

**INNOCENTI WORKING PAPER**

**SIMULATING THE IMPACT OF THE GLOBAL  
ECONOMIC CRISIS AND POLICY  
RESPONSES ON CHILDREN IN WEST AND  
CENTRAL AFRICA**

**John Cockburn, Ismaël Fofana  
and Luca Tiberti**

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## **A UNICEF Research Project on the Impact of the Global Economic Crisis on Children in Western and Central Africa**

This study is the result of research promoted by the Regional Office of UNICEF for West and Central Africa, in collaboration with the UNICEF Innocenti Research Centre and the UNICEF Division of Policy and Practice and aimed at the assessment of the potential effects of the global economic crisis on children in Burkina Faso, Cameroon and Ghana and the proposal of concrete policy responses to the policy makers.

One regional and three country teams of researchers were formed. The regional team, coordinated by the African office of the Poverty and Economic Policy (PEP) research network, based at the Consortium pour la recherche économique et sociale (CRES, Dakar), was composed of researchers from Africa (GREAT, Mali; University of Yaoundé, Cameroon), from the Université Laval in Canada and the UNICEF Innocenti Research Centre. The regional team developed the basic methodology, provided training and closely supervised the three country studies, and prepared a regional report and policy brief synthesizing the results for the three countries. The country teams led the country analyses, interacted with the local policy committees and wrote their respective country reports.

This research was initiated in June 2009: at the end of that month the regional team provided the methodology and held an intensive training workshop in Accra for the local teams. A visit to each country followed in August. In the following months the regional and country teams carried out the analyses and presented the preliminary results of the study during November and December at the WCARO Social Policy Network Meeting in Dakar, the ODI-UNICEF conference on “The global economic crisis – Including children in the policy response” in London, and the AERC conference on “Rethinking African Economic Policy in Light of the Global Economic and Financial Crisis” in Nairobi. In the following two months the regional and country studies were finalized by including also some additional policy responses ad hoc to each country.

The main outcomes of this project are:

Cockburn, J., I. Fofana and L. Tiberti (2010), “Simulating the Impact of the Global Economic Crisis and Policy Responses on Children in West and Central Africa”, *Innocenti Working Paper* No. 2010-01, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence.

Bibi, S., J. Cockburn, I. Fofana and L. Tiberti (2010), “Impacts of the Global Crisis and Policy Responses on Child Well-Being: A Macro-Micro Simulation Framework”, *Innocenti Working Paper* No. 2010-06, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence.

Balma, L., J. Cockburn, I. Fofana, S. Kaboré and L. Tiberti (2010), “Simulation des effets de la crise économique et des politiques de réponse sur les enfants en Afrique de l’Ouest et du Centre: Le cas du Burkina Faso”, *Innocenti Working Paper* No. 2010-03, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence.

Bibi, S., J. Cockburn, C.A. Emini, I. Fofana, P. Ningaye and L. Tiberti (2010) “Incidences de la crise économique mondiale de 2008/09 et des options de politiques de réponse sur la pauvreté des enfants au Cameroun”, *Innocenti Working Paper* No. 2010-04, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence.

Antwi-Asare, T., J. Cockburn, E. F. A. Cooke, I. Fofana, L. Tiberti, D. K. Twerefou (2010) “Simulating the impact of the global economic crisis and policy responses on children in Ghana”, *Innocenti Working Paper* No. 2010-05, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence.

Bibi, S., J. Cockburn, M. Coulibaly, and L. Tiberti (2009) “The Impact of the Increase in Food Prices on Child Poverty and the Policy Response in Mali” *Innocenti Working Paper* No. 2009-02, UNICEF Regional Office for West and Central Africa, Dakar, and UNICEF Innocenti Research Centre, Florence

# Simulating the Impact of the Global Economic Crisis and Policy Responses on Children in West and Central Africa

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**Summary:** The current global financial and economic crisis, which exacerbates the impacts of the energy and food crises that immediately preceded it, has spread to the developing countries endangering recent gains in terms of economic growth and poverty reduction. The effects of the crisis are likely to vary substantially between countries and between individuals within the same country. Children are among the most vulnerable population, particularly in a period of crisis. Especially in least developed countries, where social safety nets programmes are missing or performing poorly and public fiscal space is extremely limited, households with few economic opportunities are at a higher risk of falling into (monetary) poverty, suffering from hunger, removing children from school and into work, and losing access to health services. This study simulates the impacts of the global economic crisis and alternative policy responses on different dimensions of child welfare in Western and Central Africa (WCA) over the period 2009-2011. It is based on country studies for Burkina Faso, Cameroon, and Ghana, which broadly represent the diversity of economic conditions in WCA countries. In order to capture the complex macro-economic effects of the crisis and the various policy responses – on trade, investment, remittances, aid flows, goods and factor markets – and to then trace their consequences in terms of child welfare – monetary poverty, hunger (caloric poverty), school participation, child labour, and access to health services – a combination of macro- and micro-analysis was adopted.

The simulations suggest that the strongest effects are registered in terms of monetary poverty and hunger, although large differences between countries emerge. More moderate impacts are predicted in terms of school participation, child labour, and access to health care, although these are still significant and require urgent policy responses. Specifically, Ghana is the country where children are predicted to suffer the most in terms of monetary poverty and hunger, while Burkina Faso is where the largest deteriorations in schooling, child labour and access to health services are simulated.

Among the policy responses examined to counteract the negative effects of the crisis on child well-being, a targeted cash transfer to predicted poor children is by far the most effective programme. A comparison between a universal and targeted approach is also presented.

**Keywords:** global economic crisis, child poverty, hunger, education, child labour, health, West and Central Africa, Burkina Faso, Cameroon, Ghana, social protection

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# 1. INTRODUCTION

The global financial and economic crisis has complex and profound impacts on countries around the world including the countries of West and Central Africa. The October 2009 update of the International Monetary Fund (IMF) forecasted 1.1 per cent negative growth in the global economy in 2009.

While the global economy is expected to gradually recover in 2010 with numerous monetary and fiscal stimulus programmes in developed countries, analysts generally agree that growth will remain weak (IMF 2009a). The magnitude and persistence of the financial and economic crisis will depend, among other things, on the confidence of actors in the international financial system and the efficacy of economic revival plans that most industrialized and emerging countries have begun to put into action.

While developing countries' relatively weak integration into the global financial system has sheltered them from the effects of financial contagion, the ensuing economic crisis has affected them directly through international trade, investment, foreign aid, remittances and other channels.

The macroeconomic impacts and the distributive effects of the global crisis in developing countries will largely depend on the magnitude and length of the recession in developed countries, the initial conditions in each country and their macroeconomic policies to respond to the crisis. However, designing practical and appropriate policies in developing countries to stimulate growth and protect vulnerable populations groups, in particular children, from the harmful effects of the crisis requires an understanding of the likely magnitude and nature of these effects.

The global financial and economic crisis threatens growth and poverty reduction achievements that have recently been accomplished in many developing countries. African growth will decline by two thirds according to IMF forecasts – from 6.2 and 5.2 per cent, respectively, in 2007 and 2008 to 1.7 per cent in 2009 - with sub-Saharan Africa facing a more extreme decline – at 1.3 per cent in 2009 compared to 7.0 to 5.5 per cent, respectively, in 2007 and 2008 (IMF 2009b).

As we would expect, poverty tends to increase in a period of crisis with the magnitude depending on the depth of the crisis, but also the change in inequality (World Bank, 2008), which is supposed to rise, as the poor often suffer disproportionately from crisis.

It is difficult to evaluate the welfare impacts of a crisis on individual well-being in terms of monetary and non-monetary aspects. At the beginning of the crisis, households adapt mostly by increasing their labour supply and consuming past savings. However, in a longer period of crisis with few economic opportunities, households are eventually forced to reduce their consumption and possibly withdraw children from school and go without health consultations in case of illness.<sup>1</sup>

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<sup>1</sup> These results have been observed, for example, in Côte d'Ivoire, Ethiopia, Malawi, Tanzania and Zimbabwe (World Bank 2008).

To our knowledge this research project is among the first attempts to use economic models to simulate the effects of this global crisis on children. Past economic crises have been shown to be detrimental to children in various dimensions of their well-being. As shown by the table below, past (local or regional) economic crises had strong impacts on household welfare. For example, past crises led to an increase in poverty ranging from 1 percentage point in Brazil (1989) to a dramatic 12.2 points in Venezuela (1994) (Lustig 2000). Lustig also clearly shows that in the years following this crisis, poverty rates continued to rise, albeit less quickly.

**Table 1: Economic Crises and Poverty in Selected Countries (headcount ratios)**

country	before crisis	year of crisis	change in % points
Argentina <sup>°</sup>	25.2	34.6	9.4
	(1987)	(1989)	
	16.8	24.8	8.0
	(1993)	(1995)	
Brazil <sup>°°</sup>	27.9	28.9	1.0
	(1989)	(1990)	
Costa Rica	29.6	32.3	2.7
	(1981)	(1982)	
Indonesia	11.3	18.9	7.6
	(1996)	(1998)	
Korea	2.6	7.3	4.7
	(1997)	(1998)	
Malaysia	8.2	10.4	2.2
	(1997)	(1998)	
Mexico	36	43	7.0
	(1994)	(1995)	
Thailand	9.8	12.9	3.1
	(1997)	(1998)	
Venezuela	25.7	32.7	7.0
	(1982)	(1983)	
	40	44.4	4.4
	(1988)	(1989)	
	41.4	53.6	12.2
	(1993)	(1994)	

*Source:* Skoufias (2003: 1088) and Lustig (2000: 19)

*Note:* Years are reported in parentheses. \* 1 year after the crisis; ° data for Argentina refer to Greater Buenos Aires; data for Brazil refer to all metropolitan areas only.

Mendoza (2009), in his review on the effects of aggregate economic shocks on children, cites that infant mortality rate increased by 2.5 percentage points following the economic crisis in Peru in the late 1980s, 1.4 points in Indonesia as a result of the Asian economic crisis in 1998 and by 7 per cent above the expected levels in Mexico following the 1995 crisis. Christian (2010) reviews numerous cases of increased child mortality and malnutrition resulting from different economic crises in selected developing countries in Africa, Asia and Latin America. Other studies reported by Mendoza (2009) and covering Brazil, Tanzania and Guatemala show how economic shocks led to higher unemployment rates amongst the parents and, as a



consequence, to a higher probability of children dropping out of school and engaging in work activities.

There are also likely to be long-term consequences of crisis on children as households adjust to falling incomes by diminishing spending on education and health,<sup>2</sup> by substituting food consumption towards lower quality items and by changing intra-household resources' allocation to the disadvantage of women and girls.<sup>3</sup>

To understand the nature and the extent of the effects of the economic crisis in developing countries requires a rigorous analysis of the transmission mechanisms at both the macro and micro levels. In this study, we attempt to predict *ex ante* the impacts of the crisis, and possible policy responses, on children in West and Central Africa (WCA). As timely data monitoring child well-being are not readily available to guide the rapid implementation of policies to protect children, we develop a predictive model that anticipates the impacts of the crisis on various essential dimensions of child welfare.

The analysis is limited to three countries in WCA representing some of the diversity of economic characteristics of countries in the region: Burkina Faso, a landlocked country with little integration into the world economy, mainly through exports of agricultural raw materials such as cotton; Cameroon, a moderately integrated country mainly exporting natural resources such as oil and timber; and Ghana, well integrated into the global economy and exporting both agricultural goods (cocoa) and natural resources (gold and timber) with significant inflows of foreign investments over the last decade.

The rest of the paper is organized into four sections. A general overview of the expected impacts of the crisis on developing countries, particularly in WCA, and the main channels of transmission is provided in section 2. The following section summarizes the methodological approach used to predict the specific impacts in the three countries. The crisis and policy response simulation scenarios and results are presented and discussed in Section 4. The main findings of the study are briefly summarized and recommendations made in the conclusion.

## **2. MACROECONOMIC IMPACTS OF THE GLOBAL ECONOMIC CRISIS IN WCA: AN OVERVIEW**

In 2009, the world economy experienced its worst performance since the Second World War according to the IMF (2009a). World economic output is forecast to have fallen by 1.1 per cent in 2009. This marks a substantial downward revision from the forecasts that the IMF presented in January 2009 and November 2008, an illustration of the difficulty in predicting how the economic situation will evolve in the coming months and years.

Growing economic interdependence has considerably increased vulnerability to global economic crisis in both developed and developing countries. Analysts are unanimous about

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<sup>2</sup> See, for example, Attanasio and Szekely (2004) for the case of Mexico during the 1990s.

<sup>3</sup> As discussed, for example, in Dercon and Krishnan (2000) for the case of individual shocks in Ethiopia in 1994 and 1995.

the global nature of the crisis and reject any “decoupling” of growth in developing countries. However, Willem te Velde (2008) shows that structural changes and the increased role of China have led to a significantly lower sensitivity of economic growth in Africa with respect to changes in growth rates in the OECD. Indeed, he found that this “growth elasticity” declined from 0.5 during the 1980s to 0.2 by 2000-2007, suggesting that the fallout of the financial and economic crisis emanating from industrialized countries could be somewhat cushioned for African economies.

The initial spread of the crisis to industrialized and emerging countries was mostly through the financial sector as a result of their strong integration into the international financial system. In particular, exposure to subprime mortgages linked them to the heart of the crisis. According to the ILO (2009), the decoupling hypothesis for emerging economies has proven false, with the principal emerging economies also being hit by the crisis.

In contrast to the industrialized and emerging economies that faced the direct effects of the financial crisis, it is the ensuing global economic crisis that is most affecting developing countries. The principal channels linking developing economies to the global economy are: trade, remittances, foreign investment and international aid.

#### *a. Transmission channels*

- **Trade**

Worldwide, international trade recorded an average 9.3 per cent annual growth rate over the first half of the 2000s, more than double the 3.8 per cent growth for global economic production (Griffith-Jones and Ocampo 2009). However, international trade in goods and services has been more volatile than world output in recent decades and, consequently, could be an important channel through which the crisis is spread to developing economies (Griffith-Jones and Ocampo 2009; World Bank 2008).

External trade in goods and services is an important component of developing economies, particularly those in sub-Saharan Africa (SSA). Indeed, developing countries have among the highest openness ratios in the world (table 2).<sup>4</sup>

The crisis affects both the volumes and prices of traded products. The IMF (2009c) forecasts a 15.0 per cent decline in export volumes for the advanced economies in 2009, with a corresponding figure of 6.5 per cent in emerging and developing economies. Imported volumes are also forecasted to decline by 13.6 and 9.6 per cent, respectively, in emerging and developing economies. Prices of both energy and non energy products also registered substantial declines of 37.6 and 23.8 per cent, respectively, in 2009 according to IMF forecasts.

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<sup>4</sup> Trade links are measured by trade openness which is the ratio of external exchange of goods and services - imports and exports - to GDP.

**Table 2: Trade structure by region (per cent)**

	Import share	Export share	Coverage rate	Openness*
Sub-Saharan Africa	1.1	1.0	92.0	67.6
Middle East and North Africa	3.8	3.9	104.4	60.1
Asia	17.1	19.5	113.7	43.4
South America	2.5	2.6	104.0	30.9
China	3.9	5.6	141.5	56.3
India	0.9	0.9	102.5	25.3
Russian Federation	1.7	2.2	127.3	65.7
North America	23.8	19.1	80.4	25.9
European Union 27	39.2	39.0	99.5	64.9
Rest of the World	6.0	6.2	103.2	61.0
All	100.0	100.0	100.0	44.2

*Source:* Global Trade Analysis Project (GTAP) 6

*Note:* Openness = Ratio of export and import to GDP; Coverage rate = ratio of export to import

The financial crisis significantly reduced economic growth in emerging countries such as China and India in 2009, placing downward pressures on the demand and prices for primary products such as copper, petroleum and other natural resources. These negative repercussions for African economies, particularly for those that export primary minerals, are undeniable. Willem te Velde (2008) suggests that the developing countries most at risk are those maintaining close trade relations with the industrialized countries in recession (e.g. Mexico), but also those who are dependent on high income-elasticity products (e.g. tourism in the Caribbean and many African countries) and on exports of products for which world prices have fallen (e.g. copper in Zambia). Consequently, the impact of the crisis on specific developing countries should be directly related to their respective external trade profiles.

Export-import ratios (or "coverage rate"), measured by product group, draw attention to the heterogeneity in the structure of external trade for SSA (table 3). However, despite these large variations, the region, including the three countries covered in this study, has a trade surplus in primary sector products, which include agriculture and natural resources. SSA is also an importer of both food and non food manufactures as well as services.

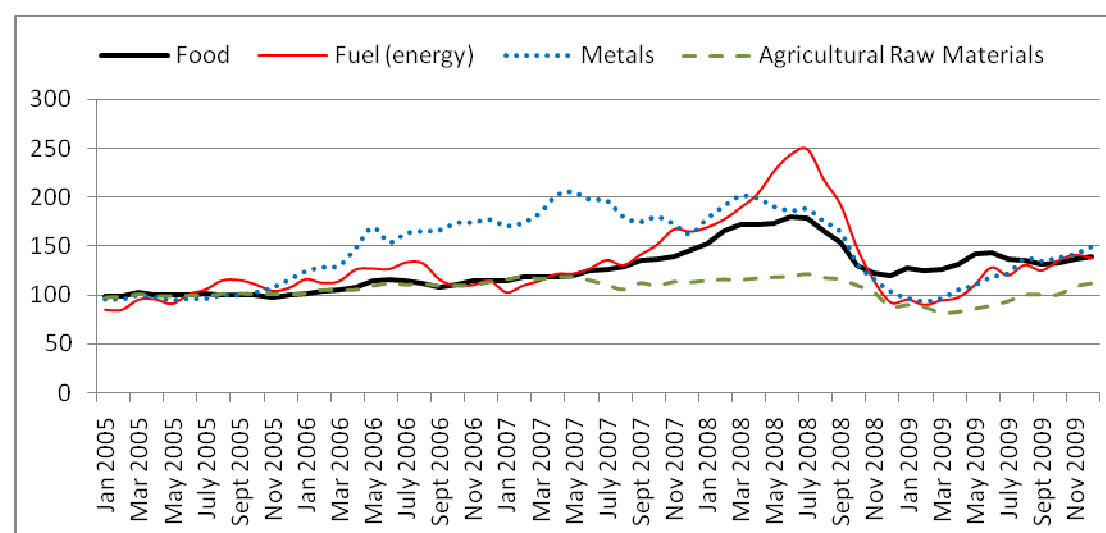
According to Griffith-Jones and Ocampo (2009), as a consequence of the crisis, countries that export manufactures and services can expect a decline in the volume of their transactions, whereas exporters of primary raw materials are more likely to face a drop in international prices. Therefore, the threat of deteriorating international trade in agricultural products and natural resources induced by the economic crisis hangs more heavily over SSA. According to Griffith-Jones and Ocampo (2009), SSA can expect to experience shocks more in terms of prices than volumes. However, they benefit from falling prices for non food manufactured goods and services and food.

