time, to foreign currency funding via wholesale markets or via Western European parent banks. Among households borrowing in foreign currency,

**FIGURE 2.5**  
**Foreign-Currency-Denominated Loans, 2008**

In percent of bank loans to households

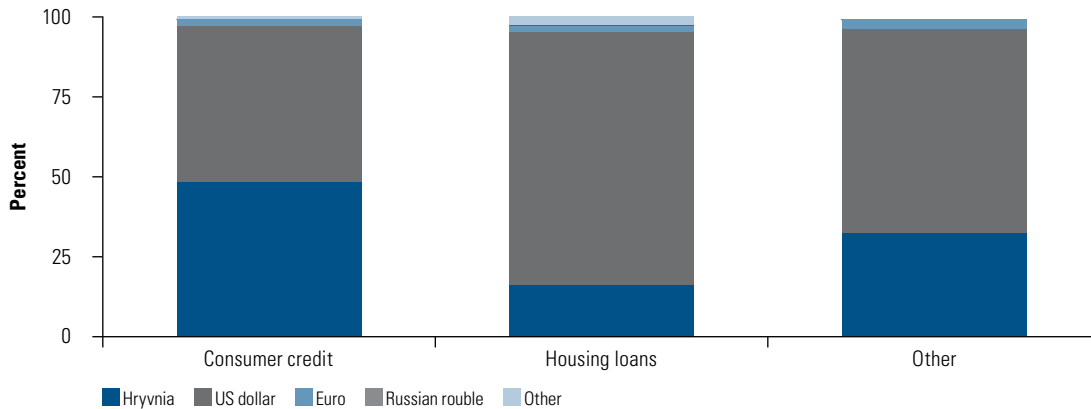


Sources: MNB and other National Central Banks.

FIGURE 2.6

**Foreign-Currency-Denominated Loans in Ukraine, 2008**

In percent of total, by currency



Sources: National Bank of Ukraine and staff calculations.

however, there also seemed little awareness of their exposure to currency risks although in some countries a high share of foreign currency deposits provides some hedging of the currency risk. These developments in the EU10 mirror recent trends elsewhere, particularly in the middle-income CIS countries, where households also obtained loans denominated in US dollars and other foreign currencies. In Serbia, few of the household loans are explicitly foreign-currency-denominated. However, up to 81 percent appear to be foreign-currency-indexed.<sup>18</sup>

There are again substantial variations in the foreign currency exposures of household debt across countries. The Baltics and Ukraine are at the higher end of this distribution, with foreign-currency-denominated loans accounting for over 80 percent of bank loans to households in Estonia and Latvia; the Czech and Slovak Republics are at the lower end, with little or no foreign-currency-denominated household debt. Some have suggested that a few national policies may explain some of these differences across countries—such as more restricted eligibility requirements in 2004 for housing subsidies in Hungary (which then prompted households to substitute toward less expensive foreign currency loans) or regulatory measures to limit borrowing foreign currency in the Czech Republic.<sup>19</sup>

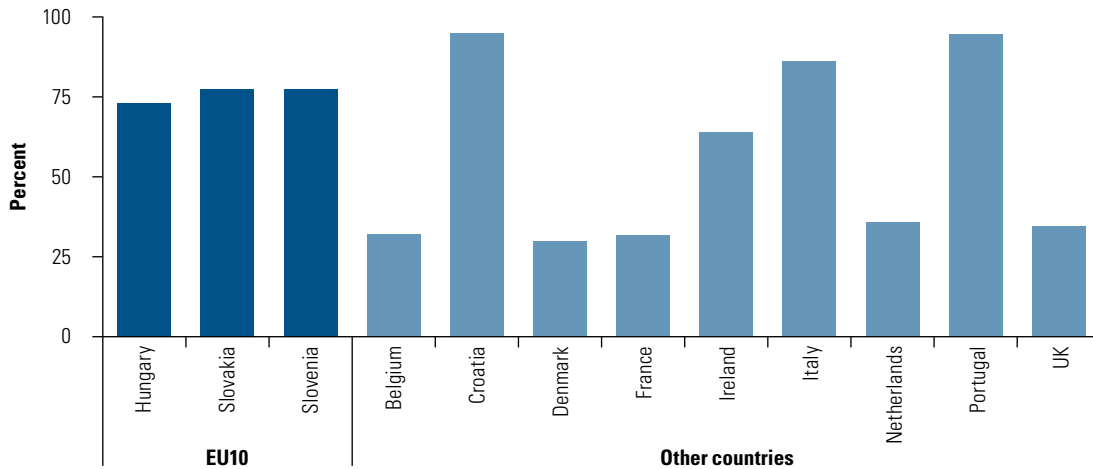
Second, in some EU10 countries, mortgages with variable (adjustable) interest rates account for the largest share of lending, exposing households to interest rate shocks. In these countries, such variable interest rate mortgage debt represented over three-quarters of all mortgage debt, at least until recently, using available data. Households are vulnerable in a financial downturn, in the event that banks pass on a higher cost of credit to them. However, as shown in other countries' experiences, this may be mitigated to the extent that interest rate adjustments may be capped, as is the case, for example, in Denmark.

Increasing mortgage indebtedness has exposed a rising share of households to the recent changes in house price trends in many of the EU10 countries. For example, in Estonia and Latvia house prices fell in Q4 2008 by around 16 percent and 36 percent year-on-year respectively compared with growth rates of around 20 percent and 60 percent in Q1 2007. Such price changes lead to redistributions of wealth between those long or short in housing stocks. These can then affect the distribution of consumption via direct wealth effects and via the impacts of changing collateral values on credit constraints. Indeed, household-level analysis in the United Kingdom has found the

FIGURE 2.7

**Mortgage Loans with Adjustable Interest Rates, 2006**

In percent of all housing loans



Sources: IMF, OECD, and National Central Banks.

largest elasticity of consumption with respect to housing prices in older homeowners with an insignificant elasticity for younger renters.<sup>20</sup>

### Household Vulnerability: Regional Overview

Microeconomic data can be a critical source of information on household indebtedness. Current assessments of the credit risks faced by the banking sector have been largely based on macroeconomic data. In general, little is known about household indebtedness based on household-level data in the EU10. The debt profile could vary across household income groups and by type of loan, such as mortgage and non-mortgage. In principle, such microeconomic data and profiles allow for a closer monitoring of risks associated with selected household groups. Where household borrowing is limited, indicators based on average household indebtedness for all households as a whole mask the likely concentration of borrowing among selected households.

This section draws information from the databases of the EU-SILC, an annual household survey anchored in the European Statistical

System that was first initiated in 2003, with the new EU member countries undertaking their first surveys in 2005. Data are typically made available to the general public two years after the survey, so we currently have data through 2007 and data for both older and newer EU members for 2005–2007. Among other variables, the EU-SILC collects information on the incidence of mortgage debt holding, interest payments, arrears on mortgage interest payments, and disposable income. The analysis of EU-SILC data is supplemented with the analysis of a few other ECA countries with relevant variables in their HBS. For these countries, there is information on total household debt, including mortgage debt and other household loans, and on total debt service, including interest payment and principal payment, in contrast to the EU-SILC data, which has information on interest payment alone.

There are a few notable patterns in the household survey data, suggesting likely adverse welfare consequences during an economic downturn. These include patterns of household debt holdings, including among those that are more vulnerable or less able to service their debt in a difficult economic environment.

## BOX 1

**Definition of EU-SILC Variables Used in the Analysis**

Total disposable household income is the sum for all household members of gross personal income components (gross employee cash or near cash income; gross non-cash employee income; gross cash benefits or losses from self-employment [including royalties]; unemployment benefits; old-age benefits; survivor's benefits; sickness benefits; disability benefits; and education-related allowances) **plus** gross income components at household level (income from rental of a property or land; family/children-related allowances; social exclusion not elsewhere classified; housing allowances; regular inter-household cash transfers received; interests, dividends, profit from capital investments in unincorporated business; income received by people aged under 16) **minus** regular taxes on wealth; regular inter-household cash transfer paid; and tax on income and social insurance contributions.

Interest paid on mortgage refers to the total gross amount, before deducting any tax credit or tax allowance, of mortgage interest on the main residence of the household during the income reference period. It excludes any other mortgage payments, either interest or principal, made at the same time, such as mortgage protection insurance or home and contents insurance; payments on mortgages to obtain money for housing purposes (e.g., repairs, renovations, maintenance) or for non-housing purposes; and repayments of the principal or capital sum.

*Reproduced from Eurostat, Description of SILC User Database Variables. Version 2007.1 (01-03-09). Permission being requested.*

First, debt holdings rise with household income level but are spread across income quintiles, including the poorer households. In the Czech Republic, for example, over a third of households in the poorest quintile hold some debt, rising to about 55 percent of households in the richest quintile. In addition, on average among EU10 countries, the share of mortgage holders across age groups first increases and then decreases with age, a pattern that is broadly consistent with the life cycle theory of consumer behavior. Taken together, these suggest that when macroeconomic shocks increase the financial burden due to mortgage debt, it is the poorest households and the youngest households with weaker ties to the labor market who are among those most likely to suffer adverse shocks, in the absence of a savings buffer. The shocks can be channeled through income shocks, exchange rate shocks (if the mortgage is in foreign currency), or interest rate shocks (in case of variable-

interest mortgages). If the mortgage payments represent a considerable share of a household's disposable income, a rising debt burden may curtail the household's ability to protect its welfare.