**Table 3: Coverage rate (import to export ratio)**

	Burkina Faso	Cameroon	Ghana	SSA	MENA	Asia	South America
Agriculture	1.3	19.7	3.4	4.1	0.4	0.4	3.7
Mining and minerals	2.3	1.6	2.4	53.7	29.7	0.2	4.1
Processed food	0.1	0.2	0.1	0.6	0.3	0.6	3.5
Other manufacturing	0.3	0.9	0.1	0.5	0.6	1.3	0.7
Services	0.6	1.1	-	0.6	0.8	1.0	0.6
All	0.4	1.1	0.5	0.9	1.0	1.1	1.0

Source: Global Trade Analysis Project (GTAP) 6

Note: Coverage rate=Export to import ratio; SSA=Sub-Saharan Africa (excluding South Africa); MENA = Middle East and North Africa, including Israel and excluding Turkey; Asia excluding China, India and the Middle East.

**Figure 1: Food, energy, metal and agriculture raw material price indices, 2005-9**

Source: International Monetary Fund.

Note: Description: Price Index, 2005=100; Food includes Cereal, Vegetable oils, Meat, Seafood, Sugar, Bananas, and Oranges; Fuel (energy) includes Crude oil (petroleum), Natural gas, and Coal; Metals includes Copper, Aluminium, Iron ore, Tin, Nickel, Zinc, Lead, and Uranium; Agricultural Raw Materials includes Timber, Cotton, Wool, Rubber, and Hides

Commodity prices reached record levels in 2008 (figure 1). Since the third quarter of 2008, the global economic recession has been accompanied by a substantial decline in commodity prices. Over the first quarter of 2009, the average product price index was at the same level as the second quarter of 2005, four years earlier. Between July and December 2008, the global price index of energy recorded the most extreme fall, -63 per cent, followed by food and metal prices, respectively, by -45 and -33 per cent over the same period. The fall in the global price indices for agriculture raw materials was less extreme with -28 per cent between July and December 2008. Commodity prices have recorded strong gains over recent months. Energy and metal prices indices have rebounded respectively by 50 and 44 per cent between December 2008 and 2009; agriculture raw materials and food prices have also posted respectively 28 and 17 per cent increases over the same period.

Countries that are dependent on energy and mineral exports and food imports are particularly vulnerable to the price changes resulting from the global economic crisis. With the higher

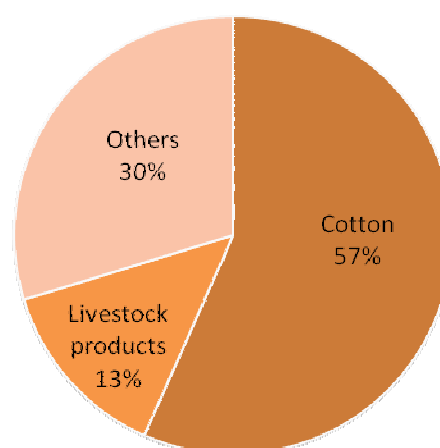
reductions in their export revenues than their imports expenses, these countries face pressures on their current account balances. Agriculture exporting economies in SSA are expected to be less negatively impacted by the decline in commodity prices consecutive to the global crisis. These economies are highly dependent on energy and food imports and are likely to benefit more from the decline in their import prices.

According to Willem te Velde (2008), countries with an external current account deficit are most at risk, facing strong pressures on their exchange rate and inflation. Countries exporting natural resources have benefited from higher prices and improved their terms of trade over the last few years. Consequently, many of them are in a better position to deal with the crisis, compared to the agricultural and manufacturing exporters in SA. On the other hand, the drop in energy prices is favourable to net petroleum importing countries after the recent surge that contributed significantly to deteriorating their external current account.

The consequences of the crisis on the economy of Burkina Faso are likely to be felt in all sectors, in particular those linked to the global economy. A decline in export volumes and prices is expected. Indeed, in recent years, Burkina Faso's exports are increasingly dominated by products that are dependent on global demand conditions, in particular cotton fibre and livestock products (Figure 2). The expected decline in exports is mainly attributable to a contraction in the volume of exports of cotton and, consequently, the fall of 56 per cent in cotton price from its peak in March 2008 to March 2009 (figure 6). Since then, the prices of cotton rebounded by 49 per cent between mid- and end 2009. Livestock products witnessed a moderate decline of 17 per cent from August 2008 to August 2009, and have stagnated since then.

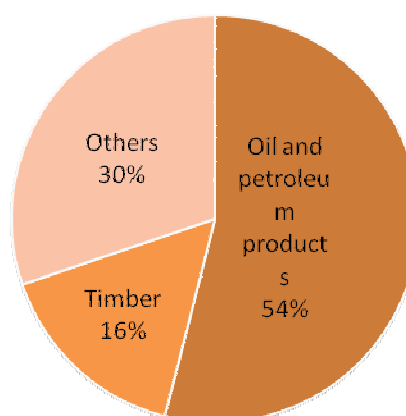
Shocks to prices of Cameroon's major export commodities (oil and petroleum products) remain the principal transmission mechanism of the crisis to the economy, coupled with the decline in global demand for many other export products such as timber and, to a lesser extent, rubber,

**Figure 2: Export structure, Burkina Faso**



Source: National Accounts 2004

**Figure 3: Export structure, Cameroon**

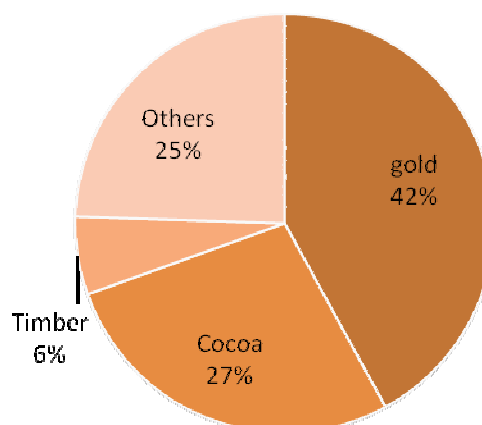


Source: National Accounts 2007

cotton, and aluminium (figure 3). Cameroon's main export product, oil and oil products, posted a severe decline after reaching an all time record price in July 2008. In the second half of 2008, the price correction was drastic: -63 per cent (figure 1). Therefore, export revenues are expected to fall by 1,017 billion CFA francs, representing 9.9 per cent of the GDP, between 2008 and 2009, with 40 per cent imputed to the fall in oil export revenues (IMF 2009d).

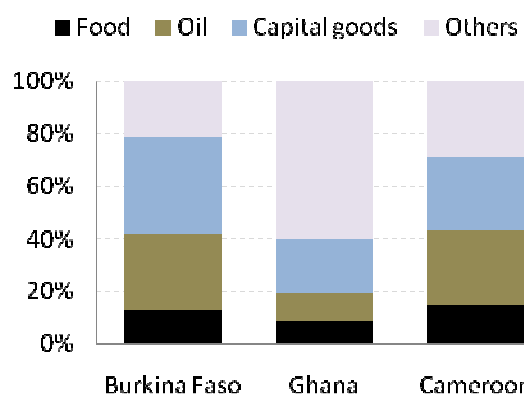
Ghana depends primarily on natural resources: gold, cocoa, and timber for its foreign exchange (figure 4). Ghanaian external trade of goods and services is expected to be less severely affected by the crisis than many other countries largely due to favourable terms of trade developments associated with continuing strong export prices for gold and cocoa (figures 7 and 8) and a less severe decline for timber (figure 9) — its two main exports, and the lower prices of fuel, food, and machinery (figure 1), which are the main components of Ghana's imports (figure 5).

**Figure 4: Export structure, Ghana**



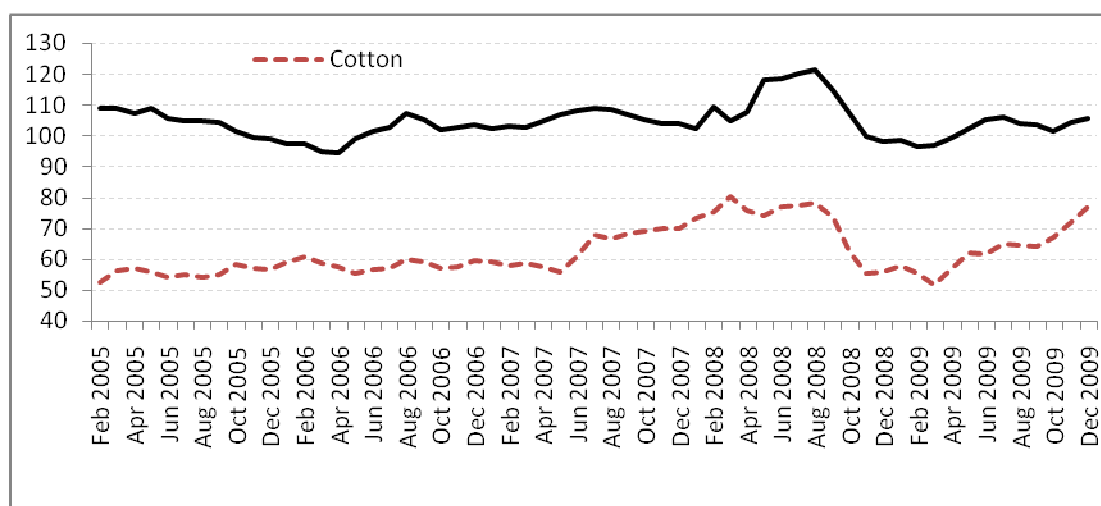
Source: National Accounts 2005

**Figure 5: Import structure**



Source: National Accounts 2004, 2005, and 2007 respectively for Burkina Faso, Ghana, and Cameroon

**Figure 6: Global prices of cotton and livestock products (US \$ cents per pound)**

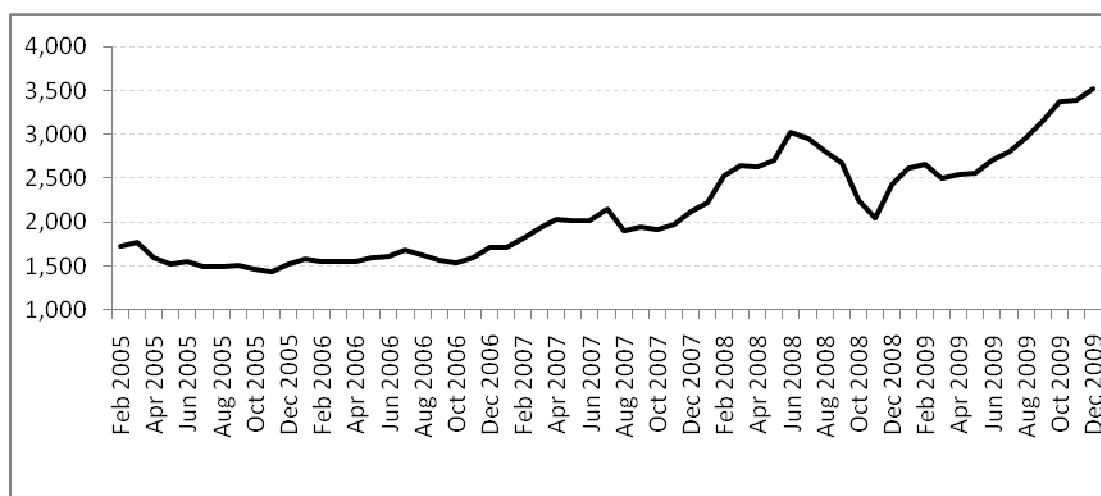


Source: International Monetary Fund (February 2009) available at

<http://www.imf.org/external/np/res/commmod/index.asp>.

Note: Cotton Outlook 'A Index', Middling 1-3/32 inch staple, CIF Liverpool; Simple average price of beef (Australian and New Zealand 85% lean froes, FOB U.S. import price), poultry (whole bird spot price, Georgia docks), lamb (frozen carcass Smithfield, London), swine (51-52% lean hogs, U.S. price)

**Figure 7: Global prices of cocoa (US \$ per metric ton)**

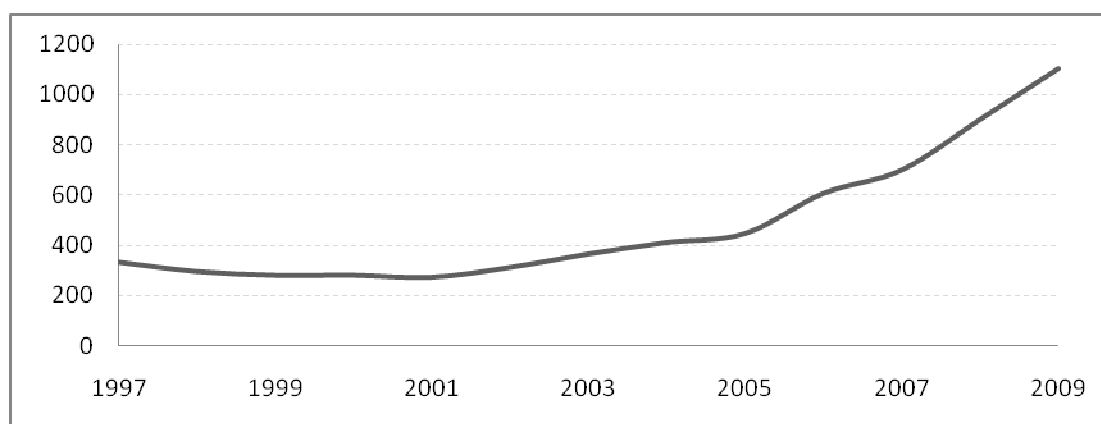


Source: International Monetary Fund (February 2009) available at

<http://www.imf.org/external/np/res/commmod/index.asp>

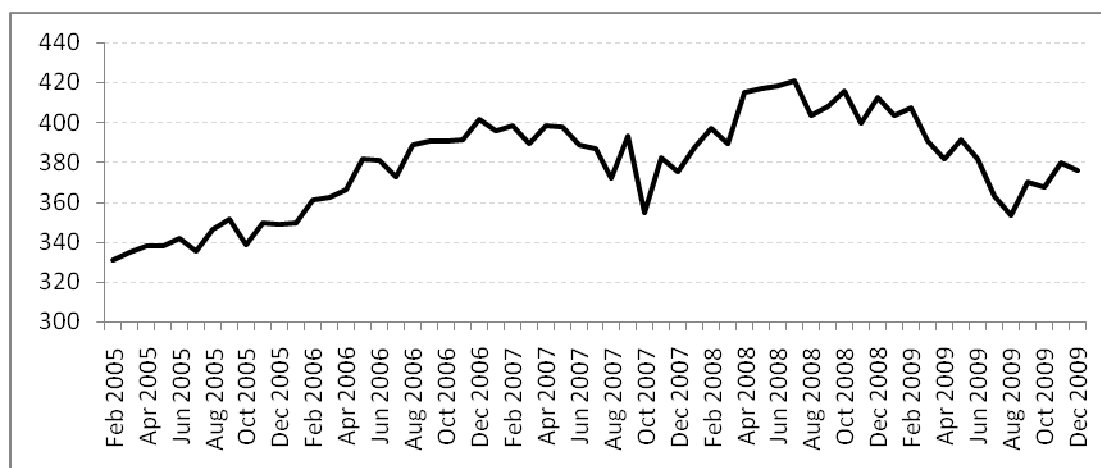
Note: International Cocoa Organization cash price, CIF U.S. and European ports

**Figure 8: Global prices of gold (US \$ per fine ounce)**



Source: <http://www.measuringworth.org/gold>

**Figure 9: World prices of timber and timber products (US \$ per cubic metre)**



Source: International Monetary Fund (February 2009) available at

<http://www.imf.org/external/np/res/commmod/index.asp>.

Note: Simple average of Hard Logs (Best quality Malaysian Meranti, import price Japan), Hard Sawnwood (Dark Red Meranti, select and better quality, C&F U.K port), Soft Logs (average export price from the U.S. for Douglas Fir), Soft Sawnwood (average export price of Douglas Fir, U.S. Price)

### • Remittances

According to World Bank (2008) and Willem te Velde (2008), the financial and economic crisis will reduce remittances, with lower numbers of migrants and smaller amounts transferred per migrant. Migrants are a vulnerable group in their host countries, particularly new arrivals, who have the most difficulty in finding or maintaining employment during an economic crisis (ILO 2009).

A slowdown in remittances' growth was already registered between 2007 and 2008, from 16 per cent in 2007 to 7 per cent in 2008 (Ratha, Mohapatra and Silwal 2009). Although remittances are not necessarily a major transmission channel of the crisis, their decline could be one of the factors that will prolong it according to Griffith-Jones and Ocampo (2009).



The DGEP (“Direction Général de l’Economie et la Prévision”) in Burkina Faso forecasts a decline of 2.2 per cent in remittances in 2009, which will undoubtedly contribute to reduce household consumption and savings. Although accounting only for 0.8 per cent of GDP, remittances in Cameroon are also expected to fall by 0.1 per cent of GDP, which corresponds to nearly 5.3 billion CFA francs according to an IMF report (2009d). In Ghana, according to Bank of Ghana data, net inward private transfers fell from 507.63 million US\$ in the first quarter of 2008 to 397.08 million US\$ in the first quarter of 2009.

- **Foreign investment**

The economic crisis is expected to reduce the volume of inflows and increase the cost of capital for developing countries. While developing countries remain weakly integrated into international capital markets compared to emerging economies, the crisis could compromise the momentum achieved by a number of growing African countries in terms of mobilizing foreign capital (Griffith-Jones and Ocampo 2009).

According to UNCTAD (2009), FDI towards markets in emerging economies fell by 10 per cent in 2008. OECD estimates are even more pessimistic, predicting that Latin America and Africa will not be spared from falling FDI. Countries that rely heavily on FDI may therefore be more at risk than others (Willem te Velde 2008). However, a World Bank review of studies on previous economic crises points out that capital transfers and investments – particularly FDI – are less stable than exchange in goods and services or remittances (World Bank 2008).

The decline in the volume and price of exports leads to lower profit margins for exporters, implying lower profitability for investment projects. Combined with the crisis in liquidity and confidence in financial markets, bank loans could undergo unprecedented declines. The World Bank (2008) review on past financial crises indicates that the 1995 peso crisis in Mexico was marked by a reallocation of banks’ financial portfolios to the detriment of loans. The enormous fall in the volume of credit offered by banks especially affected the supply of commercial credit.

Foreign investment in Burkina Faso is expected to decline due to uncertainty and falling rates of return. In particular, FDI targeting mining, road construction and manufacturing industries are at risk. Indeed, important road and infrastructure projects are already on hold or lagging, likely because of the crisis. According to projections by the DGEP, FDI was 36.5 billion CFA francs in 2008, more than three times lower than in 2007, and appears to be continuing to deteriorate with the contracting global economy.

Several large investment projects have been postponed in Cameroon because of the tighter international financial conditions, particularly in the sectors of energy, aluminium and mining, as reported by the IMF (2009d). According to the latter, foreign capital inflows are expected to fall by 86 billions of CFA francs, representing 0.8 per cent of GDP.

Data compiled by the Ghana Investment Promotion Council on FDI shows that inward investments in the first quarter of 2009 was only one-third of the level of a year earlier. In the

area of portfolio investments, Ghana benefited in 2007 and early 2008 from foreign investments in the domestic treasury bill market. As risk aversion increased following the global financial crisis, these investments were partly liquidated in late-2008 and early-2009. Ghana issued a debut Eurobond in late 2007 and was considering further market placements in late 2008. These were cancelled when Ghana's market access was effectively closed as a result of the global crisis. With regard to privatization proceeds, the country experienced inward capital investments associated with divestitures in both 2007 and 2008. Given the increased risk aversion after the global financial crisis, further such revenues are not in near-term prospects. Private remittances and capital flows are projected at \$2.2 billion in 2009, down from more than \$4 billion in the preceding two years. This shortfall accounts heavily for the projected balance of payments deficit in 2009 and for the projected continuing decline in foreign reserves. Without any exceptional financing in 2009, gross reserves would decline to a projected \$1.5 billion (1.5 months of imports). With \$450 million of exceptional financing from the World Bank, IMF, and other bilateral creditors, foreign reserves would be stabilized in 2009 at a projected \$1.95 billion (1.9 months of import cover).

- **International aid**

International aid commitments made at the Summits of Gleneagles (2005) and Monterrey (2002) were already not being respected, but the flow of official development assistance may be further adversely affected by the crisis. The problem of indebtedness and the instability of fiscal policy in industrialized countries could negatively affect development aid and donor countries' commitments to contribute 0.7 per cent of their GDP to developing countries (Willem te Velde 2008). As such, countries that depend on international aid face elevated risks of being affected by the global financial and economic crisis. However, World Bank (2008) suggests that international aid would be the least volatile component and debt servicing costs are the main difficulty that developing countries could be confronted with in the case that the global economic crisis induces a contraction in their economy. The mobilization of foreign aid depends not only on the conditions of donor countries but also the performance of the current IMF Policy Support Instrument (PSI). For example, IMF (2009c) projections indicate a slight decline of foreign aid received by Burkina Faso from 2.9 per cent of GDP in 2008 to 2.8 per cent of GDP in 2009.

- b. Macroeconomic impacts***

For developing countries, the crisis is very likely to compromise recent growth and poverty reduction achievements by exacerbating the impacts of the energy and food crises that immediately preceded it. While increasing integration of these economies into the global economy had been a source of significant economic growth in the previous years, this exposure has also made their economies more vulnerable to global crises (World Bank 2008). It is also expected that developing economies, particularly those in sub-Saharan Africa, will be less able to adjust to the crisis than industrialized economies because of their weaker macroeconomic, fiscal and financial contexts. Initial evidence already points to substantial impacts on our focus countries.

- **Burkina Faso**

In Burkina Faso, rising oil and food prices, falling remittances, the massive return of emigrants and poor rainy seasons have all contribute to compromise growth and poverty reduction over the last decade. The countries per capita GDP is estimated at 480 US\$ in 2008 (Annex I - Table 1). Average growth rate of GDP was 5.3 per cent in real terms between 2005 and 2008 and is expected to fall to 3.5 per cent in 2009, according to IMF projections (IMF 2009b). The economic slowdown in 2009 is largely due to difficulties faced in agriculture, in particular the cotton sector. In fact, agriculture has suffered from poor spatial and temporal distribution of rainfall and flooding in several regions, resulting in disappointing growth rates in the primary sector: 0.9 per cent and -0.5 per cent, respectively, in 2006 and 2007. Most dramatically, cotton production fell by 33 per cent from 649,400 tons in 2006/2007 to 434,000 tons during the 2007/2008 campaign. The impacts of this fall in production are exacerbated by the recent decline in producer prices. The global economic crisis will certainly increase the difficulties of the agricultural sector by further reducing producer prices and access to trade credit.

- **Cameroon**

With an average economic growth rate of about 4 per cent annually over the past half-decade and an income per capita of 1,150 US\$ in 2008 (Annex I – Table 1), Cameroon's GDP growth rate is expected to fall to 1.6 per cent in 2009 according to IMF (2009a) forecasts. The deteriorations of the external position – mainly due to the substantial decrease of the prices of its main export commodity, i.e. oil and petroleum products - and of the fiscal account are identified as the main causes of this slowdown. The net increase in the external current account deficit is estimated at 7.6 per cent of GDP, bringing foreign currency reserves from 6.2 to 4.5 months of imports between 2008 and 2009 (IMF 2009a). The fiscal surplus of 2 per cent of GDP in 2008 is projected to transform into a 1 per cent deficit in 2009.

- **Ghana**

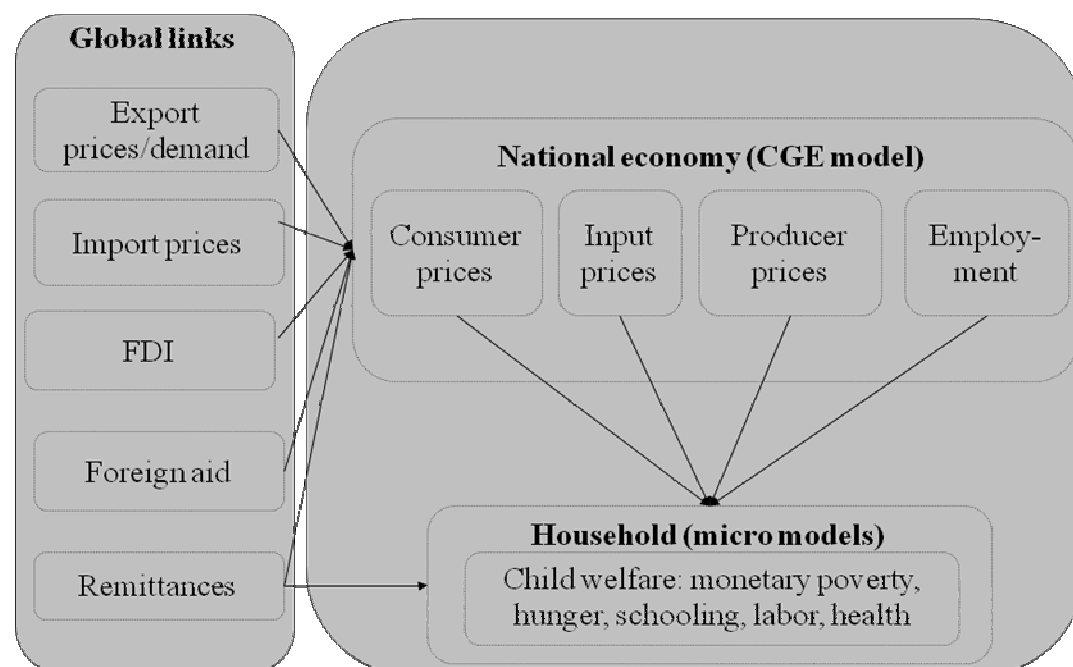
Like many countries in sub-Saharan Africa, Ghana is experiencing the impact of the global crisis. Although Ghana's exports are expected to be less severely affected by the crisis than many other countries given persistent strong export prices for gold and cocoa - its two main exports - private remittances are falling, foreign direct investment appears to be lower, and access to global credit has suffered a setback. These developments have had a direct impact on the balance of payments, domestic demand, and economic growth. At the same time, currency pressures have triggered higher inflation, requiring tighter monetary policy, with further adverse impacts on economic activity. The degree of economic slowdown in 2009 remains uncertain, as quarterly GDP data are not compiled in Ghana. The Bank of Ghana's Composite Index of Economic Activity (CIEA) at the end of May 2009 declined by 2.2 per cent in real terms relative to the previous year, suggesting real GDP growth below the 5 per cent mark, down from the peak of 7.3 per cent in 2008. Similarly, the Bank of Ghana's survey of business and consumer confidence in June 2009 reported a decline in optimism compared to the April 2009 survey. The IMF's regional economic outlook in October 2009 forecasted a 4.5 per cent GDP growth rate in Ghana, representing a reduction of 2.8 percentage points compared to the 2008 performance. Slower economic growth is having a

clear impact on government revenue collections, with domestic VAT collections and corporate income taxes falling 27 and 17 per cent, respectively, below government target levels in the first half of 2009. At the same time, public deficit financing has been adversely impacted. No financing from international credit markets or through sales of national assets to foreign investors is projected for 2009-2010, compared to financing in the range of 4-6 per cent of GDP during 2007-08. In terms of the balance of payments, lower remittances and a decline in capital inflows contributed to a sharp decline in foreign reserves in late 2008 and the first half of 2009. The Ghanaian national currency (*Cedi*) depreciated significantly through late-2008 and into 2009, contributing to substantially increase the 12-month inflation rate from the 10 per cent range a year earlier to close to 20 per cent through the first half of 2009. A significant contribution to this trend came from import prices, including a 30 per cent rise in petroleum product prices that led to increased transport costs in May 2009. The main social and economic characteristics of the country are presented in Annex I - Table 1.

### 3. METHODOLOGICAL FRAMEWORK

The impact of global financial and economic crisis is expected to differ among developing countries depending on their initial conditions and their links to the international financial market and the global economy. It is also likely to differ substantially between individuals and households within any given country according to their sources of income, consumption patterns and other characteristics.

**Figure 10: Transmission channels of the global economic crisis to children**



As depicted in Figure 10, the global economic recession affects the demand for and prices of commodities traded by these countries, foreign aid, FDI and remittances. These changes have

large and varying impacts on product markets, factor markets, government finances, international trade and households. To capture these, macro-economic analysis is required.

In order to then track the impacts of these changes on individual households, their members, and in particular children, the macro level analysis needs to be complemented by a micro-investigation. Consequently, a combination of macro- and micro- analyses is needed to fully capture the effects of the global financial and economic crisis on developing countries and to help formulating policies to mitigate their effects on households and children.

Macro-economic analysis estimates the potential impact of the global crisis and alternative policy responses on key variables such as wage rates, employment, food and non-food prices, etc. Given the magnitude of the shocks engendered by the crisis, a computable general equilibrium (CGE) framework is required to incorporate the structural aspects of the economy and capture the many and varied direct and indirect interactions between factor markets, good markets, households, government, private firms and the foreign partners. However, CGEs generally cannot distinguish the impacts on individual households and their members, as required to evaluate the poverty, nutritional, educational and health impacts on children.

The micro-economic analysis is based on models of individual and household behaviour using data from household surveys. The effects of the global economic crisis on households and individuals can be felt in terms of changes in employment opportunities and earnings, commodity prices, private and public income transfers, and the provision of public services. The extent to which such effects impact on household and individual welfare depends primarily on their income sources and consumption patterns. To make an appropriate micro-economic analysis we need to take account of the ability of households and individuals to adjust their consumption behaviour to changes in relative prices and household income, as well as to adjust their income-earning behaviour.

A combination of the two methodologies is essential to capture the impacts of the global crisis on households and children in WCA and design adequate policy responses in a way that will also provide guidelines for targeting interventions in the most effective manner. The methodology followed to model the macro channels as well as the variables linking the macro to the micro model and the outcome variables for child well-being is described in detail in Bibi, Cockburn, Fofana and Tiberti (2010a).

#### *a. Modelling the macro channels of the global economic recession*

The macroeconomic assessment of the global economic crisis on developing economies uses a CGE approach. A CGE model is a multi-market model of an economy based on real world data. The technique uses a system of mathematical equations that represent the behaviour of all agents (producers, factors, consumers, government, etc.) in a market economy, incorporating its specific institutional and structural characteristics. They are widely used to analyze the sectoral and distributional effects of external shocks and macro policies.<sup>5</sup> Most

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<sup>5</sup> They are primarily based on neoclassical theory of general equilibrium, first formulated by Léon Walras in 1877 and later formalized by Arrow and Debreu (1954) and McKenzie (1954, 1959, 1981). Improvements in

equations are derived from microeconomic theory specifying how agents adjust the quantities supplied and demanded in each market in response to price changes. There are also a few macroeconomic equations ensuring that the behaviours of economic agents are consistent with macroeconomic constraints. The resulting model is then used as a "laboratory" to conduct simulations of the impacts of shocks and policies to explore their respective impacts.

The CGE framework used in this study is based on the neoclassical-structuralist general equilibrium theory. The model captures impacts on production, consumption, factor markets and prices in an economy in which agents adopt profit and welfare maximizing behaviour. Market prices adjust in order to reconcile endogenous supply and demand decisions, thus determining levels of production, employment and consumption. The model is adapted to capture a number of structural features of the studied economies, such as the initial production structure, market segmentation and price rigidities.

### **b. *Modelling of the linking variables in the macro model***

In order to assess the distributional and child welfare impacts of these shocks and eventual policy responses, we must first transmit changes in commodity and factor prices, as well as employment levels, to the micro level. Existing macro-micro models differ primarily in the type of effects examined and the mechanism used to link its two components. As described by Essama-Nssah et al. (2007), one can identify the following three types of effects to track the distributional impact of macroeconomic shocks and policies: *the price effects* or change in prices of factor endowments and purchased goods; *the reallocation effects*, i.e. change in the use of domestic resources; and *the endowment effects* or change in the availability of resources.

We propose to use a sequential "top-down" approach, following Robillard, Bourguignon, and Robinson (2008), to link the macro and micro components of our analysis. The model attempts to capture the price and reallocation effects of the global financial and economic crisis.<sup>6</sup> The macro- and micro- models are run over a period of three years: 2009-2011. While this is suitable to capture most of the shocks associated with the global crisis at the macro-level – i.e. trade and trade prices, FDI, foreign aid and some government policy responses – the change in remittances from family members living and working abroad and other government policy responses, such as the change in public transfers, can be simulated both at the macro- and the micro- levels.

The global crisis could have quite complex distributional effects on households and children. The effects of the global economic crisis on households and their members can be felt in terms of changes in commodity and factor prices, employment opportunities and earnings, private and public income transfers, and the provision of public services. The extent to which such effects impact household and individual welfare depends primarily on their connection to the market, their factor endowments and consumption patterns, and their ability to adjust to the shocks through changes in their consumption patterns, labour supply and savings behaviour.

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data collection and advances in computer technology and software have enhanced their applications to applied policy analysis.

<sup>6</sup> We do not integrate the endowment effects according to the short perspective of the analysis.

While these impacts will be the focus of the micro analysis, it is important that the macro analysis simulates the impact of the crisis on the key variables driving this micro-economic behaviour: commodity price, wage rates, employment variations, non-labour income (figure 10).

*c. Modelling of the linking variables in the micro model and the outcome variables for child welfare*

The main objective of the analysis at the micro level is to assess the effects of the global economic crisis and various possible policy responses on different dimensions of child welfare in Burkina Faso, Cameroon and Ghana measured by: monetary poverty, caloric poverty (or “hunger”), school participation, child labour and access to health care services.

Most poverty and inequality analysis is conducted at the household level. However, given our preoccupation with the impacts of the global recession on children, we include detailed information on all individuals in the micro model to analyze poverty and inequality effects at the individual level. We do not attempt to model intra-household allocation decisions and instead simply assume that consumption is shared equitably (proportionally to caloric needs) among members of each household. As a consequence, adults and children are considered to be monetary or caloric poor if they belong to a monetary or caloric poor household, i.e. a household for which per-adult equivalent consumption expenditure is less than the poverty line or the per adult equivalent daily calorie consumption is below 2450 kcal (for Burkina Faso a caloric poverty line of 2283 kcal is used as the food component in the monetary poverty line is based on this minimum caloric requirement, INSD 2009).

Hereafter the methodologies followed to estimate the potential impact of the crisis on the different dimensions are briefly presented. Changes in child monetary poverty under the different scenarios simulated in this analysis are captured through a Cobb-Douglas approach, using household specific preferences but with fixed budget shares. A more sophisticated approach allowing for substitution effects, such as an Almost Ideal Demand System (AIDS), was not possible with the available micro data.<sup>7</sup> Aggregate household consumption, deflated by a per adult equivalent scale based on minimum caloric needs and by relevant spatial and temporal deflators, is the variable used to assess changes in monetary poverty, according to country specific absolute poverty lines. Changes in real expenditure are affected by two main channels: income and consumer prices. Changes in total income are the result of the sum of changes in total income from: wages (affected by variations in both wage and employment rates); self-employment in agriculture and non agriculture sectors; transfers (public and private transfers and dividends). Changes in consumer prices affect real expenditures through household purchasing power.

Child *monetary poverty* is measured by comparing each child’s real total expenditure to the expenditures required to satisfy his/her basic needs as reflected in the values of a typical consumption basket used to determine the national poverty line. As the individual expenditure used to assess poverty changes over time and across the different scenarios is expressed in real terms (and thus varies with price changes), the official absolute poverty

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<sup>7</sup> A similar approach (Quadratic Almost Ideal Demand System) was followed in Bibi et al. (2009).

lines for the three countries are kept at their initial official value. The child poverty rate (which is the main poverty measure shown and discussed below) is a measure indicating the percentage of the total child population living in households whose equivalent consumption is lower than the poverty line.

The second dimension we analyze focuses on calorie consumption. Specifically, we define a child as suffering of *hunger* when her/his daily calorie intake is below 2450 kcal (or 2283 kcal for Burkina Faso). As for hunger rates in the child population, nutritional tables specific to each country<sup>8</sup> are used to derive the caloric contribution of the principal food items and, based on the estimated individual food consumptions (household food consumption per adult equivalent), to calculate individual calorie intake for the base year and under the different scenarios simulated in our analysis. As for the monetary poverty analysis, a unitary model assigning part of the household consumption to each individual proportional to their respective equivalence scales (based on age and sex) is used. Calorie intakes are affected across the different scenarios by changes in household income (which are obtained as described before) and by changes in food prices, as they modify the quantities of food consumed in the Cobb-Douglas formulation. However only for Cameroon we have the suitable data to fairly appropriately estimate calorie consumption. Indeed, the household survey used for Cameroon provides the information (value and quantities consumed) required to calculate unit prices for every consumed food item, that is the price actually (or potentially, in case of self-consumption) paid by the household.<sup>9</sup> For the other two countries we were obliged to use a regional official price (distinguished by urban and rural areas) to get the quantity consumed by each household. This official price – collected by the country statistical office – is likely to be higher than the price actually paid by households as it is collected in major markets, covers only market-traded goods, and does not necessarily reflect the same quality of good as that actually consumed by the households, particularly poorer households. This approach may clearly overestimate initial hunger rates to the extent that it underestimates quantities actually consumed. Initial levels of hunger reported for Burkina Faso and Ghana should be then treated with caution, although the subsequent variations – which are our prime interest – should be less affected. The approach followed to simulate the impact of the crisis on hunger strictly refers to caloric intake and its changes over the simulated scenarios. It thus does not pretend to give a fully comprehensive picture of nutrition-related issues. It mainly aims at capturing potential changes in the food quantity (translated in changes in calorie intake) rather than changes in the diversity and the nutritional quality of food consumed by households and their children and looking at other nutritional components such as proteins, minerals and vitamins, which are very likely to be affected during economic shocks.<sup>10</sup>

Impacts on *school participation* and *child labour* are studied simultaneously through an econometric model, where real expenditure is the variable through which the effects of the crisis and of policy responses are captured. Other individual, household and community characteristics are inserted in the model as covariates and are assumed to be unaffected by the

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<sup>8</sup> Barikmo et al. (2004) for Burkina Faso and Cameroon; Eyeson and Ankrah (1975) for Ghana.