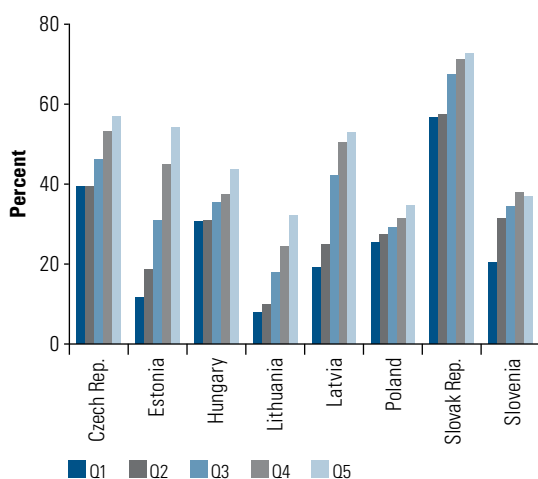
Second, in some countries debt service is a significant share of income, particularly among the poor. In Hungary, for example, data from the EU-SILC suggest that mortgage interest payments among the poor represent over 10 percent of their income. In Latvia, the share increases to almost 15 percent. If anything, these estimates of the debt service burden may be understated. A recent, independent survey for UniCredit Group indicates that for about 30 percent of all households, total household debt repayment covers more than a fifth of the household budget. Another 20 percent of households allocate 10 to 20 percent of their household budget to debt repayments.

Third, in some countries, mortgage interest payments are a significant share of income

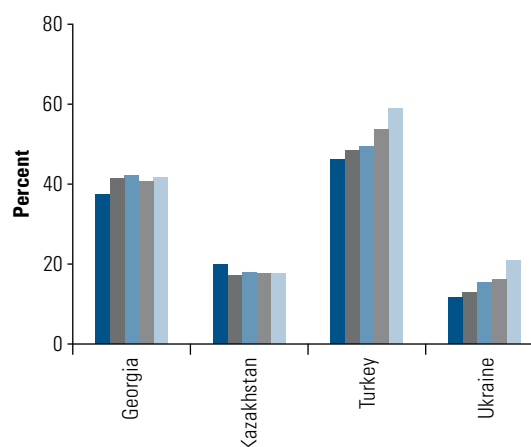
**FIGURE 2.8**  
**Household Debt by Income Quintile**

In percent of households

**Selected EU10 countries, 2007**



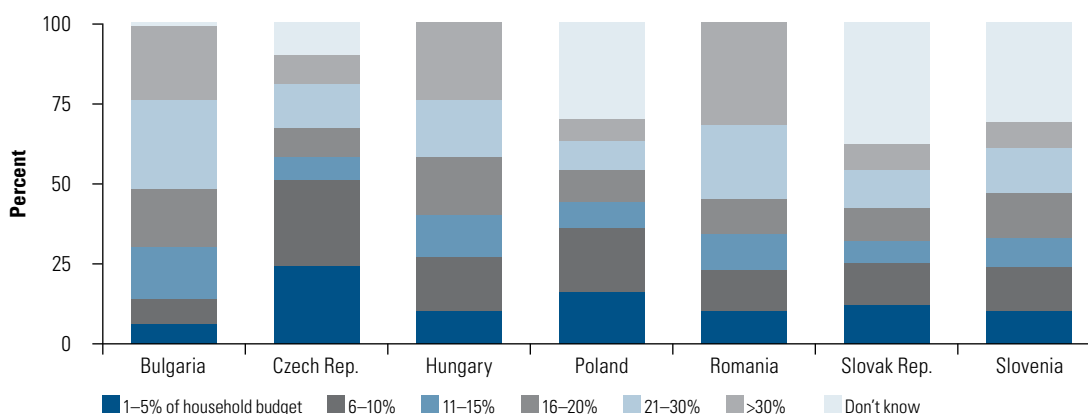
**Other ECA countries, 2006 or 2007**



Sources: EU-SILC and staff calculations.

**FIGURE 2.9**  
**Household Income Used for Debt Repayments**

In percent of all households



Source: UniCredit Group.

Note: The graph should be read as follows: The bars represent shares of the household population. The colors represent the percentage of household budget spent on debt service. In Slovenia, for example, 10 percent of households spend 1 to 5 percent of their budgets on debt service. Another 15 percent of households allocate 6 to 10 percent of their budgets for debt service.

among the youngest and oldest workers. In Hungary, the youngest workers (age 25 and younger) allocate over a tenth of their disposable household income to mortgage interest payments. Slovak workers in the youngest group also spend almost 10 percent of their

income to pay mortgage interest. In Lithuania, interest payments as a share of disposable income are the smallest in the youngest workers and then rise with age, reaching close to 6 percent of income among those aged 55 or older. In the meanwhile, in Latvia, mortgage

interest payments occupy a large share of household income across all age groups from the youngest to oldest, which is, in most cases, over 10 percent of disposable income. Large debt service ratios are also observed among those employed in economic sectors that have experienced some of the sharpest downturns in recent months (such as in construction).

### **Stress Testing Household Indebtedness: Country Illustrations**

#### **Introduction**

Stress tests of household debt using microeconomic data are rare, but the results of existing tests suggest considerable welfare consequences. A recent stress test in Hungary suggests that a simultaneous fall in employment and an interest rate shock would increase “risky loans” by 8 to 12 percentage points. Though the banking sector is found to be resilient to these shocks, the default risk is concentrated among the poor households. A stress test in Poland suggests that unemployment shocks (compared to interest rate or exchange rate shocks) have the highest impact on probability of default. Modest increases in unemployment can increase the share of loans in default by over 5 percentage points.<sup>21</sup>

We ran similar analyses of mortgage debt on a few selected countries, using EU-SILC data, and of total household debt, using HBS data. The choice of countries has been guided by data availability and the degree of exposure to interest rate, exchange rate, and unemployment rate shocks. The magnitude of the hypothetical shocks has been driven by actual changes in recent months—such as the doubling of unemployment rates in some EU10 countries—and is thus greater in magnitude than what has been previously assumed by the few stress tests that exist. We also simulated uniform shocks across countries—for example, 25 percent exchange rate depreciations—as explained more fully in Box 2.

For two of the countries analyzed, the fixed exchange rate regime, the authorities’ commitment to the peg, and the credibility of this regime protect households from the adverse effects of exchange rate adjustments. Some institutions have been examining the merits of alternative exchange rate regimes and they argue that a regime change would lead to adverse social consequences.<sup>22</sup> *The results of the simulations here should be seen in a similar light, as evidence of the likely welfare costs of abandoning the peg.*

#### **BOX 2**

### **Stress Testing Household Indebtedness**

This section follows some recent attempts to stress test household debt holding and assess the share (or change in share) of vulnerable households.<sup>23</sup> The steps taken are outlined as follows:

**Calculating baseline figures.** First, we use data from a sample of households from selected household surveys to calculate some baseline figures for the debt service burden (which may or may not include principal repayments, depending on the data source).

**Identifying vulnerable households.** Second, the debt service burden is compared to an indicative threshold, against which a household may be classified as vulnerable. There are two principal ways of defining indicative thresholds for determining the increase in the number of vulnerable households (sometimes referred to as “borrowers at risk”):

## BOX 2 (continued)

**Stress Testing Household Indebtedness**

- (i) One is based on the notion of a **“financial margin,”** or the disposable income left after deducting debt payments and basic living costs.<sup>24</sup> Households with negative margins are considered to be in financial distress and are likely to default on their debts. We use this benchmark in analyzing the HBS data on the total debt service burden.
- (ii) The other measure is an indicative **threshold debt service** burden that is more arbitrary, and based on previous findings regarding the level at which a household is more likely to become delinquent or be in arrears. In particular, we compare EU-SILC data on interest payments as a share of disposable income to an indicative threshold of 20 percent, following previous studies of mortgage delinquencies.<sup>25</sup> We also use a 30 percent threshold in our sensitivity tests.

**Subjecting households to shocks.** Third, the households are subjected to various macroeconomic shocks, such as an interest rate shock, an exchange rate shock, and an unemployment shock. The magnitude of the shock—such as some percentage point increase in the aggregate unemployment rate—depends on a country’s own historical increase, over the most recent two-year period.<sup>26</sup> In addition, we use two hypothetical scenarios, as listed below. The selection of specific households subjected to a shock proceeds as follows:

In the case of an **unemployment shock**, the selection of a particular household that is subjected to the shock—that is, whether a given household member becomes jobless—can be either random or based on a probability model of unemployment. In the case of a random assignment, we employ 1,000 draws and then calculate the average outcome, including the standard error.<sup>27</sup> In the case of a probability assignment, the likelihood of being unemployed is drawn from a probit model of unemployment, where unemployment is a function of an individual’s socioeconomic background, demographic characteristics, and geographic location. We employ a parsimonious model and assume that there are four key drivers of the probability of unemployment: educational level, age, gender, and place of residence.<sup>28</sup>

In the case of an **interest rate shock**, we use aggregate figures on the share of variable interest loans out of all household loans (e.g., 40 percent of all loans have adjustable interest rates). We adopt one critical assumption: we assume that loans with variable interest rates are proportionally distributed across indebted households, such that where, for example, 40 percent of all loans are variable interest rate loans, then we assume that 40 percent of all indebted households have variable interest rate loans. This is admittedly a crude assumption, as household debt with variable interest rates may be concentrated among selected groups of households. However, in the absence of more detailed information in household surveys on interest rate variability of each household’s debt holding, this is the most reasonable assumption we could make.<sup>29</sup> The share of households with variable interest loans is randomly selected using a similar routine outlined above, and these households are then subjected to the relevant interest rate shock. As before, we employ 1,000 draws and calculate the average outcome.

In the case of an **exchange rate shock**, the selection of households follows the same general procedure outlined above in the preceding paragraph.

## BOX 2 (continued)

### Stress Testing Household Indebtedness

**The magnitude of the hypothesized shock.** As previously stated we simulate the impact of shocks based on actual changes in recent years as well as on uniform, hypothesized magnitudes. In the case of unemployment rates, for example, some Baltic countries have experienced as much as 10 percentage point increases in the unemployment rate. We use these actual changes as base cases as well as a uniform 10 and 15 percentage point increase across countries. In the case of interest rate shocks, countries in our sample have experienced 2 to 4 percentage point maximum increases in recent years. In addition, we also simulate 3, 5, and 6 percentage point increases. A 3 percentage point stress test is typical in the household debt literature, but other have simulated more severe shocks such as 5 and 6 percentage point increases as well.<sup>30</sup> Finally, in the case of exchange rate shocks, we use maximum actual changes (which have been substantial in a few cases) as well as a uniform 25 and 35 percent depreciation. For selected countries with SILC data, we are able to simulate interest rate, exchange rate, and unemployment shocks. For countries with HBS, we do not have the necessary information on the share of loans with variable interest rates.