<sup>9</sup> As presented in Bibi et al. (2010a), a median price calculated at the district level was used.

<sup>10</sup> See the supplement, “The impact of climate change, the economic crisis, and the increase in food prices on malnutrition”, Journal of Nutrition, Volume 140, issue 1, January 2010 (in particular, Brinkman et al.).



crisis. Households are assumed to choose among four different situations for each school-age child: attending school and not working; attending school and working; working and not attending school; neither working nor attending school ("idle"). Where possible, child labour is constructed according to a definition where a child is considered to be a labourer if s/he spends at least one hour (14 hours if aged between 12 and 14 years) in economic work or 28 hours in domestic work per week.<sup>11</sup> This is the definition used for Ghana and Cameroon, but not for Burkina Faso because of the lack of information from the household survey. Here, a child is defined as "labourer" if s/he does any economic related activities irrespective of the number of hours devoted to it. Domestic work is thus ignored here for lack of information.

Similarly, we used an econometric model to simulate the effects of the different scenarios on the decision to consult a *health service* for an ill child and then, amongst children who do consult, the effects on the choice of type of the health facility consulted (grouped under four different categories according to the quality of their services).

The effects of the crisis and policy responses on school participation, child labour and access to health services are captured only from the demand side (through changes in real expenditure). One important limitation is the poor quality of the household surveys on information regarding the supply side determinants (i.e. detailed information on school and health facilities).

A main goal of this analysis is to guide policy makers towards the adoption of effective policy responses that counteract the negative effects of the global economic crisis on child poverty. The characteristics of the interventions we propose are discussed below. A targeted cash transfer has significant and specific implications on the methodology also for the micro model: it is in fact on the micro side that we can identify poor children, predict their poverty status and target them for cash or in-kind transfers.

A major challenge in applying a targeted cash transfer policy in the real world is to correctly identify the poor. Due to the lack of reliable information on the income levels of the households, the government is required to predict their poverty status using a limited number of individual, household and geographic characteristics, which are easily observable by the government and not subject to manipulation by the individual. To do that we estimate the relationship between these characteristics and expenditures (per adult equivalent) observed in the household surveys. After the relationship is estimated, it is then possible to predict the individual expenditures and the individual poverty status of all individuals in our household survey in order to simulate the actual implementation of the policy. By comparing the predicted and actual (according to the household survey expenditure data) poverty status of the survey households, we are able to evaluate likely targeting errors: namely under-coverage (poor individuals excluded from the social safety programme because predicted as non-poor) and leakage (non-poor individuals benefiting from transfers because erroneously identified as poor). The administrative costs faced by the governments to put in place the policies proposed here are not taken into account and we thus only include the total amount of cash transfers allocated or the cost of the subsidies provided.

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<sup>11</sup> For the definition see also the statistical section (see "social protection" area) of [www.childinfo.org](http://www.childinfo.org)

The total amount transferred to predicted poor children is equal to 1 per cent of GDP in terms of the year of the household survey used for the micro-econometric analysis. We made the hypothesis that all the transfers received by children living in the same household are pooled and shared equitably among all the household members. As we cannot know what allocation rule is in force within each household, we adopted a relatively neutral approach.

#### *d. Data*

##### *Macroeconomic analysis*

CGE models are operationalized through a procedure that involves calibrating the model parameters such that the model exactly reproduces the benchmark situation given by the Social Accounting Matrix (SAM). Therefore, the model requires a benchmark data set presented in the form of a SAM.

The SAM is the presentation of the national accounts in a condensed matrix form with an important property that the sum of the row elements is equal to the sum of the corresponding column elements. It is a consistent quantitative macroeconomic data framework representing the flows between different sectors and institutional units within an economy during a given period of time, in general, one year. The SAM is therefore consistent in the sense that it describes a general equilibrium of an economy.

We use the most recent SAMs available for Burkina Faso, Cameroon and Ghana, which date to 2004, 2003 and 2005, respectively. The global financial and economic crisis started when the global economy was still facing the energy and food crisis. In order to separate the outcomes of these different crises and focus on the global economic crisis on children in West and Central Africa, the SAMs are updated to year 2008 using recent macroeconomic data and a cross-entropy method to balance the SAMs (Fofana, Cockburn and Lemelin 2005). Finally, the resulting SAMs are adjusted to account for an increasing category of workers and, thus, labour market segments and other characteristics required in analysing the distributive impact of the global economic crisis on households and children. Below are list of the main features of these SAMs.

**Burkina Faso:** 28 activities; 30 commodities; 2 factor earnings (wage and operating surplus); 8 Representative household categories ; 1 Government ; 1 Corporation; 1 Rest of the world

**Cameroon:** 42 activities; 42 commodities; 4 factors earnings (unskilled, skilled, land, and other capital); 1 Representative household category; 1 Government ; 1 Corporation; 1 Rest of the world

**Ghana:** 56 activities; 59 commodities; 6 factors earnings (self-employment, unskilled, skilled, land, other agric. Capital, non agric. capital); 2 Representative household categories ; 1 Government ; 1 Corporation; 1 Rest of the world

With regard to the micro analysis, we used the latest available nationally representative household surveys. These are the “Enquête sur les conditions de vie des ménages” (ECVM) carried out in 2003 in Burkina Faso, the “Troisième Enquête Camerounaise auprès des Ménages” in 2007 (ECAM III) and the “Ghana Living Standard Survey” done in 2005/06 for Ghana. The “base-year” of our analyses is thus represented by the year in which the national surveys were carried out: 2003 for Burkina Faso, 2005/06 for Ghana and 2007 for Cameroon, and we made the hypothesis – strong but necessary in the absence of reliable data – that both the distribution and the level of consumption and revenues did not change between the year of the survey and the base year of our analysis.

#### **4. SIMULATION SCENARIOS AND RESULTS**

The impact of the global economic crisis is captured through the four main channels – external trade, private remittances, foreign investment, and international aid – that link these three WCA economies to the global economy. Their recent trends are highlighted and hypotheses are developed concerning the impacts of the economic crisis on those channels over the 2008-2011 period studied. Government expenditures are assumed to remain constant and the increase in government deficit, induced by the fall in domestic tax revenue and foreign aid inflows, is assumed to be compensated through increased domestic borrowing.

##### ***a. Simulation scenarios***

The July 2009 IMF report predicts stabilization by early 2010 and recovery beginning in the second half of 2011. On the basis of this information on the situation of the global economy, the study simulates the shocks introduced by the global crisis during the next three years with the following scenario: crisis in 2008/09, stabilization in 2009/10, and beginning of recovery in 2010/11.

The crisis period in 2008/09 is characterized by a contraction in all linking variables. Changes in world import prices are observed in IMF databases. The magnitude of the impact of the crisis on country-specific import prices is closely linked to the structure of the external trade in each country. Hypotheses are made on the changes in other linking variables based on official reports published by the IMF (for external trade), the World Bank (for international remittances), the European Community (for international aid), and UNCTAD (for foreign investments).

While other linking variables are assumed to remain at their 2008/09 levels with assumed stabilization of the crisis in 2009/10, commodity prices are expected nonetheless to increase, as is currently being observed in most commodity markets.

The world economy is assumed to begin recovery from the global economic crisis in 2010/11. This translates into an increase in commodity prices and other macro variables, i.e.

export demand, foreign investments, development aid, and private transfers. The simulated growth rates in linking variables follow the trend observed during the pre-crisis period.<sup>12</sup>

Results drawn from the simulated crisis scenario are compared to a simulated scenario without crisis, called baseline or “Business as Usual” (BaU) scenario. This BaU scenario assumes that the changes in variables linking developing economies to the global economy follow their respective pre-crisis historical trends. Table 4 summarizes changes in the linking variables for the three countries studied. Details of these scenarios are provided in Annex II.

**Table 4: Changes in linking variables (per cent)**

	Burkina Faso			Cameroon			Ghana		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
<b>Baseline (BaU) scenario</b>									
World price of imports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export volume	4.0	3.6	3.3	5.0	4.6	4.7	12.3	12.0	11.4
Foreign investments	10.5	9.6	8.9	0.0	0.0	0.0	11.0	9.9	9.0
Foreign aid	7.4	6.9	6.5	0.0	0.0	0.0	2.7	2.7	2.6
Private remittances	7.5	7.0	6.5	0.0	0.0	0.0	7.0	6.4	5.8
<b>Crisis scenario</b>									
World price of imports	-18.1	4.9	4.9	-9.4	1.3	0.0	-19.2	10.1	10.2
Export volume	-6.5	0.0	3.3	0.2	3.6	3.2	5.0	0.0	11.4
Foreign investments	-42.0	0.0	8.9	-35.0*	-15.0*	5.0*	-42.0	0.0	9.0
Foreign aid	-12.7	0.0	6.5	-5.0	-9.0	-6.0	-14.0	0.0	2.6
Private remittances	-11.6	0.0	6.5	-12.5	-20.0	20.0	-11.6	0.0	5.8

Source: authors' calculation. See also Annex II

Note: \* Reserves

### *b. Child welfare in the baseline scenario (without crisis)<sup>13</sup>*

#### • Monetary poverty

Child monetary poverty rates presented and discussed in this study are calculated using the national absolute poverty lines.<sup>14</sup> As national poverty lines differ across the three countries, any attempt at ranking the countries according to child monetary poverty rates is misleading. Burkina Faso has a child monetary poverty rate in the base year equal to 32.7 per cent, Cameroon 50.2 per cent and Ghana 33.7 per cent. As for the poverty gap, Burkina Faso has a rate equal to 9.2 per cent, Cameroon 17.9 per cent and Ghana 11.2 per cent (table 5, Annex I).

It is noteworthy that, when a relative poverty line (equal to 50 per cent of the median value of consumption) is used, child monetary poverty rates are 13.9 per cent in Burkina Faso, 30.6

<sup>12</sup> The crisis period started in 2006 with energy crisis, followed up by a food crisis and then by the global financial and economic crisis.

<sup>13</sup> If the reader is interested by the absolute numbers of children affected in the scenarios presented in this study, then s/he can simply use the percentages shown and discussed hereafter in the main text together with the relevant absolute numbers reported in table 6 (Annex I).

<sup>14</sup> National poverty lines are 82,672 FCFA for Burkina Faso, 269,443 FCFA for Cameroon and 3,708,900 old Cedis (37.089 in new Cedis) for Ghana in terms of their respective survey years.

per cent in Ghana, and 20.8 per cent in Cameroon. If an absolute international (extreme) poverty line equal to 1.25 US\$ 2005 PPP is used, child monetary poverty rates are 46.8 per cent in Burkina Faso, 12.2 per cent in Ghana and 16.0 per cent in Cameroon. When an absolute poverty line equal to 2 US\$ 2005 PPP is used, child monetary poverty rates are 72.3 per cent in Burkina Faso, 31.6 per cent in Ghana and 40.8 per cent in Cameroon. Although the two international absolute poverty lines proposed by the World Bank are widely debated, it clearly emerges that Burkina Faso has adopted a national absolute poverty line that is far below both and which thus needs to be revised, whereas Ghana has adopted an (upper bound) absolute poverty line very close to 2 US\$ 2005 PPP, which also happens to be close to the relative poverty line above of 50 per cent of median consumption value, and Cameroon's poverty line is closer to the 1.25 US\$ standard.

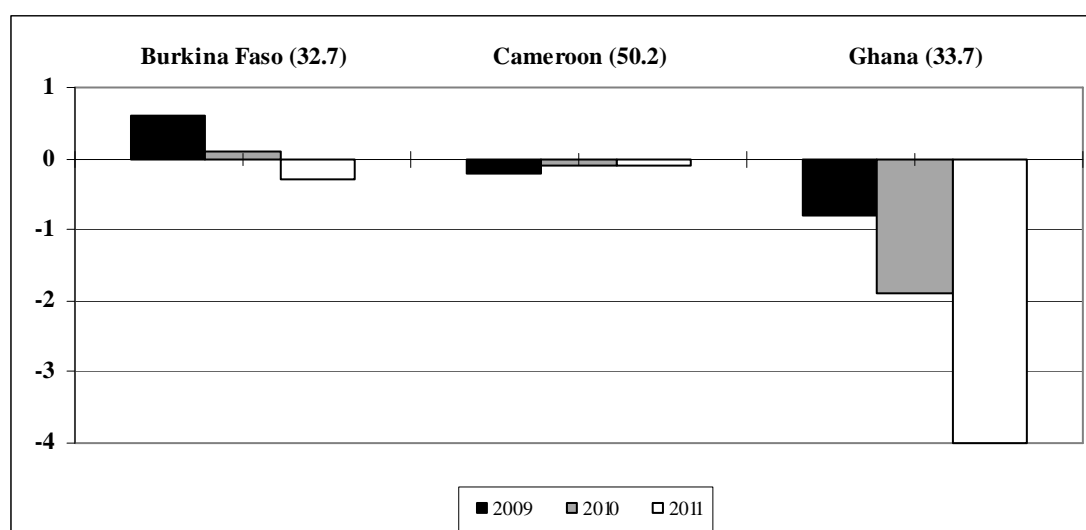
According to our analysis, in the absence of the global economic crisis only Ghana would have continued to grow at a fast rate, mainly thanks to its structural and institutional developments in early 2000s, and, consequently, posted impressive reductions in child poverty (Figure 11). This is in line with the trend in poverty reduction observed in the early 2000s.<sup>15</sup> In both Burkina Faso<sup>16</sup> and Cameroon, according to our simulations, in absence of the crisis, child monetary poverty does not fall significantly; indeed it slightly increases in 2009 and 2010 in Burkina Faso. This is both due to their low GDP growth rates and to the higher rates of inequality in Burkina Faso and Cameroon. Indeed, the Gini coefficient, calculated for the child population based on per adult equivalent consumption, is around 47 per cent in Burkina Faso and 53 per cent in Cameroon, as compared to 36 per cent in Ghana.

---

<sup>15</sup> Official national headcount poverty rate in 1991 was 51.7 per cent, in 1998 39.5 per cent and in 2005/06 28.5 per cent (Ghana Statistical service 2007).

<sup>16</sup> When a per capita equivalence scale is used, national and child poverty rates are substantially higher than those estimated when a per adult equivalence scale based on minimum caloric needs is used, as in this analysis. We used an equivalence scale for comparative purposes in this study and also because we considered this to be more appropriate in a context such as that of Burkina Faso where more than half of expenditures are devoted to food and the number of children per household is dramatically high. For information, our national poverty rate (44 per cent), based on the latest available household survey (2003) and calculated with a per capita equivalence scale for the whole population, is very close to the official one (46.4 per cent) (World Development Indicators 2009).

**Figure 11: Simulated changes in child monetary poverty without crisis in 2009-2011**



Source: authors' calculation

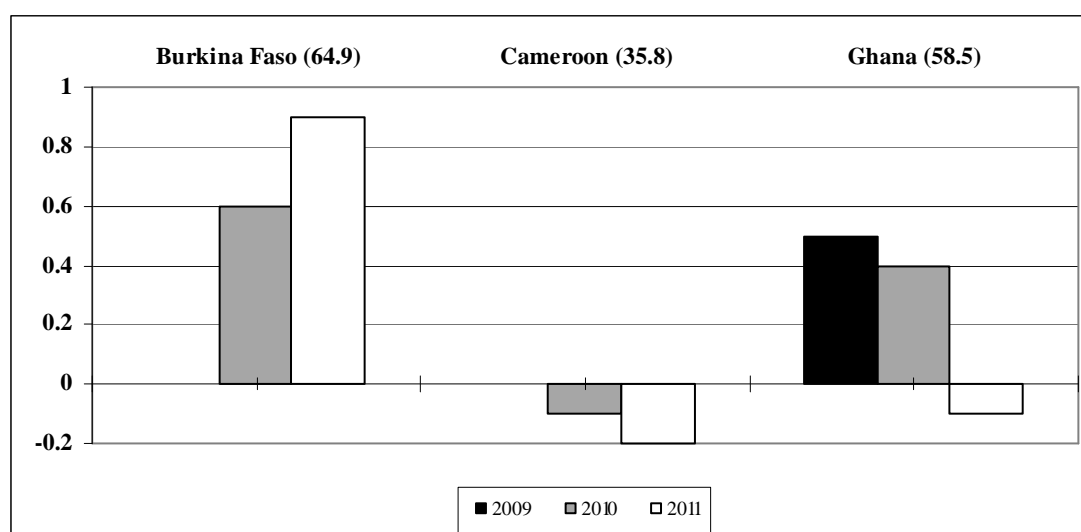
Note: changes are expressed as % difference with the base year rate. Numbers in parentheses refer to the base-year values.

### • Hunger

Hunger rates among children in the base year are 64.9 per cent in Burkina Faso, 58.5 per cent in Ghana<sup>17</sup> and 35.8 per cent in Cameroon. As already discussed above, the lower rates in Cameroon might be at least partly due to the better quality of data used to calculate hunger rates. However, the simulated changes still give some rough basis for discussion. In terms of BaU hunger rates, figures for Cameroon are broadly in line with those for monetary poverty rates. On the other hand, Burkina Faso and, to a greater extent, Ghana show a trend in hunger rates to some extent different from that discussed above for monetary poverty (figure 12). Two explanations can be offered. First, the initial share of children who are calorically poor is around twice the share that is monetarily poor. Second, food prices increase faster than non-food prices in our BaU simulations, based on preceding trends. These results suggest to policy makers that improvements in monetary poverty do not necessarily imply a reduction in hunger, implying that policy responses targeting specific welfare dimensions should be considered.

<sup>17</sup> This is in line with the figure reported by an IFPRI report, where the authors (Ahmed et al. 2007) show a hunger rate for the total population in Ghana in 1998 equal to 56.7 per cent. The methodology and the definition of "hunger" followed in the IFPRI report are the same as those used in this study. They only differ in the choice of caloric poverty line: the IFPRI study set the caloric poverty line at 2200 kcal, whereas we set it at 2450 kcal.

**Figure 12: Simulated changes in hunger rates without crisis in 2009-2011**



*Source:* authors' calculation

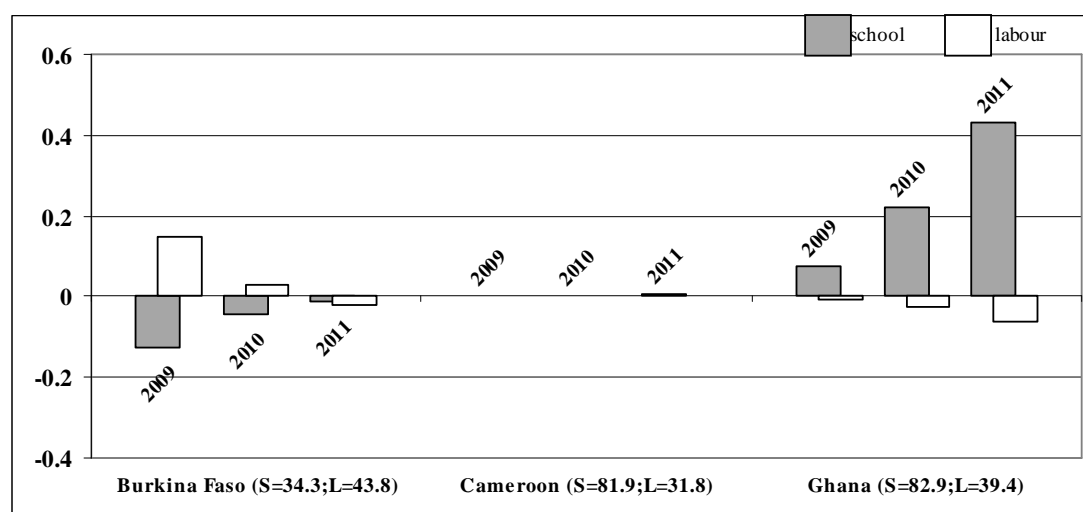
*Note:* changes are expressed as % difference with the base year rate. Numbers in brackets refer to the base-year values.

- **School and work participation**

In terms of base-year school participation rates for children aged both 6-10 and 11-14 years old, Burkina Faso (33-34 per cent; figures 13 and 14) shows a tremendous deficit,<sup>18</sup> in comparison with the other two countries (82-85 per cent in Cameroon and 83-86 per cent in Ghana). Yet, for children aged 6 to 10 years old, child work participation rates in Burkina Faso (44 per cent) are more comparable, especially with Ghana (39 per cent). Consequently, the share of children neither working nor attending school is also markedly higher in Burkina Faso for this age group. Among older children (11-14), the rate of involved in child labour in Burkina Faso is almost twice that observed in the other countries despite the fact that it excludes domestic work.

<sup>18</sup> However, the third wave of MICS data (micro data sponsored by UNICEF) carried out in 2006 show a substantial increase in net school enrolment (46 per cent) in primary education in Burkina Faso.

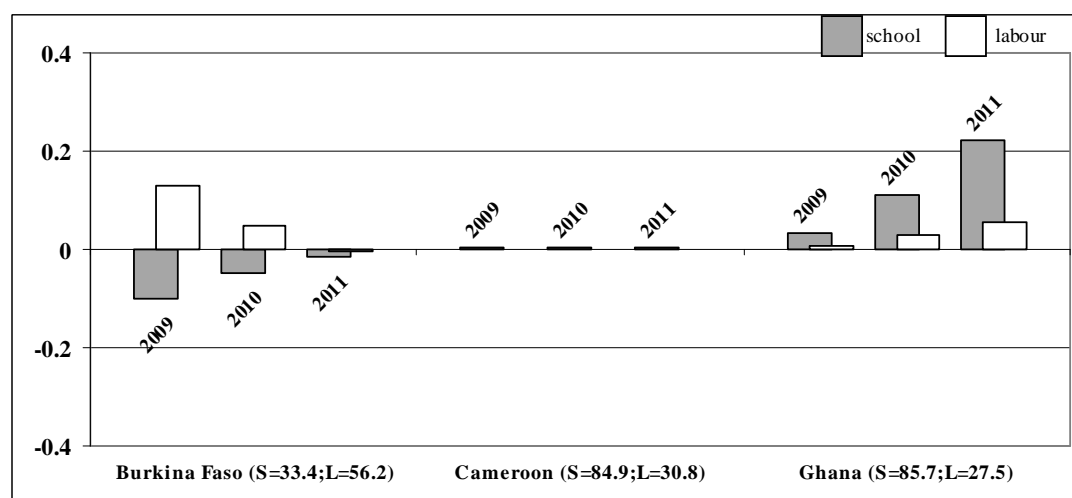
**Figure 13: Simulated changes in school participation and child labour without crisis in 2009-2011 (aged 6-10)**



Source: authors' calculation

Note: changes are expressed as difference (in percentage points) compared to the base year rates. For Burkina Faso the sample is 7-10 years old. S=base-year school participation rates; L=base year child work participation rates. Numbers in brackets refer to the base-year values.

**Figure 14: Simulated changes in school participation and child labour without crisis in 2009-2011 (aged 11-14)**



Source: authors' calculation

Note: changes are expressed as difference (in percentage points) with the base year rate. S=base-year school participation rates; L=base year child work participation rates. Numbers in brackets refer to the base-year values.

As they are driven by changes in total expenditure, simulated changes in school participation and child labour without the crisis (BaU) reflect changes in monetary poverty. The simulations show that school participation actually declines and child work increases in Burkina Faso in 2009 and, to a lesser extent, 2010, whereas they remain practically unchanged in Cameroon (Figures 13 and 14). The increase in school participation over the three years in Ghana is evenly mixed between children who work and those who do not. The increase of those who both work and study is slightly more than balanced by the decrease in

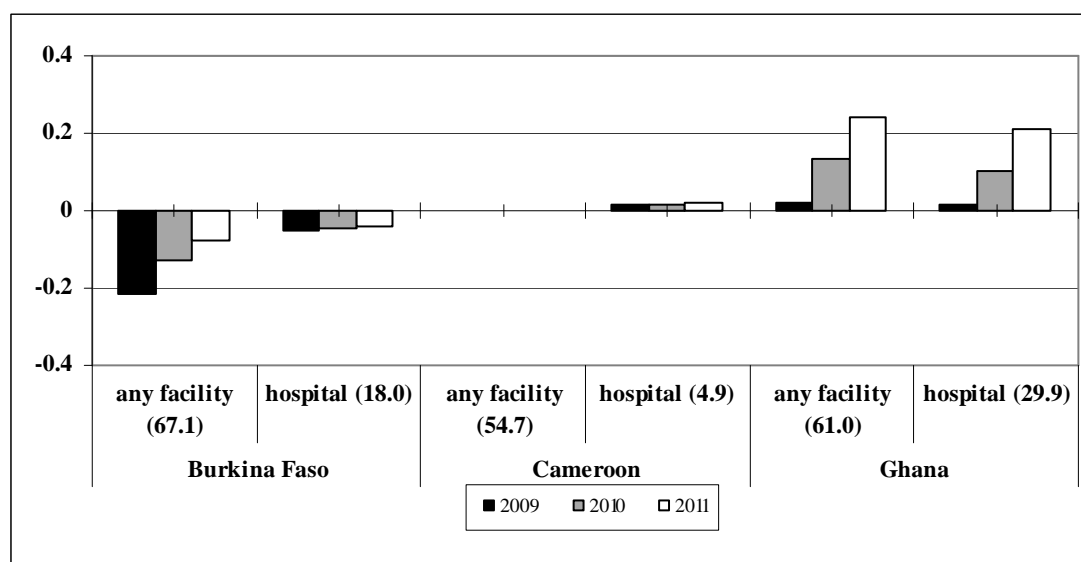


the percentage of children only working, thus leading to a reduction in child labour though small. For older children, there is an increase in both school attendance and child work, as children move out of the "idle" category over time. An important policy indication may be already drawn here: whereas in Ghana and, a fortiori, in Cameroon the government may implement school-based social safety programmes (i.e. school feeding programmes) as a way to target the majority of children aged 6 to 14 years old, in Burkina similar policy responses would exclude around two thirds of school age children.

- **Access to health services**

As for access to health services, if we look at the base-year values we find that ill children in Burkina Faso are more likely to consult a health facility than in Ghana and Cameroon (Figure 15). If we disentangle this result by type of facility we see that in Ghana a higher percentage of consultations for ill children occur in hospitals or health clinics (more than 65 per cent), deemed as high to good quality health facilities, and only 4 per cent to traditional healers. In contrast, in Cameroon a relatively high percentage of ill children receive health services from traditional practitioners. Consistent with results for monetary poverty, our simulations suggest that in the absence of the crisis, Burkina Faso would have registered a slight decrease in the demand for health services, while in Cameroon and, to a larger extent Ghana, there would have been an increase.

**Figure 15: Access to health care (any facility/hospital) without crisis in 2009-2011**



Source: authors' calculation

Note: changes are expressed as difference (in percentage points) with the base year rate. Numbers in brackets refer to the base-year values. Categories of health facilities consulted by ill children and used in the analysis are (in order of quality):

**Burkina Faso:** (1) national and regional hospitals, advanced medical centres; (2) private health practitioners, health NGOs; (3) centres for health and social promotion; (4) traditional healers

**Cameroon:** (1) primary and provincial hospitals; (2) district hospital, commune health centre, health practitioner going to the sick person's home; (3) drugstore, health clinic, school/work infirmary, health NGOs; (4) traditional healers, informal drug sellers

**Ghana:** (1) hospitals; (2) clinic, mother and child clinic, maternity home; (3) pharmacy or chemical store; (4) consultant's home, patient's home or other

In the figure, in addition to any type of health facility (categories 1 to 4), results for category 1 are shown

### *c. Simulated macroeconomic impacts of the global economic crisis*

#### *The global economic crisis slows economic growth in WCA*

The crisis slows down the economic growth prospects in Burkina Faso, Cameroon and Ghana between 2009 and 2011 as depicted in table 5. GDP growth rates fall between 1.1 and 2.3 percentage points relative to the BaU (no crisis) scenario in these countries in 2009. While growth rates increase in Cameroon in 2010, although still below their BaU levels, this is not the case in Burkina Faso and Ghana until 2011.

The economic slowdown is most pronounced in Cameroon and Ghana. These countries were predicted to grow respectively by 4 and 7 per cent in the absence of the crisis, whereas with the crisis they are expected to grow at rates closer to 2 and 5 per cent respectively. In contrast, Burkina Faso is least affected, losing only 1 percentage point or less of growth in each year. Recovery comes quicker in Cameroon than in Burkina Faso and, in particular, Ghana. For the latter, the second year of the crisis appears to be even more damaging for the economy with a growth rate of 3.8 per cent. The hypothesis of early rebound for commodity prices as observed in most markets while other linking variables – export, FDI, aid, and remittances – are stagnating, exacerbate the adverse effects of the crisis.

In the next sections, we try to understand the disparities between these economies by highlighting their macroeconomic specificities. Thus, we start by decomposing their GDP components into final consumption, investment and net exports, and analyze their respective contributions to the economy slowdown consecutive to the global economic crisis.

**Table 5: Annual real GDP growth rates (per cent)**

Period	Burkina Faso			Cameroon			Ghana		
	BaU	Crisis	Variation*	BaU	Crisis	Variation*	BaU	Crisis	Variation*
<b>2009</b>	5.3	4.1	<b>-1.1</b>	4.2	1.9	<b>-2.3</b>	7.3	5.1	<b>-2.3</b>
<b>2010</b>	5	4	<b>-1</b>	4.2	3.1	<b>-1.1</b>	7.3	3.8	<b>-3.5</b>
<b>2011</b>	4.9	4.4	<b>-0.4</b>	4.4	3.4	<b>-1</b>	7.4	6.5	<b>-1</b>

Source: authors' calculation

Note : \* Percentage points (rounding).

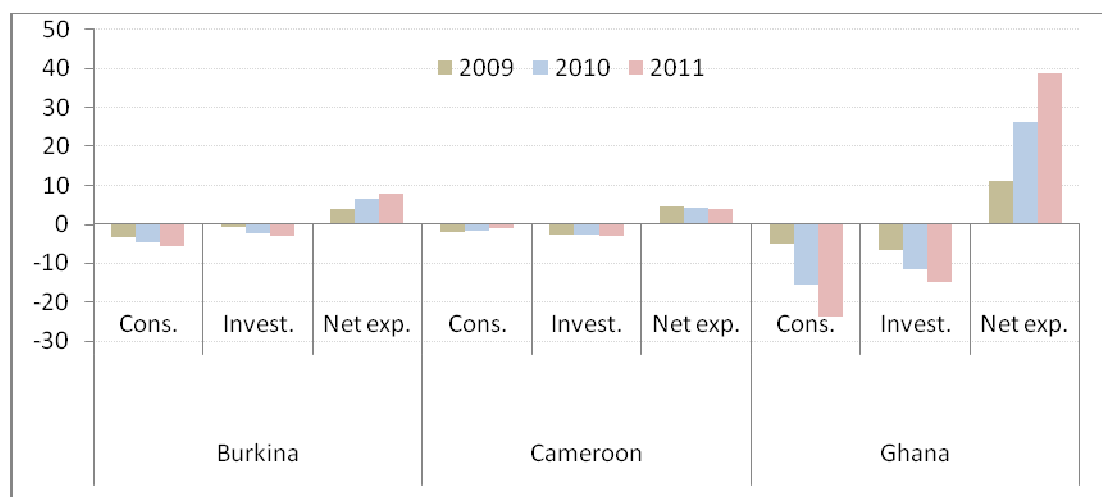
*WCA economy benefits from the trade effect of the global economic crisis, but this is insufficient to counter-balance the decline in final consumption and investment*

The three economies studied benefit from falling import prices. Indeed, the trade deficits in Burkina Faso and in Ghana, respectively 15 per cent and 36 per cent of GDP in 2008 (Annex I, Table 2), are reduced due to a significant decrease in import costs (Figure 16). The trade surplus of Cameroon, representing 5 per cent of GDP in 2008 (Annex I, Table 2), increases (Figure 16). The most open economy, Ghana, benefits most with its trade deficit (or net exports) experiencing a significant decline.

In contrast, investment and final consumption are falling in these economies and constitute the main cause for the reduction in their economic growth rates. Final consumption, which accounted for 79 per cent, 98 per cent and 103 per cent of GDP in 2008, respectively, in Cameroon, Burkina Faso and Ghana, is the main channel through which the crisis slows growth (Figure 16). Declining investment is also an important channel in Ghana.

The magnitude of the decline in revenue and, consequently, final consumption is less important in Cameroon compared to Burkina Faso and Ghana, because of lesser external financial constraints – i.e. availability of reserves accumulated during the previous periods. However, the Cameroon economy benefits less from the positive trade effect because of the greater fall in the prices of energy products. If Ghana's favourable terms of trade developments, associated with continuing strong export prices for its two main exports (gold and cocoa) and greater exposure to external trade, has contributed to substantially improve its trade deficit, the importance of foreign investment in the country renders it particularly vulnerable to its reduction during the crisis.

**Figure 16: Change in consumption, investment and net export to GDP ratios relative to BaU (percentage points)**



Source: authors' calculation

Note: Cons.: Consumption; Invest.: Investment; Exp. : Exports.

*The loss of income due to the contraction of exports, foreign investments, development aid and remittances exceeds the decline in import costs, so that the purchasing power and final consumption of households experience a significant fall.*

Prices of goods and productive factors are measured in real terms using a consumer price index. Table 6 shows a relative increase in the average real price of imports and a relative fall in the average real price of exports.

Export prices in Burkina Faso, Cameroon and Ghana fall more than import prices in 2009 (table 6). However, the decline in export volumes is less than that of import volumes for the same period. These results confirm Griffith-Jones and Ocampo (2009) in their conjecture that

developing country exports will be more affected by price shocks than volume shocks while the opposite is true for industrialized and emerging countries. The nature of the products exported by these two groups of countries is the main cause of this difference. Developing countries, including those covered by our analysis, mainly export agricultural and mining goods to industrialized and emerging countries whereas they mainly import from these countries manufactured goods and services.

**Table 6: Quantity and price effects of the crisis**

	Initial Intensity		Quantity variation (%)		Price variations (%)				
	Import	Export	Import	Export	Import	Export	Domestic	Producer	Value added
<b>Burkina</b>									
2009	13.9	5.7	-20.4	-10.7	24.6	-6.8	-2.1	-2.4	-5.6
2010	13.9	5.7	-17.5	-4	13.9	-2.7	-1.2	-1.2	-3.6
2011	13.9	5.7	-7.2	-0.5	4.6	-1.4	-0.3	-0.3	-1.2
<b>Cameroon</b>									
2009	11.8	13.1	-20.2	-4.8	25.2	-4.2	-0.1	-0.6	-5.1
2010	11.8	13.1	-1.9	-1	1.4	2	0.2	0.4	0.2
2011	11.8	13.1	0	-1.5	-1.1	0.2	0	0	0.2
<b>Ghana</b>									
2009	39.2	27.5	-20.2	-7.3	2.9	-9	-6.4	-7	-9.9
2010	39.2	27.5	-29.6	-12	12.9	-14.6	-9.4	-10.6	-20.1
2011	39.2	27.5	-15.2	0	7.8	-7.4	-4.6	-5.3	-10.4

*Source:* authors' calculation

*Note:* Import intensity is the initial (2008) ratio of import value to total domestic consumption; export intensity is the initial ratio of export value to total domestic production. The other columns present the percentage changes between the crisis and BaU scenarios. For each scenario, these represent the differences between the crisis and the BaU percentage variations, relative to 2008.

The global economic downturn reduces factor prices and revenues in WCA. The fall in factor prices and incomes depends on the magnitude of the decline in export quantities and prices, as well as the openness to external trade. The rapid recovery of world prices compared to other linking variables exacerbates the fall in factor prices and revenues and delays economic recovery in economies presenting high external trade deficit. In contrast, economies that have recorded a trade surplus in recent years benefit from the increasing world prices through faster recovery.

Falling export prices are transmitted to domestic producers as shown in table 6. The magnitude of the fall in real production prices depends not only on the fall in export prices, but also on initial export intensities. Ghana experiences the largest decline in producer prices because of these reasons. It is followed by Burkina Faso, which has the lowest export intensity but suffers from a substantial decline in export prices. In contrast, producer prices change little in Cameroon. Factor prices, as reflected by value-added prices, follow a similar trend with Ghana recording the largest decline in 2009, followed by Burkina Faso and Cameroon.