**Recalculating the share of vulnerable households.** As households are subjected to a shock—for example, as a member of the household becomes “unemployed” and ceases to receive any income from work<sup>31</sup>—the shock then results in the decrease in total household income and the household’s ability to repay debt. In the case of an interest rate shock or an exchange rate shock, the size of debt (or interest) payment grows accordingly. In all cases, the debt service burden is recalculated and then compared to the relevant threshold. The share of vulnerable households then rises accordingly.

## Results

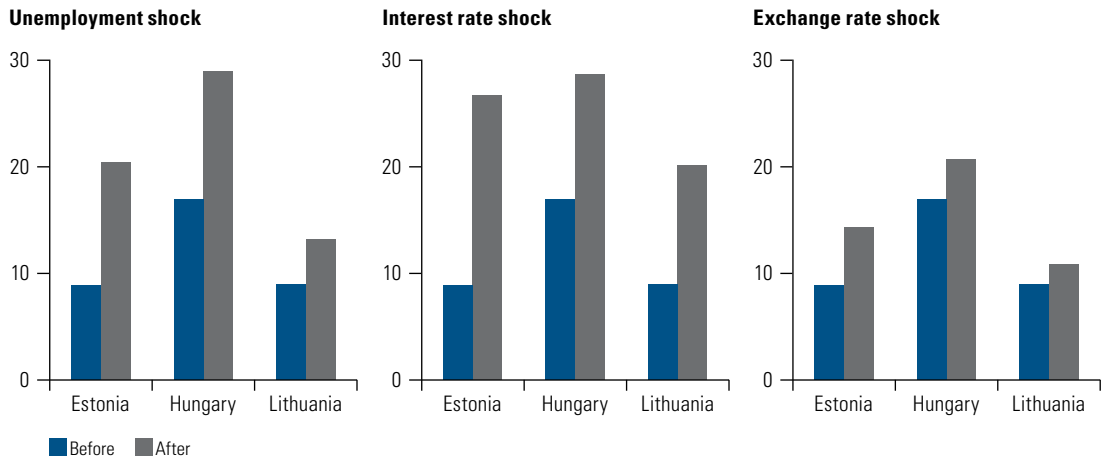
The results of the analysis of EU-SILC data suggest that current macroeconomic shocks can significantly expand the pool of households that are unable to service their debt. A severe 5 percentage point interest rate shock in Estonia, Lithuania, and Hungary, for example, can increase the share of vulnerable households or borrowers at risk by up to 20 percentage points, depending on the magnitude and severity of the shock (figure 2.10). A less restrictive threshold—that is, interest payment representing 30 percent of disposable income—yields smaller welfare effects from interest rate shocks compared to this first set of estimates, but they are still large. In particular, the share of borrowers at risk can expand by 7 to 12 percentage points in our sample of countries. A more modest

interest rate hike—3 percentage points—using a 30 percent threshold yields much lower but still nontrivial adverse consequences for household well-being. Borrowers at risk increase by 4 to 7 percentage points of all indebted households. The results are in appendix table 1, appendix table 2, and appendix table 3.

Unemployment shocks also expand the share of vulnerable households by several percentage points. The results hold, regardless of whether the unemployment shock follows a probability assignment or a random assignment, although a random assignment generally leads to higher welfare costs.

In the countries analyzed, interest rate shocks have the largest impact on household vulnerability. In part, this is due to the assumed magnitude of the shock. It is also driven by the

**FIGURE 2.10**  
**Stress Testing Household Indebtedness: Selected EU-SILC Data**  
 Vulnerable households or borrowers at risk as a share of indebted households



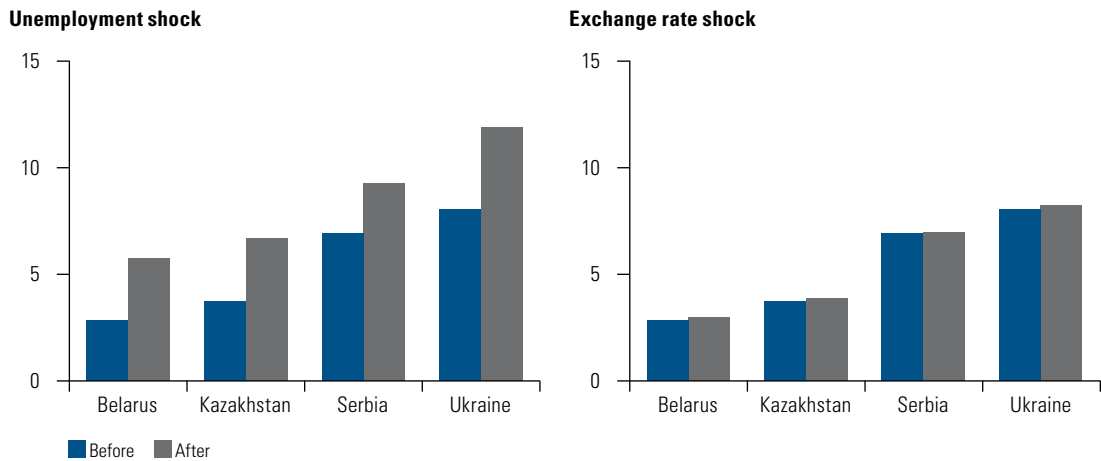
Sources: EU-SILC data and staff calculations.

Note: The simulated shocks are a 10 percentage point increase in unemployment rates, a 5 percentage point increase in interest rate shocks, and 25 percent depreciation in exchange rates. This refers to mortgage debt only. Vulnerable households are identified using a 20 percent interest payment threshold. See main text and Box 2.

degree of initial exposure. In particular, while only *some* indebted households will be hit by an unemployment shock, *all* indebted households with variable interest rates will see increasing debt burdens from an interest rate hike.

The analysis of HBS data assuming comparable unemployment and exchange rate shocks suggests a far more limited impact on household welfare.<sup>32</sup> In Belarus, Kazakhstan, Serbia, and Ukraine, exchange rate shocks increase,

**FIGURE 2.11**  
**Stress Testing Household Indebtedness: Selected HBS Data**  
 Vulnerable households or borrowers at risk as a share of indebted households



Sources: HBS data and staff calculations.

Note: The simulated shocks are a 10 percentage point increase in unemployment rates and a 25 percent depreciation in exchange rates. Vulnerable households are identified based on the “financial margin” measure. See main text and Box 2.

on average, the share of borrowers at risk by less than 1 percentage point. Unemployment rate shocks, on the other hand, were found to increase vulnerable households by up to 5 to 6 percentage points, depending on the magnitude of the shock and depending on whether the shocks are distributed randomly or according to a probability assignment.

These two sets of estimates—one for SILC and one for HBS—are not comparable. As previously discussed, one is based on mortgage debt information and the other is on total household debt. The two methodologies employed for identifying borrowers at risk—the use of a threshold level of interest payment burden in the case of SILC data

### BOX 3

#### EU-SILC and HBS Data on Household Debt: Comparisons with Other Sources

This chapter uses household debt data drawn from EU-SILC and HBS data for those ECA countries for which the relevant data are available. Some caution is warranted in the interpretation of these household survey data, as they are not primarily designed to collect information on household liabilities. The focus of the SILC survey is not access to financial services or financing constraints, but rather social exclusion and income poverty. Because these are survey data, the volume of household loans and mortgages may not necessarily correspond fully to aggregate data from the banking sector. Nonetheless, in countries where SILC data have been analyzed, the data have provided a useful statistical portrait of the distribution of household debt.<sup>33</sup> More important, the calculations used in this chapter are broadly consistent with other sources of macroeconomic and microeconomic information.

First, ***the trends in the share of households with negative financial margins are consistent with aggregate macroeconomic developments.*** In Belarus, for example, between 2001 and 2008, the economy grew rapidly while poverty rates sharply. According to the National Bank's Bulletin of Banking Statistics, household and aggregate NPL ratios also declined. In our calculations of financial margins, the share of households with negative margins was also small and fell steadily between 2001 and 2008 (appendix figure 2). In Kazakhstan, more recent household survey data obtained by the team indicates that the share of household with negative margins began rising as the crisis hit the country in late 2007.

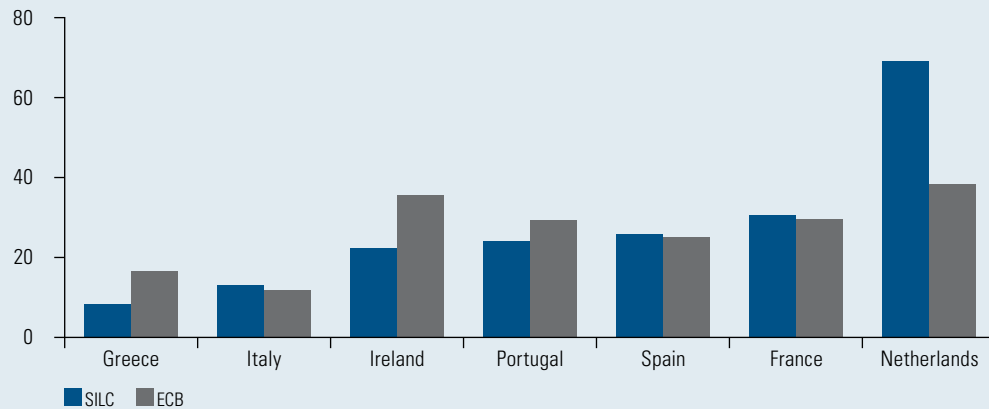
Second, ***the socio-economic and demographic patterns of household debt holding documented here are consistent with other existing analyses of household debt data.*** In Lithuania, for example, summary data from Bank of Lithuania indicate that the share of households with housing loans rises with income, consistent with EU-SILC patterns. More generally, the patterns of debt holding by income and by age in ECA countries for which data are available are fully consistent with those of Western Europe and other advanced economies.<sup>34</sup>

Third, for the Western European countries for which we have SILC data, ***the relative ranking of countries in the share of indebted households is consistent with those of other sources,*** such as the European Central Bank and OECD. Greece and Italy are at the lower end of the distribution while Netherlands is at the higher end.