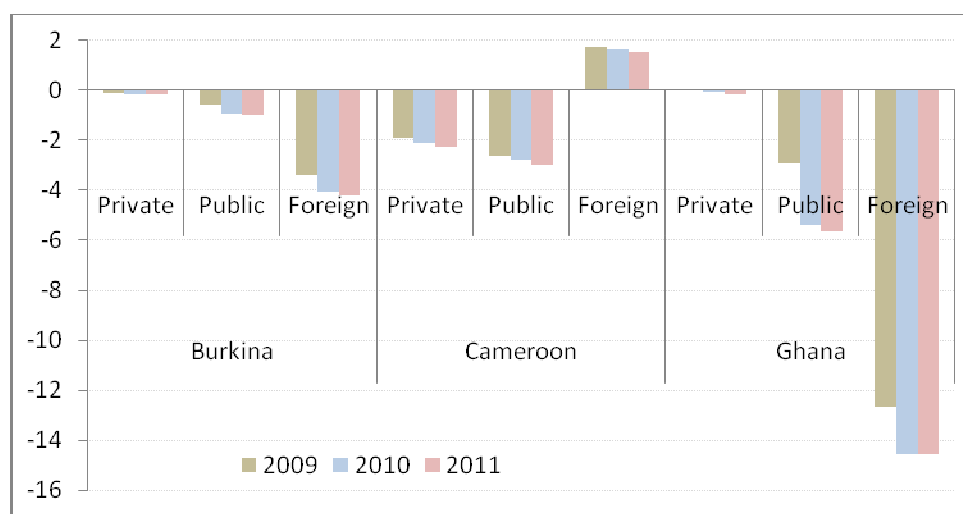
The fall in factor prices diminishes subsequently in Burkina Faso when the global economic crisis stabilizes. In contrast, the assumption of import price recovery in 2010 exacerbates the impact of the global economic crisis in Ghana, which has the highest import penetration rate.

The recovery in other linking variables – export volumes, investment, etc. – contributes to mitigate the adverse effect by 2011. The recovery in import and export prices in 2010 is beneficial to economic growth in Cameroon because of its initial trade surplus. Hence factor prices follow their non-crisis trends as early as 2010 in this country, although at lower levels.

*The global economic crisis hits WCA economies through a decline in foreign capital inflows particularly in countries that are well integrated into the global economy. Government revenue and savings also fall with the global economy downturn. This is more pronounced when it is heavily dependent on taxes on external trade.*

The decline in total savings is largely driven by the (simulated) fall in foreign capital inflows. The impact is considerable on the Ghanaian economy, which initially showed a significant net flow of foreign investment – at 37 per cent of GDP compared to 11 per cent and -2 per cent of GDP, respectively, in Burkina Faso and Cameroon (Annex I, Table 3). The decline in foreign capital inflows compared to the scenario without crisis is more than 12 per cent in Ghana in 2009, compared to less than 4 per cent in Burkina Faso (Figure 17). In Cameroon, the study assumes a drawing down of reserves accumulated in previous periods that offsets this fall in foreign capital inflows.

**Figure 17: Change in savings to GDP ratios relative to BaU (percentage points)**



Source: authors' calculation

**Table 7: Change in government revenues relative to BaU, Ghana (percentage points)**

	Taxation income					Transfer income	Capital income	All income
	Production	Consumption	Imports	Exports	Direct			
2009	-4.4	-2.5	-11.1	-10.0	-2.2	-16.7	-4.6	-6.0
2010	-17.2	2.9	-9.8	-20.2	-6.6	-2.7	-9.6	-5.0
2011	-4.7	3.2	-2.0	-3.7	-3.6	0.0	-4.2	-0.6

Source: authors' calculation

Public savings also deteriorate with the crisis. Once again, the largest impact is experienced in Ghana. In this country, the decline in public savings is entirely induced by the fall in

government revenue given the assumed rigidity of government per capita expenditure. Once again, this is due to a fall in external trade taxes and foreign aid (table 7).

*The global economic crisis increases the informality of employment in WCA. In economies that rely heavily on agricultural exports, the decline in formal employment and informal wages is more pronounced in rural than urban areas. In contrast, economies that are highly dependent on natural resource exports experience a greater contraction in urban than rural employment.*

The global economic crisis has important distributional effects dictated by the external trade structure of each country. The global economic crisis impacts differently on traded sectors depending on whether their main products are imported or exported. Agriculture products, with low income elasticities, and non-agricultural products, which have higher income elasticities, are also impacted differently.

The decline in imports required to balance the current account in the face of falling export revenues benefits local import-competing products. This applies primarily to manufactured goods in WCA. In contrast, the decrease in export opportunities leads to increasing supply on domestic markets and a lowering of domestic prices for exportable goods. This concerns mostly agricultural products representing 68 per cent of total exports in Burkina Faso, 52 per cent in Ghana and only 24 per cent in Cameroon (Annex I, Table 4). In Cameroon, it is primarily natural resources – especially petroleum – that are exported.

The decline in formal employment is most pronounced in Cameroon in the first year given that the main export sectors employ more formal than informal workers. This impact is greatest in urban areas, as this is where these sectors are primarily located (table 8). In contrast, formal employment is more affected in rural than urban areas in Burkina Faso and Ghana, as these economies are dominated by agriculture exports for the former, and the prices for the main non-agriculture export products (gold) evolve favourably for the latter.

While formal employment recovers in Cameroon with the stabilization and economic recovery in the following years, it deteriorates in Ghana and Burkina Faso due to the high cost of imported inputs with the recovery of import prices, which penalizes more rural than urban employment.

The excess supply of formal workers migrates to the informal market such that the latter increases in all three countries (table 8). This additional supply of labour on the informal market results in downward pressure on informal wages (table 9). Note that formal wage rates are assumed to be rigid in real terms given the short term prospect of the analysis.

**Table 8: Change in employment relative to BaU (percentage points)**

	Formal				Informal			
	All	Rural	Urban unskilled	Urban skilled	All	Rural	Urban unskilled	Urban skilled
<b>Burkina Faso</b>								
2009	-0.1	-0.7	0.5	0.6	0.0	0.2	-0.4	-0.2
2010	-1.2	-1.8	-0.2	-1.3	0.5	0.7	0.1	0.5
2011	-1.0	-1.6	0.0	-0.9	0.4	0.6	0.0	0.4
<b>Cameroon</b>								
2009	-3.1	-2.3	-2.7	-4.5	2.5	0.1	4.6	6.2
2010	-0.8	0.4	-0.9	-0.6	0.7	0.0	1.5	0.9
2011	-0.7	0.8	-0.7	-0.6	0.6	0.0	1.3	0.9
<b>Ghana</b>								
2009	-1.1	-6.0	0.5	-1.2	0.8	1.0	-3.3	1.0
2010	-4.7	-13.7	-1.7	-4.8	3.4	2.6	10.4	3.8
2011	-2.3	-4.4	-1.0	-2.5	1.7	1.2	4.2	2.0

Source: authors' calculation

**Table 9: Change in informal real wage rates relative to BaU (percentage points)**

	All	Rural	Urban unskilled	Urban skilled
<b>Burkina Faso</b>				
2009	-9.2	-10.4	-7.7	-6.5
2010	-6.2	-6.6	-4.7	-6.8
2011	-2.0	-1.8	-0.9	-3.3
<b>Cameroon</b>				
2009	-8.5	-5.8	-11.6	-11.9
2010	-1.2	-0.3	-2.6	-1.4
2011	-0.5	0.6	-1.8	-1.3
<b>Ghana</b>				
2009	-11.0	-10.2	-5.0	-14.1
2010	-26.9	-27.7	-25.1	-25.2
2011	-14.4	-15.7	-11.9	-11.6

Source: authors' calculation

#### *d. Simulated child welfare impacts of the global economic crisis*

##### ▪ Monetary poverty

The different extent to which the three countries are predicted to be affected by the economic crisis mirrors the socio-economic structural differences between them. First, while Cameroon and Burkina show a inverse-U shaped profile of child monetary poverty over the period 2009-2011 with a peak in 2010, in Ghana child monetary poverty shows a continuously increasing trend. Indeed, Ghana is the country where children are predicted to suffer most from the global crisis, with monetary poverty increasing by more than 6 percentage points in 2011 relative to the base year. Compared to the “business as usual” scenario, where monetary poverty was predicted to fall in Ghana by more than 4 percentage points by 2011, the potential impact of the crisis is even greater.

Table 10 disaggregates the contribution of the different price and income channels affecting real expenditure: consumer prices, net income from agriculture, non-agricultural self-employment income, wages (by sector) and other income such as international remittances

and dividends. In Ghana, the deterioration is driven primarily by a reduction in consumer purchasing power as consumer prices increase, followed by a large drop in income in the non-agriculture sector. Increases in agricultural incomes offset the increase in child monetary poverty somewhat.

In contrast, child poverty in Burkina Faso is mainly affected by the fall in incomes in the agriculture sector, where losses from sales are more than double the losses in terms of own-production. Self-employment in the non-agriculture sector do not contribute to changes in child poverty, as only around 1 per cent of households get income from this sector.

In Cameroon the impacts are more diffuse. Changes in consumer prices and the reduction in income from self-employment in the non-agriculture sector are the major contributors in the increase of child poverty. As for the “consumer prices” component, non-food items (not shown) are the main channel through which children are affected by the crisis. The fall in wages affect child poverty relatively more in Cameroon, representing roughly a sixth of total child monetary poverty increase.

**Table 10: Simulated impacts of crisis on child monetary poverty by channel**

	<u>Burkina Faso</u>			<u>Cameroon</u>			<u>Ghana</u>		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
base year (absolute rate)	32.66			50.20			33.73		
with crisis (% change to the base year)	3.79	4.67	4.36	1.85	2.04	2.01	1.52	6.10	6.65
<i>contribution to child poverty changes after crisis by different channels (% change to the base year)</i>									
<b>Consumer prices:</b>	<b>0.28</b>	<b>0.65</b>	<b>1.12</b>	<b>0.67</b>	<b>0.62</b>	<b>0.59</b>	<b>2.12</b>	<b>4.44</b>	<b>5.04</b>
<b>Agriculture sector:</b>	<b>2.85</b>	<b>3.23</b>	<b>2.33</b>	<b>0.37</b>	<b>0.39</b>	<b>0.44</b>	<b>-1.77</b>	<b>-1.64</b>	<b>-2.37</b>
sales	1.77	2.02	1.55	0.16	0.19	0.23	-1.22	-1.06	-1.67
own-production	0.76	0.93	0.54	0.15	0.17	0.17	-0.85	-0.84	-1.12
cost of inputs	-0.09	-0.13	-0.13	0.00	0.00	-0.01	0.00	-0.06	-0.11
<b>Non-agriculture sector (self-employment):</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.53</b>	<b>0.56</b>	<b>0.64</b>	<b>1.11</b>	<b>2.99</b>	<b>3.63</b>
<b>Wages:</b>	<b>0.02</b>	<b>0.02</b>	<b>0.01</b>	<b>0.30</b>	<b>0.29</b>	<b>0.30</b>	<b>-0.08</b>	<b>0.08</b>	<b>0.07</b>
formal	0.00	0.01	0.01	0.01	0.01	0.23	0.00	0.00	0.01
informal	0.02	0.01	0.00	0.29	0.28	0.28	-0.08	0.08	0.05
<b>Other income:</b>	<b>0.54</b>	<b>0.74</b>	<b>0.77</b>	<b>0.02</b>	<b>0.09</b>	<b>0.03</b>	<b>0.20</b>	<b>0.21</b>	<b>0.19</b>

*Source:* authors' calculation

*Note:* as changes in poverty status linked to the different channels do not necessarily affect all individuals, the sum of the changes in each component does not exactly equal the total change.

Finally, the wage sector, which is not a major source of income in the region, contributes only slightly to the deterioration in monetary poverty, especially in Burkina Faso. It is noteworthy that changes in the informal wage sector affected children relatively more than the formal sector, with the exception of Cameroon for 2011. Remittances do not seem to play a crucial role in the predicted increase in child monetary poverty, as relatively few households rely upon international remittances. Only in Burkina Faso, where 6 per cent of individuals live in households receiving remittances (of which more than a quarter are poor), this channel plays much of a role, accounting for roughly one-sixth of the total change in



child monetary poverty (in 2011). In Cameroon and Ghana, again 6-7 per cent of people live in households who receive international remittances, but the vast majority (90 per cent) is non-poor so that the impact on child poverty is small.

**Table 11: Simulated contributions to crisis impacts on child monetary poverty by region**

	Child population share	Headcount poverty rate				Absolute contribution to poverty			
		base year (%)	2009	2010	2011	base year (%)	2009	2010	2011
			difference (% points) to base year				difference (% points) to base year		
Burkina Faso									
Centre	8.1	19.7	1.7	2.3	2.0	1.6	0.14	0.19	0.16
Nord	9.2	45.6	2.5	3.2	3.2	4.2	0.23	0.29	0.29
Centre Ouest	8.8	23.9	2.7	3.6	3.9	2.1	0.24	0.32	0.34
Centre Est/Centre Sud	12.6	44.8	4.3	4.9	4.2	5.6	0.54	0.61	0.52
Est	9.3	36.3	2.5	2.5	2.5	3.4	0.23	0.23	0.23
Sahel	5.8	28.8	6.7	7.4	6.1	1.7	0.39	0.43	0.35
Sud Ouest	5.3	28.9	5.5	7.2	6.7	1.5	0.29	0.38	0.35
Boucle du Mouhoun	12.7	37.5	2.8	3.8	4.0	4.8	0.35	0.48	0.51
Hauts Bassins/Cascades	13.6	21.1	3.7	4.6	5.0	2.9	0.50	0.63	0.68
Centre Nord/Plateau central	14.6	33.7	6.1	7.6	6.3	4.9	0.89	1.11	0.91
Rural	85.5	36.1	4.1	5.1	4.7	30.9	3.54	4.32	3.97
Urban	14.5	12.3	1.8	2.4	2.7	1.8	0.26	0.35	0.39
National	100.0	32.7	3.8	4.7	4.4	32.7	3.80	4.67	4.36
Cameroon									
Douala	7.6	6.3	1.9	1.8	1.8	0.5	0.15	0.14	0.14
Yaoundé	8.2	5.4	2.8	3.0	2.8	0.4	0.22	0.24	0.23
Adamaoua	5.8	68.3	3.5	4.7	4.7	3.9	0.20	0.27	0.27
Centre	6.8	45.8	3.6	3.5	3.4	3.1	0.24	0.24	0.23
Est	5.0	67.7	1.0	0.7	0.7	3.4	0.05	0.03	0.03
Extrême-Nord	20.8	75.2	1.4	1.4	1.3	15.7	0.28	0.30	0.28
Littoral	2.9	31.1	2.5	2.7	2.3	0.9	0.07	0.08	0.07
Nord	11.0	74.8	0.3	0.3	0.3	8.2	0.04	0.04	0.04
Nord-Ouest	10.3	64.9	2.0	2.3	2.3	6.7	0.20	0.24	0.24
Ouest	11.4	28.9	2.3	2.8	2.8	3.3	0.26	0.31	0.31
Sud	3.5	35.4	0.6	0.6	1.5	1.2	0.02	0.02	0.05
Sud-Ouest	6.8	42.2	1.6	1.8	1.8	2.9	0.11	0.12	0.12
Rural	69.3	66.3	1.6	1.7	1.7	45.9	1.10	1.22	1.23
Urban	30.7	13.9	2.5	2.7	2.6	4.3	0.75	0.81	0.78
National	100.0	50.2	1.9	2.0	2.0	50.2	1.85	2.04	2.01
Ghana									
Western	10.6	40.5	2.3	6.5	6.6	4.3	0.24	0.69	0.70
Central	8.7	20.8	1.8	5.4	6.0	1.8	0.16	0.47	0.53
Greater Accra	11.2	26.4	1.9	9.4	10.7	2.9	0.21	1.05	1.19
Volta	7.6	26.6	2.4	10.5	11.0	2.0	0.18	0.80	0.83
Eastern	13.1	15.8	1.9	6.6	7.9	2.1	0.25	0.87	1.04
Ashanti	17.6	18.2	2.4	6.4	6.9	3.2	0.42	1.12	1.22
Brong Ahafo	9.3	38.3	1.6	4.7	5.8	3.6	0.15	0.44	0.54
Northern	13.2	56.7	-1.4	1.5	1.3	7.5	-0.19	0.19	0.17
Upper East	4.9	69.9	1.7	7.5	6.8	3.4	0.09	0.37	0.33
Upper west	3.7	77.9	0.0	2.6	2.6	2.9	-0.00	0.10	0.10
Rural	65.5	39.7	0.9	4.5	4.4	26.0	0.60	2.94	2.89
Urban	34.5	22.4	2.7	9.1	10.9	7.7	0.92	3.15	3.76
National	100.0	33.7	1.5	6.1	6.6	33.7	1.52	6.10	6.65

Source: authors' calculation

Note: absolute contribution to child poverty rate is calculated by weighting the headcount rates by the relevant population rates.

Differences do also emerge in the regional and urban/rural impacts within the three countries (table 11). In Ghana, urban areas are more affected than rural areas by the economic crisis. In

fact, not only absolute increases are greater in urban areas but the absolute contribution to national headcount poverty rate rises more than in rural areas. This is due to the rise in agricultural incomes in rural areas, which partly offset the fall in other incomes and the rise in consumer prices. In Cameroon, absolute changes in child urban poverty rates over the simulated crisis period are around 1 percentage point larger than in rural areas, but high population in rural areas make its absolute contribution to national poverty stronger. In Burkina Faso the crisis mainly affects children living in rural areas. For example, more than 90 per cent of the change in national child monetary poverty can be traced to rural areas, both because changes here are larger and because around 85 per cent of the child population live in rural areas.

In Ghana the regions with the highest absolute contribution to the increase in child poverty are those where child poverty rates are amongst the lowest in the country (Greater Accra, Ashanti and Eastern region). This result roughly conform to the absolute changes in the headcount poverty rate, with the only exception of the Volta region where children would experience a strong increase in poverty by up to 11 points in 2011. In Cameroon, regional contributions are more homogenous with the poorest region (Extreme-Nord) and the richest region (Ouest) making the largest contributions, although it is in Adamaoua and Centre regions where child poverty rate would face the largest absolute increases. In Burkina Faso, the rural region of Centre Nord/Plateau Central, as well as the regions of Sahel and Sud-Ouest, are by far the most affected regions, whereas the Centre region (including the capital city of Ouagadougou) is where changes in absolute terms and in the contribution to child poverty are the lowest.

#### ▪ **Hunger**

As shown by Figure 19, only Ghana is predicted to experience a serious deterioration in terms of children suffering hunger due to the crisis, a situation that worsens continuously over the period 2009-2011 such that hunger rates are a full 7 percentage points higher in 2011 in comparison to the base-year (2008). It is noteworthy that in Ghana hunger rates increase much more than monetary poverty rates, while the opposite is true for the other two countries. This is due to the fact that in Ghana food prices are predicted to increase much more than non-food prices whereas, in both Burkina and Cameroon, food prices decrease in comparison with non-food prices. In Cameroon, this difference between food/non-food price changes is such that hunger rates under the crisis are even slightly lower than those observed in the base-year.