## BOX 3 (continued)

## EU-SILC and HBS Data on Household Debt: Comparisons with Other Sources

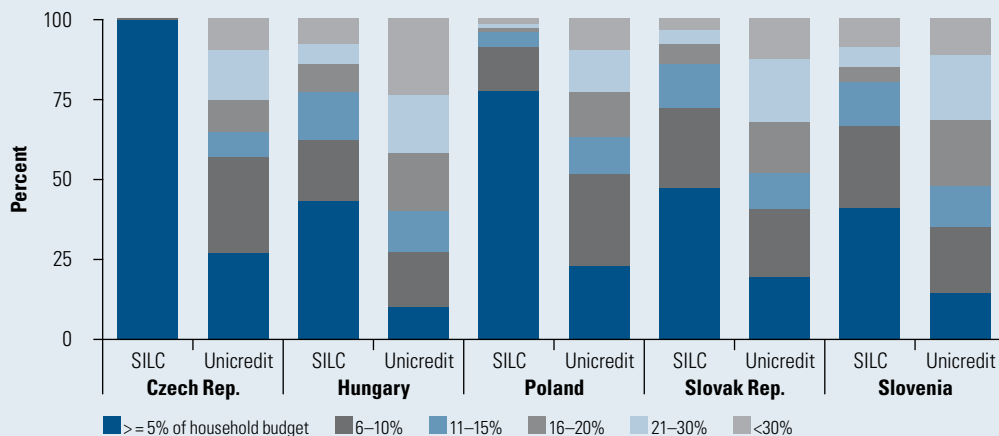
## The Share of Indebted Households: EU-SILC and ECB Data



Nonetheless, in some countries **there are significant differences in the estimated levels of household indebtedness** as can be seen in the figure. There are also differences in the estimated debt service burden, where EU-SILC data for ECA countries can be compared with those of other studies.

For example, the debt service numbers calculated by the Bank of Slovakia, particularly for the poorest households, are several factors higher than those reported in this chapter; it is not clear what is driving the differences. Meanwhile, the debt service burden estimated by UniCredit (figure 2.9) is much higher relative to estimates from the EU-SILC for the same group of countries. In part, it could reflect the deteriorating household financial conditions captured by UniCredit's more recent data collection efforts. They may also be explained by differences in survey design, though information on UniCredit's survey design is not readily available. The results of the stress tests in this chapter could then be possibly a lower bound.

## Debt Service: SILC and Unicredit Data



and the use of financial margins in the case of HBS data, which is a less restrictive measure of vulnerability—preclude a meaningful comparison of the two sets of outcomes. Nonetheless, some of the differences in the relative magnitudes may be driven in part by the differences in average debt burdens in these countries. In many of the countries with HBS data, the share of borrowers at risk is small, the average loan size is small, and the debt burdens are still sufficiently far from critical thresholds.

## E. Households and External Price Shocks

### Economic and Welfare Impact:

#### Main Transmission Channels

The economic and welfare impact of rising commodity prices depends on the intensity of use. One possible index is “energy intensity,” which is measured as energy consumption per unit of real GDP. Country averages over the past four decades indicate that energy intensity in advanced economies has fallen and both

emerging and developing countries are now substantially more energy-intensive in relative terms.<sup>35</sup> Similarly, food consumption is significantly higher in both emerging and developing countries compared to advanced economies. Their food consumption levels (in percent of household consumption) are almost three times those of advanced economies.

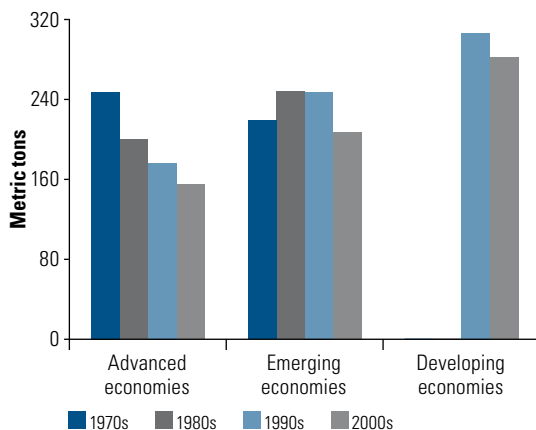
Where the price shock is transmitted through falling currencies, the economic consequence depends on whether a country is a net commodity importer. With respect to net food importing, some recent work based on an indicative threshold for vulnerability suggests that a few countries in ECA may be vulnerable.

Soaring domestic food and fuel prices—whether due to increasing global commodity food prices or falling currencies—affects the national headline inflation based on these commodities’ share in a country’s CPI. The relative importance of these commodities varies across countries, though some comparisons are hampered by the differences in the definition of what constitutes “food” (e.g., including or excluding beverage, tobacco, and others) and

**FIGURE 2.12**  
**Energy Intensity and Food Consumption, 1970s–2000s**

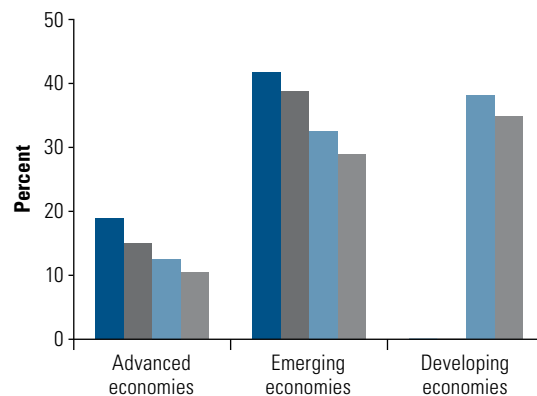
#### Energy intensity

In metric tons of oil equivalent per million of GDP in 2007 purchasing-power-parity dollars



#### Food consumption

In percent of household consumption



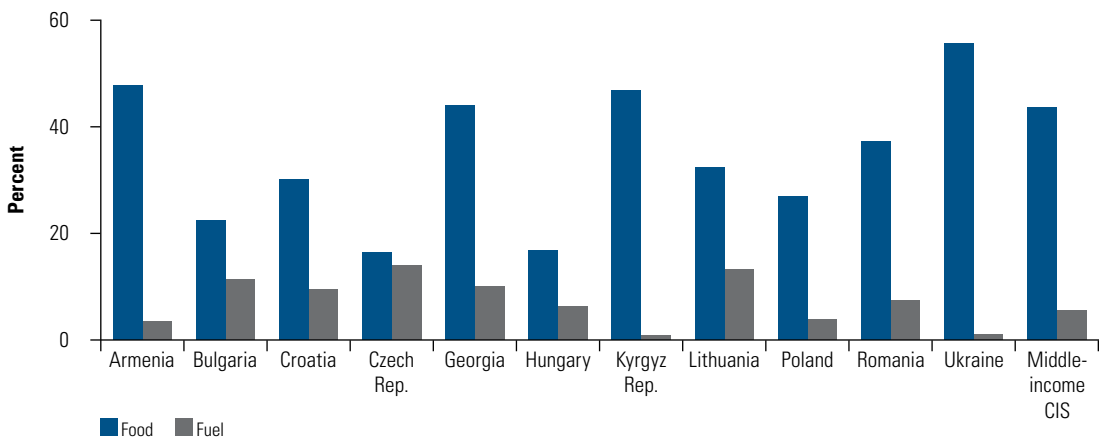
Source: IMF 2008a.

“fuel” (e.g., including gasoline, household utilities, and others).

Notwithstanding these measurement issues, these commodities typically account for a large share of the consumption basket, particularly in poorer countries. Food represents about 10 percent of the consumption basket in richer countries, while representing up to 80 percent

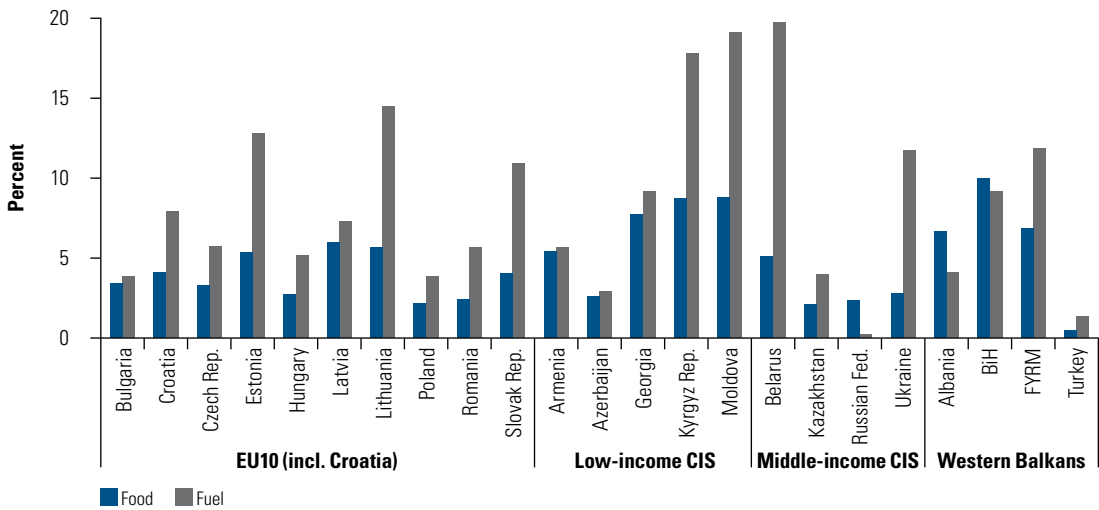
of the consumption basket in the world’s poorest countries. Fuel accounts for a much smaller share, although this does not capture the secondary dimensions, that is, the use of fuel as input into the production of other items in the consumption basket. Evidence in some countries suggests that taken all together, both the primary and secondary use of fuel could

**FIGURE 2.13**  
**Food and Fuel Share of the CPI Basket**



Sources: Kotaro Ishi and RES.