#### ▪ **School participation and child labour**

Younger school-age children (aged 6-10) are predicted to be more affected by the crisis in terms of school participation and child labour (Figures 20 and 21). Children in Burkina Faso, already with the lowest school participation rates, are the most affected with a reduction of up to 0.8 percentage points in school participation and an increase of their involvement in work of nearly 1.2 points. In decomposing these results, the situation is even worse: the fall in school participation is entirely driven by a reduction in the “school/no work” alternative, while the rise in child work is the result of an increase in the “no school/work” alternative. In Ghana, while school participation is reduced by the economic crisis (fall of up to one

percentage point), the impacts on child labour are much less. In Ghana, the decrease in school participation as a consequence of the crisis is driven both by a decrease in the number of children who combine school with labour and of those children who only work. School and labour impacts are practically nil in Cameroon with or without a policy response. This suggests that, even more than in the other two countries, interventions should focus more on supply side policies in order to try to reach the relatively small number of children currently out of the school system.

- **Access to health services**

Ill children are less likely to access health services as a result of the crisis (figure 22). In Burkina Faso, the likelihood falls by up to 1.2 percentage points, whereas the impact is more modest, but still substantial in Cameroon and Ghana. An additional effect of the crisis is the diversion from higher to lower quality health services such as traditional practitioners and to greater recourse to self-care. In Burkina Faso, services supplied by the *Centre de santé et de promotion sociale (CSPS)*, the most popular health facilities among Burkinabé children, are hardest hit, whereas in Ghana and in Cameroon, it is hospital-provided health services that fall most.

*e. Policy responses to the global economic crisis*

The previous analysis shows that the magnitude of the impact of the global economic crisis on the transmission variables and the initial conditions of the economies in WCA are key parameters in determining the effects on child welfare in the region. The various monetary and fiscal stimulus programmes in advanced countries will contribute to restarting the global economy with positive effects on developing economies, but analysts agree on the fact that the return to growth will be unusually slow.<sup>19</sup> Therefore, the design and implementation of appropriate economic policies in response to the crisis will considerably contribute to reducing its welfare cost, in particular for children.

When government faces a tight budgetary constraint, a reduction in government current and investment spending and/or an increase in taxes are optional policies that can be undertaken to balance its budget. This is known as a pro-cyclical fiscal policy response.

On the other hand, a counter-cyclical fiscal policy response would be composed of an increase in government spending on public services and/or a cut in taxes financed by external sources.

However, most developing countries, including in WCA, find themselves in a position where it is impossible to engage in counter-cyclical policy responses to the crisis due to poor fiscal and monetary management during a period of growth (World Bank 2008). The result is that they have to adopt pro-cyclical policies aimed at reducing public spending and increasing tax revenues, which will increase the short-term vulnerability of the national economy and exacerbate the effects of the crisis. The impact of tax increases would depend on their nature, income taxes being, for example, generally progressive, whereas sales taxes are often

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<sup>19</sup> World Bank (2008) and IMF (2009a).

regressive. Spending cuts would tend to hit poor households disproportionately, as they rely more on public services.

According to the World Bank review of past crises, social spending is generally pro-cyclical in developing countries, increasing in periods of growth and falling during periods of recession. The challenge for developing countries is therefore to formulate and implement temporary universal protection measures which would only be used by citizens who have fallen on hard times, and should cancel them when the economy improves and offers better opportunities (World Bank 2008).

The macroeconomic policy response in developing countries could be monetary or fiscal. They could focus on goals to accelerate economic growth and/or aim to protect vulnerable populations, such as children. Fiscal policies aiming to achieve social protection could be designed to support consumption or income for individuals and their households.

Social protection policies relevant for children may be grouped into three main categories: *social insurance*, which in some cases require contributions by the beneficiaries (e.g. health, unemployment, old age, disability and asset insurance); *social assistance*, which may be universal or restricted to a targeted population (e.g. cash or in-kind transfers, vouchers for health, education or food, price/tax subsidies and fee waivers in health, education and housing); *social welfare services*, which are generally targeted to those with special needs (e.g. social workers, shelter and board, maternal and child health/nutrition programmes).

The study quantifies the impact of two stimulus programmes aiming to protect children from the negative effects of the global economic crisis:

- **Consumption oriented fiscal stimulus:** Consumption tax cuts (VAT or tariff) on food products.
- **Targeted cash transfers** to poor children/households who are identified using a proxy-means test approach.<sup>20</sup> The effectiveness of a universal cash transfer is also discussed.

The total amount transferred under each programme is arbitrary, fixed at 1 per cent of the national GDP in 2008. This amount is entirely financed from external sources (international aid) by assumption. The proposed stimulus packages have few macroeconomic effects, consequently our analysis in the next section focuses solely on the effects on child welfare.

We also estimated additional country-specific policies that were proposed and discussed together with local committees. Detailed information on these policies and their impacts on child well-being can be found in Balma et al. (2010) for Burkina Faso, Bibi et al. (2010b) for Cameroon and Antwi-Asare et al. (2010) for Ghana. Specifically, they consist of:

Burkina Faso: regionally-targeted cash transfers, financed through an endogenous increase in import tariff rates (internal financing) or through foreign aid, and cereal

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<sup>20</sup> See tables 7, 8 and 9 in Annex I for the results of the "proxy-means" regression to identify poor individuals in the three countries.

price subsidies financed through foreign aid. The cost of the first policy is estimated to be equal to 0.4 per cent of GDP, while the second policy would cost 0.2 per cent of GDP.

Cameroon: the elimination of customs on imported food items starting in 2009 and continuing through 2011, financed by reducing the rate of accumulation of foreign reserves, and the implementation of a school canteen programme in the regions where child monetary poverty rates are above the national rate (50.2 per cent). The first policy would cost an amount equal to 0.4 per cent of 2008 GDP. The second would amount to 0.19 per cent of 2008 GDP. The annual individual cost of the school feeding programme is calculated to be FCFA 10,230 in 2007 terms (FCFA 62 per meal over 165 school days in a year). The meal is composed as under the World Food Programme scheme (150 grams of rice, 30 grams of pulses and 10 grams of vegetable oil, equal to about 400 kcal per meal).

Ghana: targeted cash transfers financed through a 20 per cent increase in tariffs on rice imports and an endogenous increase in tariffs on non-food manufacturing goods imports or, alternatively, by an endogenous increase in the property tax. The two financing mechanisms are both constructed in a way that the government is able to raise an amount equivalent to 0.5 per cent of GDP in base-year terms.

As already mentioned above, the administrative costs of the policies simulated in this study are not taken into account.

Regarding the other possible policies mentioned above, we also simulated the effects of pro-cyclical policies (results are not shown here for lack of space) and, as expected, they largely contributed to a further worsening of child welfare in all three countries. In addition, the micro data available are not suitable to simulate the impacts of a reduction in the cost of access to health and educational services, which would also have gone beyond the scope of the current study.

Consumption subsidies applied to basic necessities would give a certain level of protection to the poor (World Bank 2008). This is also the case for subsidies for agricultural inputs which stimulate agricultural production and improve rural income and the nutritional state of the population. Reducing the direct cost of access to health and educational services would also increase households' use of these services.

Public transfer programmes are potentially a good way to protect poor households from the negative effects of the global economic crisis by increasing the amount granted to individuals and their households and by fulfilling the eligibility criteria suggested by the World Bank (2008). As such, countries with programmes already in place before the crisis was triggered could increase them with the goal of protecting their vulnerable populations from the damaging effects of the crisis.<sup>21</sup> In countries where social safety net programmes are already in place before the crisis, it is much easier to intervene. However, only a relatively small

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<sup>21</sup> For example, "Food-for-Education Program" in Bangladesh and "Oportunidades" in Mexico.

number of developing countries have already developed social safety nets (Lustig 2008): 19 (out of 49) low-income and 49 (out of 95) middle-income countries have no safety net programmes at all. Specifically, with a sample of 144 developing countries analyzed by Lustig, 16 low-income and 37 middle-income countries have cash transfer programmes; while more widespread in low-income countries, school feeding programmes are implemented in only 24 of them. In addition, in most of the countries where cash transfers exist, both the coverage and the amount of benefits are dramatically low: Mendoza (2009) reports that a World Bank study reviewing social spending on safety nets in 87 developing and transition countries found that the mean spending on such programmes accounts for a mere 1.9 per cent of GDP (with a median value lower than 1.5 per cent), of which only a fourth is devoted, on average, to cash transfer programmes.

From past crises there have been some lessons on how governments respond in order to minimize the effects of crises on children. For example, in response to the Asian financial crisis, Indonesia carried out the *Jaring Pengamanan Sosial* (Social Safety Nets Scholarships) and Argentina, during its debt crisis in 2002, put in place the *Plan Jefes y Jefas*, a programme of cash transfer for households with dependants and whose household head became unemployed.

#### *f. Simulated child welfare impacts of different policy responses*

##### ▪ **Monetary poverty**

Among the policy responses proposed to counteract the negative effects of the crisis on child welfare, a targeted cash transfer (following a proxy-means test approach) to predicted poor children is by far the most effective programme, particularly in Burkina Faso and Cameroon (Figure 18). With the same overall budget, which we assume to be equal to one per cent of base year GDP (financed by foreign aid), food subsidies have smaller effects, as they do not specifically target the poor or children. Indeed, a large share of food consumed by poor people is own-produced. A similar result was also found for Mali for a subsidy for selected food items: rice, vegetable oil and milk (Bibi et al., 2009).

The effectiveness of these two policies differs across the countries. A price subsidy, while still much less effective than a cash transfer, has significant and positive effects in Burkina Faso, reducing monetary poverty by 2 percentage points by 2011 after the crisis, while in Ghana the effectiveness falls to up 1.2 points in 2010 and in Cameroon its impact is nil.

Large differences also emerge in terms of the impacts of the cash transfer policy.<sup>22</sup> In Burkina Faso a targeted cash transfer fully offsets the negative effect of the crisis (with only a minor exception in 2010). Similar results are found for Cameroon where, in all the 3 years simulated, child poverty rates are lower than those simulated in the baseline scenario, although the impacts of the crisis are predicted to be lower than in Burkina Faso. In Ghana, due to the strong predicted effects of the economic crisis on child poverty, a cash transfer

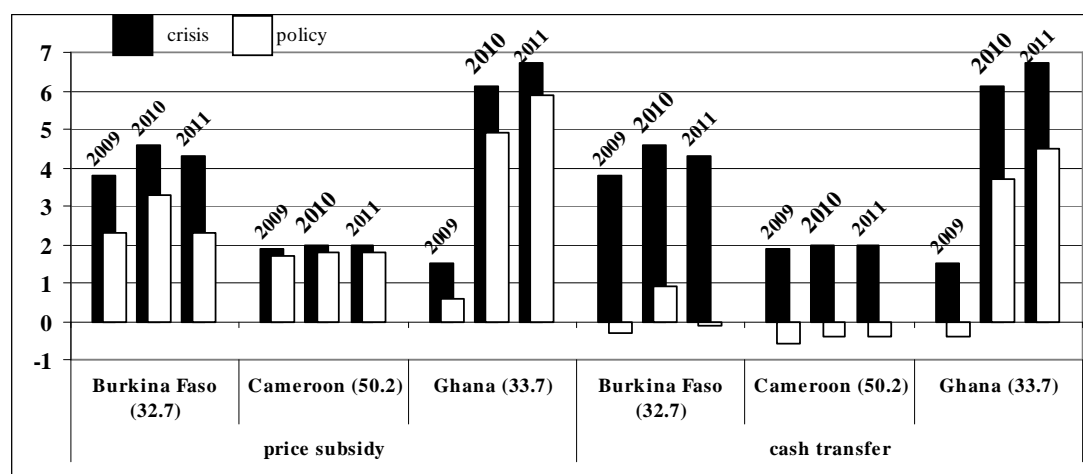
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<sup>22</sup> The individual transfer in Burkina Faso is 8628 FCFA, in Cameroon 20479 FCFA and in Ghana 19.8 new Ghana *Cedis*. In each case, the amount is calculated by dividing the total budget (equal to 1 per cent of base-year GDP) by the number of children predicted to be poor in the country as a whole.

policy is not enough to fully offset, although poverty is still reduced by more than 2 points in each year. However, it is noteworthy that the poverty gap in 2009 is even lower than observed in the base year.

The weaker performance in Ghana is also due to the fact that the amount of the cash transfer only represents around 5 per cent of both the poverty line and the consumption of predicted poor children, while for Burkina Faso it is around 10 and 9 per cent respectively and in Cameroon it is around 7 per cent of both. The cash transfer in Burkina Faso also shows a higher impact because a much larger number of children, each receiving the cash transfer, live in poorer households compared to Cameroon and Ghana, so that the total amount received by poorer households tends to be higher.

**Figure 18: Effects of policy responses on child monetary poverty: food subsidy and targeted cash transfer (as difference - in percentage points - with the base year rates)**



Source: authors' calculation

Note: Numbers in brackets refer to the base-year values

A final factor in determining the effectiveness of these two policy responses is the targeting performance of the cash transfer programme (table 12). Here, we found that Cameroon has the lowest rate of undercoverage (10.7 per cent nationwide), i.e. of poor children erroneously excluded from the programme by the proxy means test, and also the lowest rate of leakage. As the amount of transfer per child is equal to the total budget (1 per cent base-year GDP) divided by the number of predicted poor children, leakage to non-poor children reduces the amount received by poor children, whereas undercoverage excludes them completely. There is a trade-off between minimization of undercoverage (exclusion) and leakage (inclusion) errors.

**Table 12: Performance of proxy-means test in predicting poor children (national, urban and rural)**

Actual status	Predicted status					
	national		urban		rural	
	non-poor	poor	non-poor	poor	non-poor	poor
<b>Burkina Faso</b>						
non-poor	58.4	41.6	75.3	24.7	54.5	45.5
poor	24.0	76.0	20.2	79.8	24.2	75.8
<b>Cameroon</b>						
non-poor	63.3	36.7	73.8	26.2	51.4	48.6
poor	10.7	89.3	21.4	78.6	9.7	90.3
<b>Ghana</b>						
non-poor	62.9	37.1	60.9	39.1	64.2	35.8
poor	19.6	80.4	19.6	80.4	19.6	80.4

Source: authors' calculation

Note: the model correctly predicts the real status of children when the actual and predicted statuses are the same ("non-poor/non-poor"; "poor/poor"). On the contrary, it fails when the statuses do not coincide, resulting in either leakage (actual status is "non-poor" and predicted status is "poor") or undercoverage (actual status is "poor" and predicted status is "non-poor")

Table 13 suggests that the crisis draws a substantial share of children (up to 11.4 per cent in Ghana by 2011) into poverty. While the cash transfer is more successful than the price subsidy in preventing this, it is noteworthy that the cash transfer also allows a substantial share of initially poor children to escape poverty. Thus, the children targeted by the cash transfer are not only those that fall into poverty as a result of the crisis, but also those that were already poor in the base year. There are very few "winners" from the crisis, as only a very small share of children escape poverty after the crisis.

**Table 13: Transition matrix of poverty status across the different simulated scenarios with respect to the base year**

	BaU			Crisis			Crisis and Price Subsidy			Crisis and Cash Transfer			Absolute number of children
Base year	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011	
Burkina Faso	Poor			Poor			Poor			Poor			
Non-poor	1.0	0.8	0.8	5.7	7.0	6.5	3.7	5.1	3.7	2.7	4.1	2.7	3,528,203
Poor	100	98.9	97.6	99.9	99.8	99.9	99.6	99.7	99.70	93.6	94.4	94.2	1,710,876
Cameroon													
Non-poor	0.1	0.5	0.7	3.8	4.2	4.1	3.5	3.7	3.7	1.8	2.0	2.0	3,821,159
Poor	99.6	99.3	99.2	99.9	99.9	100	99.9	100	100	97.1	97.1	97.2	3,852,064
Ghana													
Non-poor	1.6	2.9	3.9	3.6	10.1	11.4	2.6	8.6	10.5	2.6	7.4	9.0	5,990,092
Poor	94.2	88.8	80.4	97.3	98.2	97.4	96.6	97.6	96.7	93.5	96.3	95.6	3,049,373

Source: authors' calculation

Note: rows identify percentages of *non-poor* or *poor* children in the base year; columns identify *poor* children under the different simulated scenarios/years. By crossing rows and columns the reader can get the share of children who are *non-poor* in the base year and *poor* under any specific simulated scenario/year, and children who are *poor* in the base year and *poor* under any specific simulated scenario/year.

Targeted cash transfers require time and institutional capacity to implement. Universal targeting is relatively easier to carry out and, at least in a first phase, may represent a more cost-effective alternative, particularly where some wealthier households self-exclude themselves by deeming the amount of the transfer too small to collect. Table 14 reports child



monetary poverty rates when a universal transfer (with the same total budget as the targeted transfer discussed above: 1 per cent of GDP) is provided, but only to children younger than 6. We assume that this transfer is pooled with other household income and shared equitably among household members, as is the case for the targeted transfer as well. As the total population of children aged 0 to 5 is smaller than the population of children aged 0 to 14 that are predicted to be poor (and thus targeted), the annual amount – in the survey’s year terms – transferred to each individual child would thus be larger: FCFA 11200 in Burkina Faso, FCFA 29300 in Cameroon and 30.6 new *Cedis* in Ghana. When the whole child population is analyzed, providing a universal cash transfer to all children aged 0 to 5 years old is very effective in reducing poverty rates after the crisis and gives results that are very close (and only slightly higher) to the scenario where we simulated a targeted cash transfer collected by all children predicted as poor. This good performance is due to the combination of a higher individual transfer and of the elimination of the undercoverage errors from the targeting approach.

**Table 14: Child monetary poverty rates under targeted and universal transfer (per cent), by different age groups**

	0-14 years old			0-5 years old		
	crisis	TT 0-14	UT 0-5	crisis	TT 0-14	UT 0-5
<b>Burkina Faso</b>	<i>base-year poverty rate: 32.7%</i>			<i>base-year poverty rate: 29.8%</i>		
2009	36.5	32.4	32.9	33.8	29.6	29.2
2010	37.3	33.6	33.9	34.6	30.7	30.3
2011	37.0	32.6	33.0	34.3	29.7	29.3
<b>Cameroon</b>	<i>base-year poverty rate: 50.2%</i>			<i>base-year poverty rate: 47.4%</i>		
2009	52.1	49.6	50.1	49.4	46.9	46.5
2010	52.2	49.8	50.2	49.5	47.0	46.6
2011	52.2	49.8	50.0	49.5	47.1	46.5
<b>Ghana</b>	<i>base-year poverty rate: 33.7%</i>			<i>base-year poverty rate: 31.3%</i>		
2009	35.2	33.3	33.4	32.6	30.7	30.0
2010	39.8	37.4	37.4	37.4	34.9	33.9
2011	40.4	38.2	38.2	37.7	35.7	34.9

Source: authors’ calculation

Note: “TT 0-14” is for targeted cash transfer to all predicted poor children aged 0 to 14 years old; “UT 0-5” is for universal transfer for all children aged 0 to 5 years old.