**FIGURE 2.14**  
**Food and Fuel Imports, 2006**  
In percent of GDP



Sources: Habermeier et al. 2009 and IMF 2008b.

account for about double its typical share of the consumption basket.<sup>36</sup>

These aggregate economic effects hide some of the likely distributional consequences of commodity price shocks within countries. First, within a given country, the food share in the CPI consumption basket may understate the relative weight of food consumption among poorer households. Second, the poverty and social consequences may vary depending on the geographic location of the household and depending on whether households are net food buyers or net food sellers. It may also matter whether they rely exclusively on food purchases for food consumption and, if they do, whether they have access to cheaper substitutes. The rural poor are thought to be more self-sufficient, able to produce food for own-consumption, compared to the urban poor. With respect to energy consumption, the poor are also thought to have access to less expensive sources of energy (though they are probably dirtier sources and pose both environmental and health risks).

The indirect effects can also be large. Fuel price increases can have a direct poverty effect, through the household consumption of energy. The indirect effects on other products consumed by the households—using fuel as an intermediate input—can also be substantial. Studies of non-ECA countries suggest that fuel price increases can have net effects that are progressive (and thus have much larger welfare consequences for urban and richer households compared to poorer, rural households) mainly through their indirect effects.<sup>37</sup> The indirect effects through income can also be substantial. For households with members who are wage-employed in the agriculture sector, the increase in earnings may partially offset the welfare consequences of rising food prices.

Policy responses, in turn, may mute the effects of global commodity price shocks on domestic prices, though they may incur large fiscal costs or redistribute income regressively.

Governments may prevent a less-than-full pass through of higher prices to consumers, through lower fuel taxes or higher subsidies. Some countries use trade policy to address external price shocks. In 2008, for example, many countries enacted more restrictive food trade policy—such as through quantitative export restrictions and taxes on selected commodities—with the stated objective of protecting food security and curbing price increases. Though this may dampen overall price increases, the policy redistributes income away from net food sellers to net food buyers. Where net food sellers are mostly poorer, agricultural households, the policy impact can be regressive.

### Regional Overview

The rise in food and fuel prices through 2008 has had adverse economic effects on countries in the region. For oil-importing countries, increases in energy prices led to widening trade imbalances and escalating inflationary pressures.<sup>38</sup> Higher energy prices also led to higher unit costs, which are perceived to undermine competitiveness unless accompanied by productivity enhancements. The poverty impact of further increases in food and fuel prices depends, as previously stated, on their relative importance in the consumption basket of households. Such shares of total consumption are observed to vary across countries and geographic locations and by household income, among other dimensions.

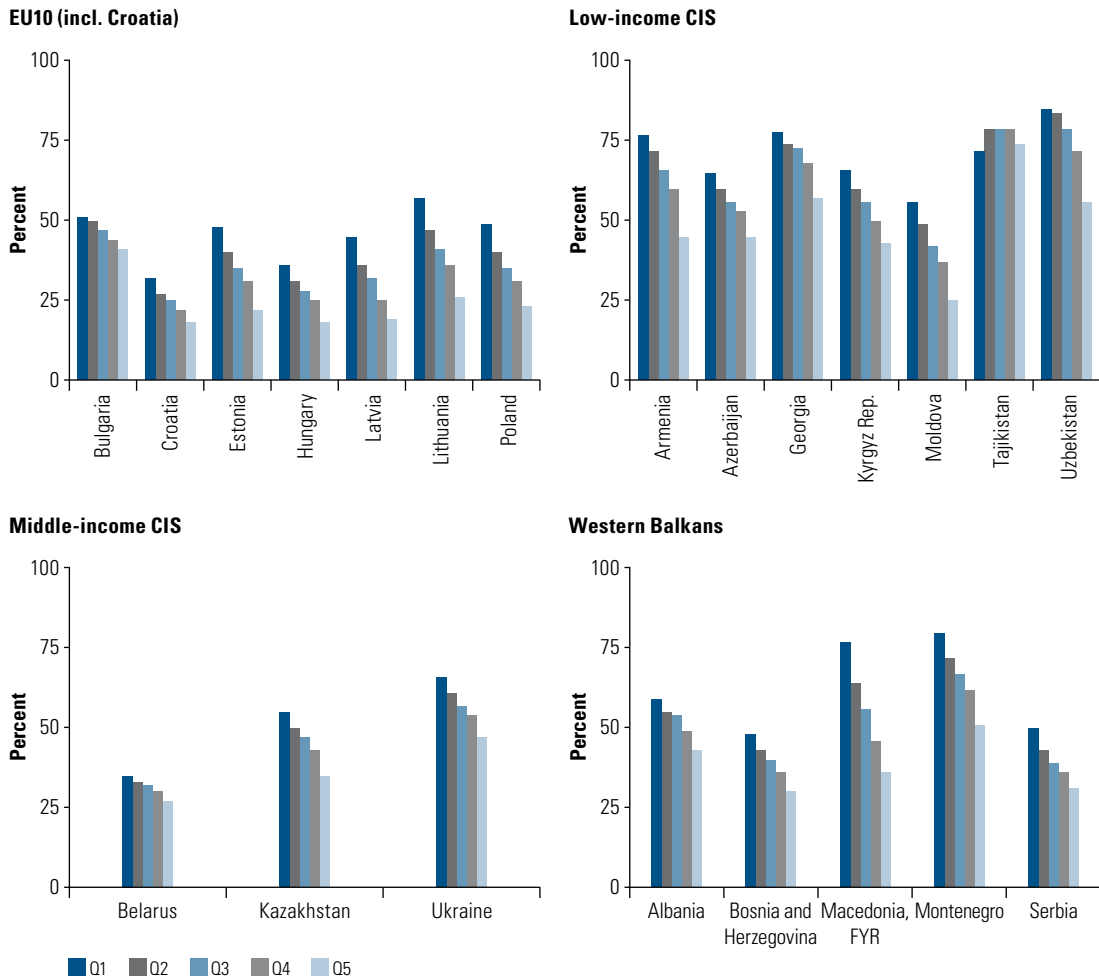
This section draws from the ECA Household Data Archives to assess household welfare consequences in case of a new round of price shocks. The figures below, for example, report the share of food and energy in total consumption by household quintiles in selected ECA countries (figure 2.15 and figure 2.16). There are a few notable observations:

First, as expected, richer countries have lower food shares. For example, food represents about a third of total consumption among the new EU member countries, on average. Among

FIGURE 2.15

**Food Shares of Consumption**

In percent of total consumption, by quintiles of household consumption



Source: Staff calculations.

low-income CIS countries, food accounts for close to two-thirds of total consumption. In fact, across sub-regional groups, the average share of food consumption tracks the level of development fairly well. There are of course some exceptions. Ukraine, for example, which ranks as a middle-income country, has food shares that are more or less comparable with some of the low-income CIS countries.<sup>39</sup>

Second, within countries, there are substantial variations across geographic space and by household income (appendix tables 4 and

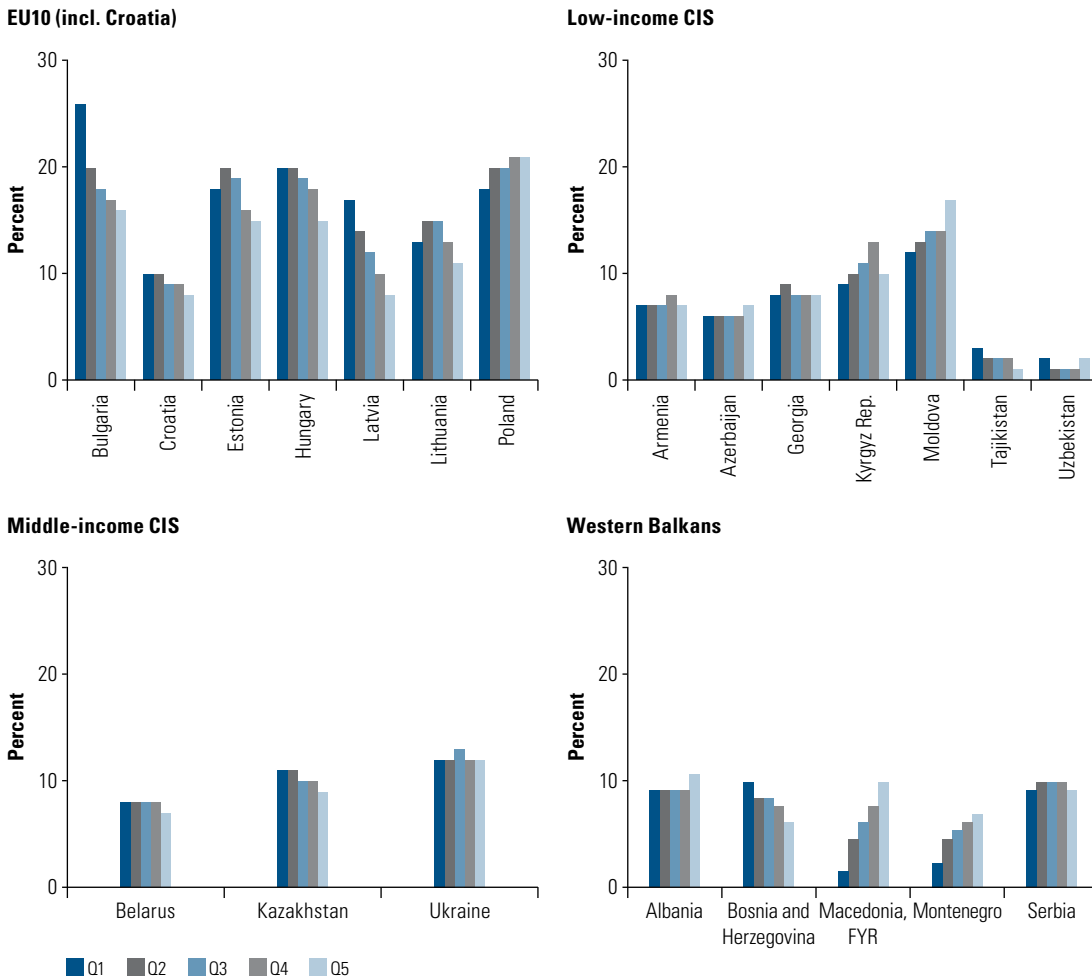
5). In Moldova, for example, the food share of rural household consumption is close to 50 percent; among urban households, it is about a third. In Poland, food accounts for about 50 percent of consumption among households in the lowest quintile; among households in the lowest quintile, the food share of consumption is a little more than a fifth.

Third, the energy shares of consumption do not reflect clear patterns along country, income, or geographic lines. In part, this may be due to the use of an imperfect proxy for energy share

FIGURE 2.16

**Utility/Energy Shares of Consumption**

In percent of total consumption, by quintiles of household consumption



Source: Staff calculations.

of consumption. If the comparable consumption aggregates from the ECA Household Data Archives are used, the consumption component that comes closest to energy is the “utility” share of household consumption, consisting of expenditures on electricity, heat, gas, water, and sewerage. In addition, the state or quality of infrastructure matters as well. Where there is insufficient utility infrastructure, many households may not be connected to central sources of energy. In fact, in many countries, the utility shares of consumption among urban

households are somewhat higher compared to those of rural households. Furthermore, the expenditure shares could reflect non-payment or payment arrears. They could also possibly reflect access to less expensive sources of fuel and energy.

Aggregate energy shares of consumption also likely mask important variations across energy sources. Connection rates, intensity of consumption, and payment behavior, among others, are likely to vary across various energy sources, such as central heat, electricity, natural gas, and

other sources of fuel. In Moldova, for example, households connected to central heating units are mostly urban households. In contrast, there is almost universal electricity connection.<sup>40</sup>

Some patterns in the utility shares of consumption may also reflect country-specific policies on utility tariffs, which can be lower than or equal to the relevant cost-recovery levels depending on whether utility reform programs have been completed. In fact, in countries known for energy tariffs that have not been completely adjusted to full cost-recovery, the utility shares of consumption are relatively low. The utility shares of consumption in Belarus and Ukraine, for example, are about half or even a third of utility shares among some of the new EU member states.

An analysis conducted by the World Bank in the middle of the crisis suggested that the welfare impacts of last year's food and fuel price increases were possibly very large. The study found that for some ECA countries, a 5 percent relative increase in food prices could worsen poverty rates by up to 3 percentage points.<sup>41</sup>

One simple numerical exercise for assessing the welfare impact of illustrative food (or energy price) increases would be to calculate the fall in real income associated with these increases. This follows previous studies of fuel and food price increases, including selected ECA countries.<sup>42</sup> The calculations are made using two plausible scenarios. One scenario assumes no substitution while another scenario allows for a limited degree of substitution. The distribution of such welfare effects across all households can then be analyzed.

Previous studies thus essentially calculate two indexes of price change.<sup>43</sup> One index, the Laspeyres price index, assumes that consumption quantities in the baseline period are fixed. It does not allow for substitution toward cheaper alternatives. The other price index, the geometric price index, allows for some degree of substitution. An alternative way to interpret these calculations would be as compensations

needed to ensure that the households are as well off as they were prior to the price change or that household utility is kept constant. In the case of the Laspeyres index, this is consistent with the items and quantities of consumption remaining unchanged, with underlying preferences characterized by a Leontief utility function (i.e., no substitution). In the case of the geometric index of relative price change, it reflects Cobb-Douglas preferences and allows for substitution away from relatively more expensive goods but keeps household utility constant.

The welfare effects are of course proportional to the budget share of food consumption, by construction. The results are in the appendix (appendix tables 6 and 7). Across all countries in the region, the poor bear a greater burden of the welfare impact of a food price increase. The differences along geographic lines are also clear: rural households are hit harder compared to urban households. With respect to a 10 percent fuel price increase, the distributional consequences are less clear. In many countries, urban households and the more affluent households bear a greater burden of the welfare impact; this, however, is not true everywhere. Where there is some possibility of substitution, the welfare impact is smaller; this is true for both food and fuel price increases.

### Country Illustrations

Within countries, there is likely to be substantial heterogeneity in the welfare impact of a price shock. The regional simulations above ignore a number of household specificities that determine the net poverty impact of food or energy price increases. As previously stated, the welfare impact of rising food price depends, in part, on whether households are net buyers or net sellers of food. The unfavorable consequences of rising prices can also be offset by rising real transfers or real wage increases. This section illustrates some of these dimensions drawing from countries where the food

or fuel price increases that have taken place are among the sharpest in the region.

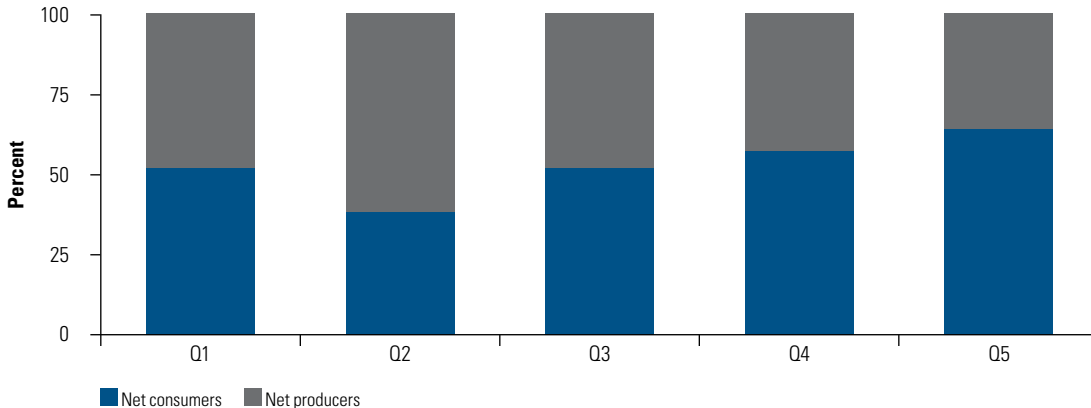
In the Kyrgyz Republic, for example, the food price increases are estimated to have had substantial welfare effects on net consumers.<sup>44</sup> Although the share of food in total consumption falls with income (and is thus highest among the poor, as we saw from the regional overview in the previous section), the share of net food consumers generally rises with

income. However, net consumers still represent the majority of households in the poorest quintile. More generally, for the country as a whole, 53 percent of the population lives in households characterized as net food consumers. Of these net consumers, 35 percent are poor. As a result, about 19 percent of the population are net food consumers as well as living in poverty, and were estimated to have been hurt the most by the food price increases in 2007.

FIGURE 2.17

### Kyrgyz Republic: Net Food Consumers and Net Food Producers

In percent of households

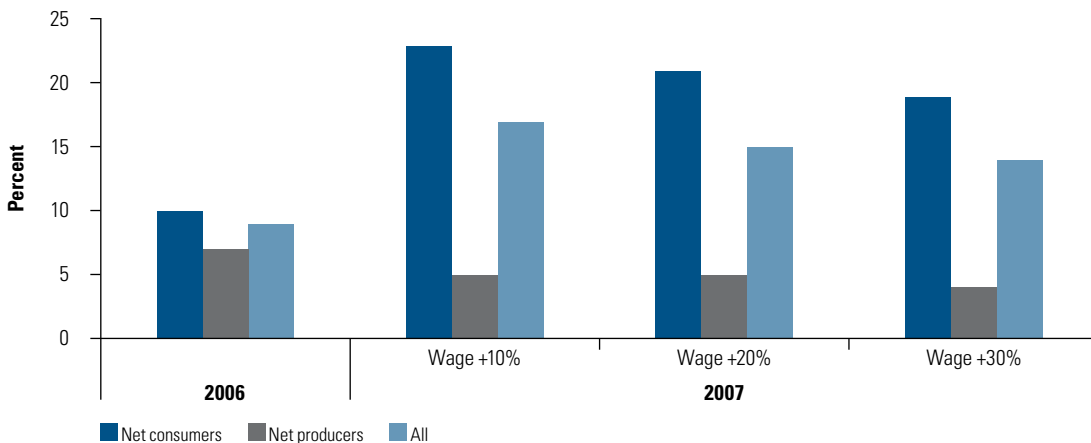


Source: Staff calculations.

FIGURE 2.18

### Kyrgyz Republic: Estimated Poverty Impact of the Food Crisis

In percent of the populations



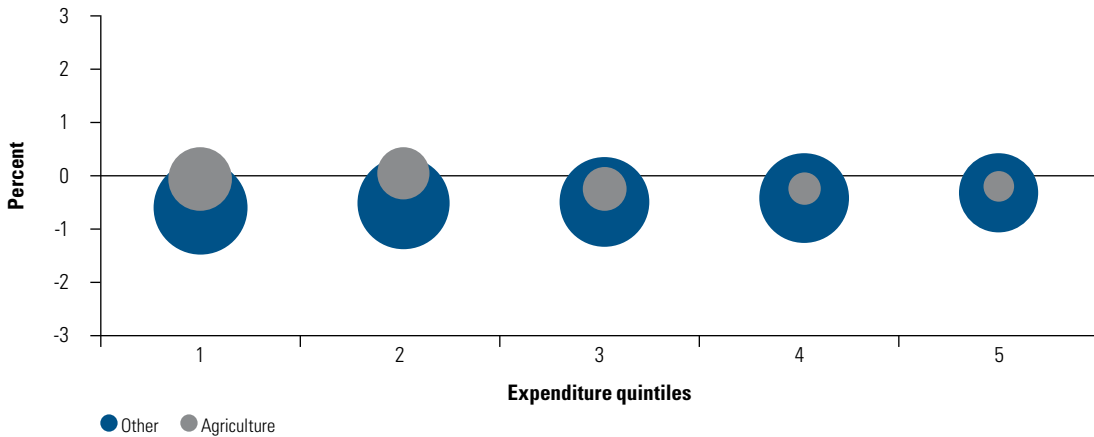
Source: Staff calculations.

At the same time, the welfare consequences of rising food prices were partially offset by rising wages in the Kyrgyz Republic. Not surprisingly, the estimated net impact on absolute poverty (with the poverty headcount at 40 percent in 2006) was inconclusive. Extreme poverty, however, was estimated to increase by up to 8 percentage points (from 9 percent in 2006), depending on the degree of wage increase. This percentage point increase is

equivalent to about 400,000 people falling into extreme poverty because of rising food prices. Urban poverty was also estimated to increase. This is not surprising considering that about 30 percent of all net consumers live in the capital.

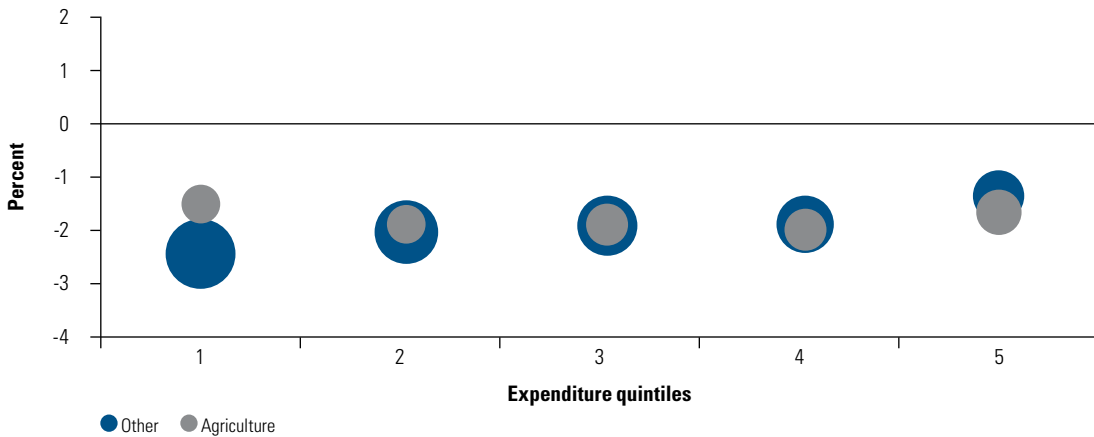
In Tajikistan and Albania, the net poverty impact is mediated by access to agriculture inputs, assets, and livelihood strategies. In a recent study of 11 countries, including

**FIGURE 2.19**  
**Albania: Welfare Impact by Livelihood**  
 Bubbles represent the size of the population affected



Source: Zezza et al. 2008.

**FIGURE 2.20**  
**Tajikistan: Welfare Impact by Livelihood**  
 Bubbles represent the size of the population affected



Source: Zezza et al. 2008.

Tajikistan and Albania, the authors found that the poorest households were likely to be hurt the most by food price shocks (figure 2.19 and figure 2.20).<sup>45</sup> They did find some evidence that some of the poor households manage to benefit from rising prices of basic commodities, depending on whether these households have sufficient access to agriculture inputs, or assets such as land.

Despite the moderating effects of livelihood and assets, the poor were nonetheless found to be the most likely to have been hit hardest by the price shock. This was true for all countries, irrespective of location within each country. This is not completely surprising, as the poorest households also have the weakest access to agriculture inputs and assets. They also tend to be relatively less educated, with relatively lower productivity and limited capability to take advantage of profitable activities in agriculture.

## F. Households and Income Shocks

### Data and Methodology

This section follows the methodology underpinning recent simulations of the poverty implications of economic growth projections.<sup>46</sup> In brief, this section uses country-level projections for GDP and private consumption through 2010. Following existing exercises, we first assume that changes in GDP or income will not be passed on fully to private consumption. The impact will depend on the relationship between private consumption growth and GDP growth in each country. Next, the projected growth in private consumption is then used to predict per capita household consumption in each country, using the household survey data from the latest available year. Finally, the predicted household consumption is compared to the relevant poverty line.

The exercise yields two sets of results: (i) poverty projections using the pre-crisis GDP

and private consumption projections and (ii) poverty projections calculated from more recent GDP and private consumption projections (released in January 2009 and April 2009). The difference between (i) and (ii) can be considered a measure of the poverty impact of the global crisis.

This section uses household survey data and macroeconomic growth projections. Household survey data are drawn from the ECA Household Data Archives. We have survey data for 25 of the 29 countries in the ECA region, representing 95 percent of the region's total population. Economic growth projections are drawn from the IMF's WEO database.<sup>47</sup> Growth projections at the country level are available for the pre-crisis period (April 2008) and for April 2009. The January 2009 WEO growth projections are available at the country level for some ECA countries (such as Russia); however, for most ECA countries, only sub-regional averages were made publicly available. These sub-regional averages were used to impute growth projections at the country level. Finally, we use historical data (covering the three years preceding the crisis) for each country to estimate the ratio between private consumption growth and GDP growth. On average, it is equal to one but there is some slight variation from country to country. (This assumption is discussed more fully below.) The underlying country data are reported in appendix table 8.

This numerical exercise uses a poverty line of \$PPP 2.50 per person per day and a poverty/vulnerability line of \$PPP 5.00 per person per day. This follows the most recent round of the International Comparison Program on purchasing power parities (PPPs). Although the World Bank recommends a new international poverty line of \$PPP 1.25 per person, the \$PPP 2.50 and \$PPP 5.00 poverty/vulnerability lines have been found to be more relevant for ECA, to take into account the higher cost of living associated with the region's colder climate and the conditions in many middle-income countries

throughout the region.<sup>48</sup> In addition, this follows the 2005 regional study that adjusted the region's international poverty line(s) to reflect similar considerations.<sup>49</sup>

### **Important Caveats<sup>50</sup>**

These regional simulations are based on several strong assumptions, which are explained further below. Although these assumptions are defensible, there is a large, inconclusive literature on, among other things, whether these assumptions hold on average, whether they hold linearly or non-linearly (depending on, for example, the level financial sector development), and whether these assumptions hold depending on whether it is a “normal” period or a crisis period, and, during a crisis period, whether it is a financial crisis or a different kind of economic crisis.

These simulations ignore the distributional consequences of the crisis. The exercise assumes that the growth in per capita household consumption is distribution neutral; that is, households in every part of the income distribution are all affected uniformly by the average growth or decline in consumption. On one hand, previous research suggests that there has been no change in inequality, on average, during economic contractions, thus lending some support to this assumption. On the other hand, there may be disproportional effects on the poor depending on the relative exposure of households to the economic shock. In fact, despite the zero change in inequality on average, substantial variations exist from country to country.

A review of ECA's experience with previous crises suggests that, in fact, certain types of households tend to be more vulnerable during crisis periods.<sup>51</sup> For example, an analysis of vulnerability in Moldova reveals that the consumption of larger households experienced larger drops after the Russian financial crisis; moreover, controlling for household size (among other individual and household characteristics), the number of children in the household was associated with larger consumption

losses. Similar results were found in an analysis of Russian households over this same period: The more children are present in a household, the greater this household's poverty risk and the lower its ability to smooth consumption. In addition, households with higher initial incomes and more assets were found to be better able to protect their welfare during and after a macroeconomic shock, in large part due to their broader menu options of coping with the shock, such as by drawing from their savings or asset liquidation.

The exercise does not assume a unitary pass-through from GDP growth to private consumption growth as the economy contracts.<sup>52</sup> These simulations are based on the estimated ratio of private consumption growth to GDP growth using non-crisis data at the country level, which may be higher or lower than one, depending on actual country outcomes. However, there is no reason to think that this recent relationship will continue to hold over the crisis period.

A large literature has emerged on the relationship between consumption growth and GDP growth. In particular, the literature has explored what is typically referred to as “excess private consumption volatility” (relative to GDP or income growth volatility) and its possible drivers, including financial intermediation.<sup>53</sup> The literature postulates that financial deepening curbs consumption volatility, as financial markets promote risk sharing and allow households to smooth consumption. Some empirical studies have provided some supporting evidence, but they have also found this relationship to be nonlinear, requiring some sufficient level of financial deepening before yielding any measurable relationship between consumption smoothing and financial intermediation.<sup>54</sup> In addition, some recent studies of the fall in consumption during financial crises suggest that financial intermediation may exacerbate the decline in consumption, as consumption becomes more sensitive to the availability of bank credit.<sup>55</sup>

The regional simulations based on GDP shocks abstract from the potential household income shocks arising from reduced remittances due to the impact of the crisis in migrant host countries. As highlighted in the previous chapter, many countries in ECA are heavily dependent upon remittances as a source of foreign finance at the macro level. At the household level, such inflows can be important sources of funds for consumption expenditures, health and education, and investment. For example, in Tajikistan in 2007 around 60 percent of the yearly consumption of the median household was financed by remittances (World Bank 2009c). As outlined in the country studies detailed below, it is thus important to tailor the specific income shocks to country characteristics.

These simulations also ignore the many non-monetary and nonincome dimensions of poverty likely resulting from the crisis. As has been seen in previous crises, the social consequences of crises can be significant, as households cut back on their health care spending, pull children out of school, and curb many other essential expenditures.<sup>56</sup> Such social consequences may have immediate consequences, as well as longer-term implications for human

capital formation, the intergenerational transmission of poverty, and the sustainability of long-term economic growth.

The results presented below for the region as a whole should thus be interpreted with caution. They should be treated as illustrative, taking into account many of the limitations of the calculations behind them. In some cases, the poverty impact may be understated, such as in the event that consumption substantially lags behind GDP growth in 2010. In other cases, the poverty impact may be overstated, where there are opportunities for consumption-smoothing and offsetting income shocks.

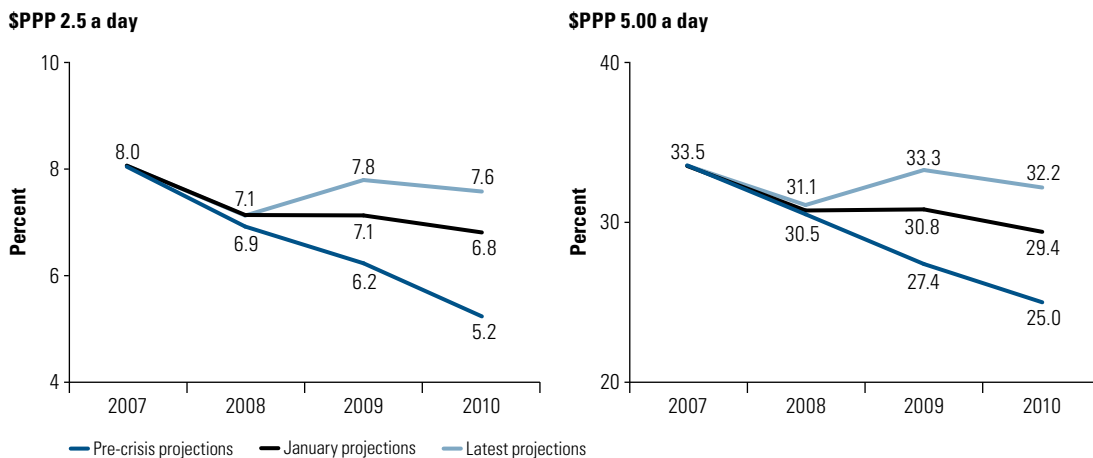
### Regional Overview: Main Results

The results suggest that poverty will rise. By 2010, the poverty headcount (using the \$PPP 2.5 poverty line) for the region as a whole is expected to be about 2.4 percentage points higher than it would have been, relative to baseline projections of income or GDP growth (figure 2.21). The share of the poor or vulnerable population also rises by 7.2 percentage points. In 2009, these shares rise by 1.6 and 5.9 percentage points, respectively. In absolute

FIGURE 2.21

### The Impact of the Crisis on Poverty and Vulnerability in the ECA Region

Poverty and vulnerability projections 2007–2010, in percent of the population



Source: Staff calculations.

terms, an additional 11 million people will fall into poverty by 2010. An additional 23 million people will find themselves vulnerable because of the crisis.<sup>57</sup> In 2009, 7 million more people are in poverty and 28 million more are either poor or vulnerable.

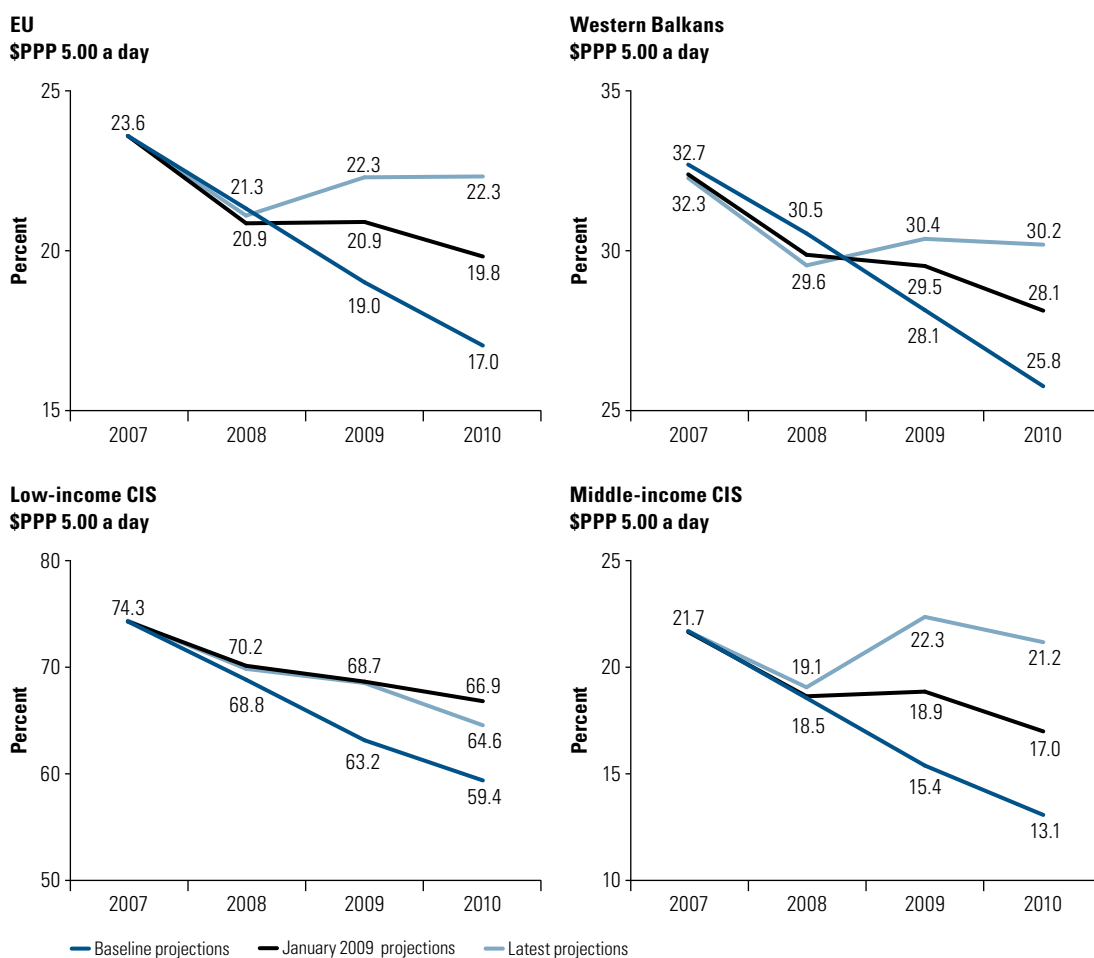
Turkey and the middle-income CIS countries are driving the percentage point increases in poverty and vulnerability, followed closely by the EU10 plus Croatia. Relative to baseline projections, the share of the poor and vulnerable population rises by over 8 percentage points, on average, in these countries. The relative

differences across sub-regions reflect the significant revisions to GDP growth projections (figure 2.22). Many of the middle-income CIS countries, for example, have experienced substantial downward revisions in their economic growth prospects between April 2008 and April 2009, with growth prospects switching from expansion to recession. Russia's 2009 growth projections, for example, fell from +6.8 to -6.5. Ukraine's growth prospects in 2009 declined from +4.9 to -7.3. In contrast, a number of low-income CIS countries still expect their economies to expand by modest amounts in 2009.

FIGURE 2.22

### The Impact of the Crisis on Poverty and Vulnerability in the ECA Region: Sub-Regional Results

Poverty and vulnerability projections 2007–10, in percent of the population



Source: Staff calculations.

These include Azerbaijan (+1.7), Georgia (+1.0), Tajikistan (+1.4), and Uzbekistan (+4.9), though all their GDP growth numbers have been revised downward as well. At the lowest end of these adjustments is Uzbekistan, with 2009 GDP growth numbers essentially unchanged from the pre-crisis period to April 2009.

### Some Sensitivity Tests

The core simulations are based on the historical relationship between GDP growth and private consumption. We re-ran the simulations above to allow for a unitary pass-through from GDP growth to private consumption (and thus to household consumption). The key results are essentially unchanged—both for the region as a whole and for the sub-regions. Selected figures are presented in appendix figure 1.

The simulations were also re-calculated using the elasticity of poverty to growth in consumption per capita calculated for ECA countries over the period 1998–2003.<sup>58</sup> Because the period refers to the economic recovery period following the Russian crisis, the poverty elasticity estimates may not be appropriate. Nonetheless, the results are essentially unchanged.

### Country Illustrations

The regional overview masks the likely heterogeneity of impact within countries. This regional analysis should not be a substitute for country-specific poverty analysis. As previously discussed, the results of the preceding numerical exercises ignore many country specificities and the likely concentration of vulnerable households, depending on the nature of the economic downturn. In addition, while some economies are still projected to grow by modest amounts, the welfare risks are not shared uniformly across all households.

Tajikistan is a case in point.<sup>59</sup> While the country as a whole is still projected to grow by a very modest amount through 2009, many households are vulnerable to falling demand

for foreign labor in Russia and Kazakhstan. As mentioned in Chapter 1, the growth of remittance outflows from Russia to CIS countries contracted in Q4 2008, tracking the declines in Russian construction activity. The latest figures indicate that the dollar value of recorded remittances to Tajikistan (via money transfers) fell 36 percent year-on-year in the first five months of 2009, with similar contractions seen in the heavily remittance-dependent economies of Georgia and Moldova. In Tajikistan the results of simulating the impact of up to a 50 percent fall in remittances suggest that the poverty headcount can rise by up to 7 percentage points, assuming households do not adjust (e.g., returning migrants do not find jobs in local labor markets), or by 3.5 percentage points, allowing for some adjustment on the part of households.

In Armenia,<sup>60</sup> the poverty headcount is estimated to increase by over 5 percentage points between 2008 and 2010, primarily driven by shocks transmitted through labor market channels. Many will find themselves out of work or earning substantially less than in previous years, particularly in sectors such as the construction and mining sectors. In addition, the impact on remittance-dependent households could be large. The results of recent analysis suggest that the poverty headcount may rise from 18 percent to 27 percent in households that receive remittances from sources other than immediate family members (a peculiar feature of household well-being in Armenia is the large share of remittances from non-immediate family members).

In Bulgaria,<sup>61</sup> the economic slowdown and the fall in remittances is estimated to lead to a 1.2 percentage point increase in poverty. Although more modest than the expected impact in other countries, the labor market is again an important transmission channel, particularly among workers in the construction sector. Declining remittances underpin about a quarter of the overall poverty increase, and a much larger share of the rise in extreme poverty.

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In Russia,<sup>62</sup> the results of recent simulations suggest that the poverty headcount in rural areas will likely rise by over 5 percentage points. The simulations suggest that in addition to rural households, households with children and pensioners are at the highest risk of falling into poverty. The growth in unemployment levels will also drive increases in poverty.