Specifically, under the universal approach, poverty rates are only 0.3-0.5 percentage points higher than under a targeted transfer in Burkina Faso, 0.2-0.5 points higher in Cameroon and 0 to +0.1 in Ghana. Moreover, if we consider only children aged 0 to 5 years old, then the universal approach is predicted to produce better performances in terms of monetary poverty than the targeted approach: in particular, in Ghana poverty rates are up to 1 percentage point lower when a universal approach is followed.

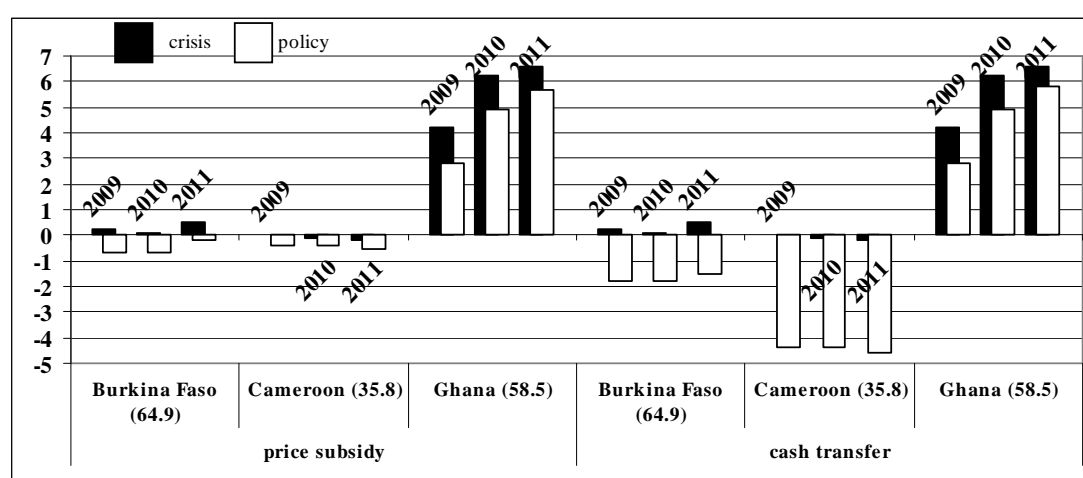
The cash transfer programme could also be integrated with a school feeding programme, starting with the most deprived districts in the country. In the case of Cameroon, a school feeding programme of this sort was estimated to cost the Government 0.19 per cent of GDP and lead to a decrease in both national monetary poverty and hunger rates for children by 0.6 and 2.6 percentage points, respectively (see Bibi et al. 2010b). As mentioned above, a school

feeding programme in Burkina Faso would have a smaller impact, as school participation there is still very low.

### ▪ Hunger

The cash transfer is also very effective in reducing hunger rates, especially in Cameroon and in Burkina Faso, while in Ghana there are no substantial differences between food price subsidies and targeted cash transfer (figure 19). In Cameroon, targeting cash transfers to poor children reduces hunger by more than 4 percentage points, while in Ghana and Burkina Faso the effects are more modest but still substantial.

**Figure 19: Effects of policy responses on child hunger: consumer price subsidy and targeted cash transfer (as difference - in percentage points - with the base year rates)**



Source: authors' calculation

Note: Numbers in brackets refer to the base-year values

### ▪ School participation and child labour

As for the other components analyzed above, a cash transfer appears to be relatively more effective as an anti-crisis tool (figure 20). This is particularly true for Burkina Faso, where school participation for children aged 7 to 10 years old increases by up to 0.5 percentage points (entirely through the “school/no-work” alternative) in comparison with the crisis, while the rate of children involved in some economic related activities decreases by up to 0.8 percentage points. Those moving out of labour partly go to school and others become inactive.

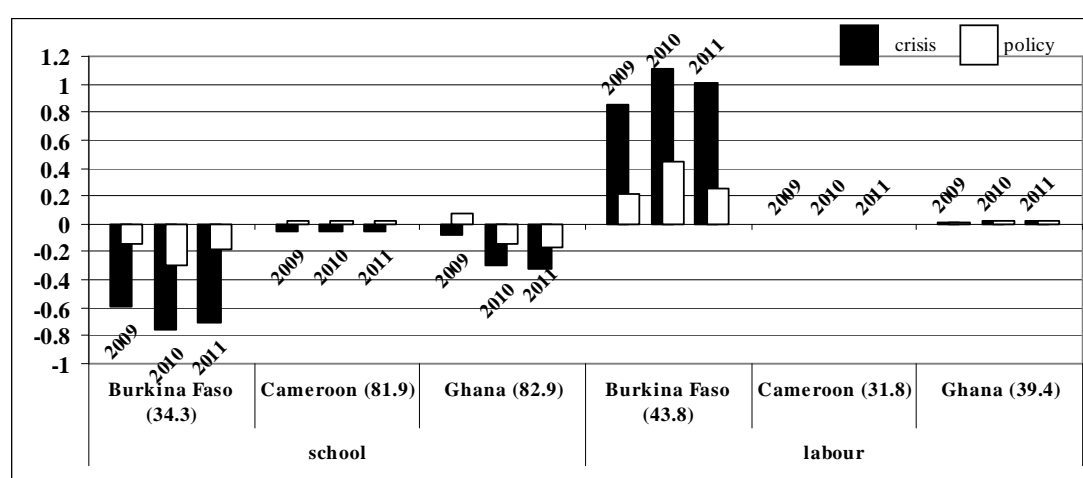
In Ghana, thanks to the cash transfer, school participation for children aged 6 to 10 years old increases by up to 0.2 percentage points in comparison with the results under the crisis: here these children are fairly shared between the two alternatives with school. Even if the “no-school/work” alternative decreases with the cash transfer, this is not enough to fully offset the increase in the “school/work” alternative and, as a consequence, this policy scenario keeps the percentage of working children in comparison with the crisis scenario basically unchanged.

Finally, in Cameroon school-age children result to be not significantly affected in their decisions by the crisis or under the policy responses. This is mainly due to the very poorly significant income coefficients, through which the effects simulated under the various scenarios are captured.

However, this and other demand-side policies will be most effective in the presence of complementary improvements from the supply side<sup>23</sup> and alone they are clearly not able to change the state of children in terms of school participation.

As for older children (aged 11 to 14), the effects are somewhat smaller, but generally follow the same pattern (figure 21).

**Figure 20: Effects of cash transfer on school participation and child labour for children aged 6 to 10 years (as difference - in percentage points - with the base year rates)**

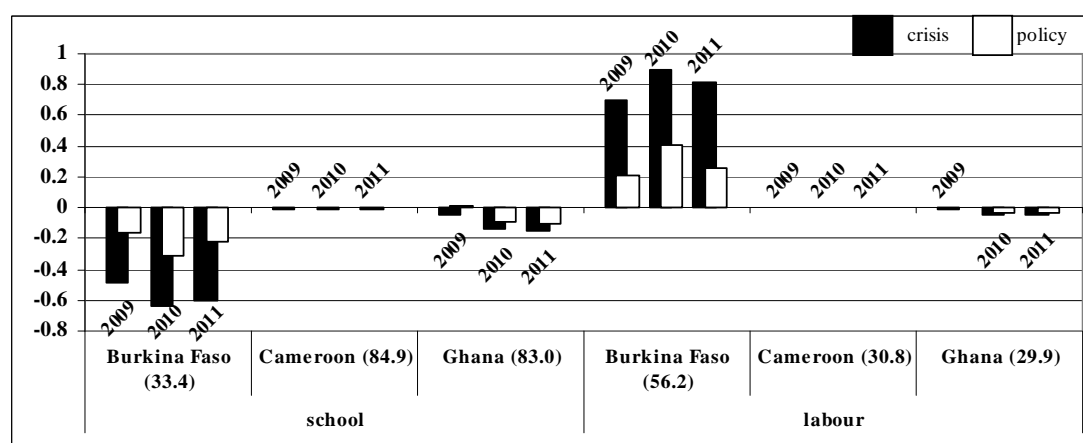


Source: authors' calculation.

Note: For Burkina Faso the sample is 7-10 years old.

Numbers in brackets refer to the base-year values.

**Figure 21: Effects of cash transfer on school participation and child labour for children aged 11 to 14 years (as difference - in percentage points - with the base year rates)**



Source: authors' calculation

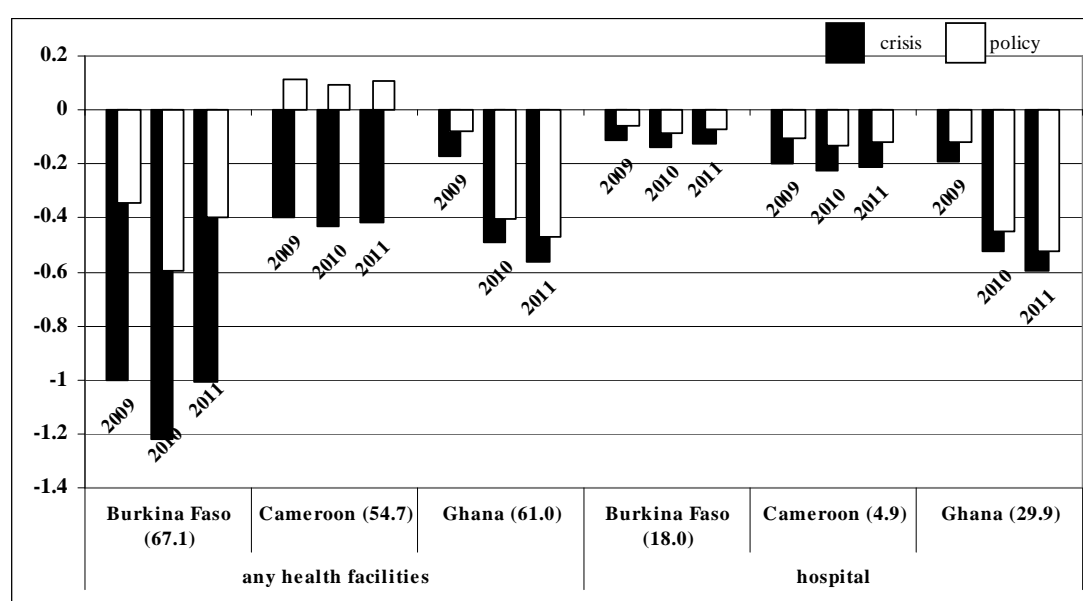
Note: numbers in brackets refer to the base-year values

<sup>23</sup> This result is widely confirmed by Kakwani et al. (2006) who assess the impact of cash transfers for school age children in 15 African countries, even when a huge (and unrealistic) budget is devoted to this aim.

## ▪ Access to health services

A targeted cash transfer policy is found to be very effective in offsetting the crisis impact in Burkina Faso and in Cameroon, but much less so in Ghana given the smaller relative size of the transfer and weaker estimated income effects (figure 22). More specifically, in Burkina Faso cash transfers more than halve the increase due to the crisis (which is around up to 1 percentage point in 2011) registered for traditional healers by diverting most of these children towards the CSPS (*Centre de santé et de promotion sociale*) (an increase by around 0.5 percentage points in comparison with the crisis results) and, to a lower extent, towards private health facilities and public hospitals.

**Figure 22: Effects of cash transfer on access to health services (as difference - in percentage points - with the base year rates)**



Source: authors' calculation

Note: numbers in brackets refer to the base-year values. Categories of health facilities consulted by ill children and used in the analysis are (in order of service's quality):

**Burkina Faso:** (1) national and regional hospitals, advanced medical centres; (2) private health practitioners, health NGOs; (3) centres for health and social promotion; (4) traditional healers.

**Cameroon:** (1) primary and provincial hospitals; (2) district hospital, commune health centre, health practitioner going to the sick person's home; (3) pharmacy, health clinic, school/work infirmary, health NGOs; (4) traditional healers, informal sellers of medicines.

**Ghana:** (1) hospitals; (2) clinic, mother and child clinic, maternity home; (3) pharmacy; (4) consultant's home, patient's home or other.

In the figure, in addition to any type of health facility (categories 1 to 4), results for category 1 are shown.

## 5. CONCLUSION

The 2008/9 global financial and economic crisis, which exacerbates the impacts of the energy and food crises that immediately preceded it, has spread to the developing countries endangering recent gains in terms of economic growth and poverty reduction. The effects of the crisis are likely to vary substantially between countries and between individuals within the same country. Children are among the most vulnerable population, particularly in a period

of crisis. Especially in least developed countries, where social safety net programmes are missing or poorly performing and public fiscal space is extremely limited, households with few economic opportunities are at a higher risk of falling into (monetary) poverty, suffering from hunger, removing children from school and into work, and losing access to health services.

This study simulates the impacts of the global economic crisis and alternative policy responses on different dimensions of child welfare in Western and Central Africa (WCA) over the period 2009-2011. It is based on country studies for Burkina Faso, Cameroon, and Ghana, which broadly represent the diversity of economic conditions in WCA countries. In order to capture the complex macro-economic effects of the crisis and the various policy responses – on trade, investment, remittances, aid flows, goods and factor markets – and to then trace their consequences in terms of child welfare – monetary poverty, hunger (caloric poverty), school participation, child labour, and access to health services – a combination of macro- and micro-analysis was adopted.

The simulations suggest that the strongest effects are registered in terms of monetary poverty and hunger, although large differences between countries emerge. More moderate impacts are predicted in terms of school participation, child labour, and access to health care, although these are still significant and require urgent policy responses.

Reductions in GDP growth rates are mainly attributable to a fall in investment and, to a much greater extent, final consumption. Benefits from falling import prices only partially offset the negative effects of reduced export prices and volumes, foreign direct investment, remittances and foreign aid. Different patterns emerge across the countries under analysis. While Cameroon's growth rate is predicted to begin to recover its pre-crisis rate already in 2010, according to our simulations we need to wait until 2011 to see economic growth start recovering in Ghana and Burkina Faso.

This difference is essentially due to the economic structure of these economies: the expected recovery in import and export prices in 2010 is most beneficial to Cameroon because of its initial trade surplus. Ghana's economy is the most integrated into the global economy and is thus significantly hit by the predicted fall in foreign capital. Burkina Faso is affected by a more modest reduction in foreign capital inflows while Cameroon is able to draw on reserves accumulated in the previous years to offset this fall in foreign capital inflows. All three countries experience drops in formal sector employment and informal sector wage rates with Cameroon showing the most pronounced movement of workers from the formal to the informal sector.

Ghana is the country where children are predicted to suffer most from the global crisis, with monetary poverty rates increasing by more than 6 percentage points. This decline is even more dramatic when compared to a reduction of more than 4 percentage points simulated in the absence of the crisis, such that the total effect is an increase of more than 10 percentage points by 2011 relative to the no-crisis scenario. Impacts in Burkina Faso and Cameroon are more modest at roughly 4 and 2 percentage points, respectively. In Ghana, this deterioration is driven primarily by a reduction in consumer purchasing power and by a large

drop in income in the non-agriculture sector. In contrast, child welfare in Burkina Faso is mainly affected by the fall in incomes in the agriculture sector while, in Cameroon, the impacts are more diffuse. In general, the effects on the wage sectors as well as on remittances generate only relatively modest adverse impacts on child poverty. In terms of absolute changes in child monetary poverty, in Burkina Faso children in rural areas are more affected than those living in urban areas, while in Cameroon and especially Ghana, monetary poverty for children living in urban areas is predicted to increase more. In all countries large interregional variations emerge.

Children in Ghana are also the most severely affected in terms of hunger, with increases of almost 7 percentage points, compared to negligible effects in Burkina Faso and Cameroon. This is primarily due to the greater monetary poverty impacts already noted and the fact that food prices are predicted to increase much more than non-food prices in Ghana.

Burkina Faso is the country where children are the most affected in terms of reduced school participation and, in particular, increased child labour. This is striking as school enrolment rates among school age children were already extremely low in Burkina Faso before the crisis (34 per cent, compared to 83 per cent in Cameroon and 84 per cent in Ghana) and child work participation was relatively high (49 per cent, compared to 31 per cent in Cameroon and 34 per cent in Ghana). The effects are more severe for younger school age children (6/7 to 10 years old), for whom enrolment rates are predicted to fall by nearly 1 percentage point in Burkina Faso and around 0.3 points in Ghana (negligibly in Cameroon) and child labour rates are forecast to increase by roughly 1 percentage point in Burkina Faso alone (negligible effects in Cameroon and Ghana). Among older children (11-14 years old), only Burkina Faso is significantly affected with enrolment drops of about 0.5 percentage points and slightly greater increases in child labour activities.

Children who become ill are also less likely to access health services as a result of the crisis and they are more likely to turn to lower quality health facilities. This result is observed in all 3 countries, with the largest reduction in consultation rates (roughly 1 percentage point) predicted for Burkina Faso.

Among the policy responses examined to counteract the negative effects of the crisis on children, a targeted cash transfer (following a proxy-means test approach) to predicted poor children is by far the most effective programme, particularly in Burkina Faso and Cameroon. With the same overall budget, which we assume to be financed by foreign aid and to be equal to 1 per cent of GDP, food subsidies have on average smaller effects, as they do not specifically target the poor or children. Broadly, the latter policy has a significant impact in Burkina Faso (only in terms of reducing the monetary poverty effect, by 2 percentage points) and, to a larger extent, in Ghana where it reduces child monetary poverty by up to more 2 points and hunger rates by more than 1 point.

The cash transfer is most effective in Burkina Faso where, as in Cameroon, it is able to fully offset the negative effects of the crisis on child monetary poverty. This policy is also very effective in reducing hunger among children in Burkina Faso and, particularly, Cameroon. Indeed, this policy is even able to reduce hunger by 3-4 percentage points in these countries

relative to our predictions in the absence of the crisis. In Ghana and Burkina Faso, the cash transfer roughly entirely offsets the effects of the crisis on school participation and child labour, while Cameroon has negligible effects as crisis impacts there were already negligible in this dimension. As we put no limits on the number of beneficiary children living in the same (poor) household, it follows that a cash transfer targeted to children is a progressive policy response, as households with more children, which are usually poorer, benefit proportionately more.

We should highlight that designing and implementing a cash transfer programme requires time and cannot represent an immediate response to the crisis. Only Ghana may be in a position to rapidly implement a cash transfer programme to respond to the crisis, as it may expand the existing Livelihood Empowerment Against Poverty (LEAP) programme. Other interventions (or mix of policies) might be more cost-effective in the short run. A combination of a universal or regionally targeted (starting with those regions where child poverty is more widespread) cash transfer programme for children aged 0 to 5 years old together with a school-feeding programme in poorer regions might represent an effective way to intervene quickly to improve child well-being. As discussed here, given the same amount of budget, a cash transfer provided universally to all children aged 0 to 5 is estimated to lead to child monetary poverty rates that are substantially similar to the case in which a cash transfer is targeted to all children (0 to 14 years old) predicted as poor, by relatively improving the situation of younger children. A universal approach such as that just mentioned would in fact have the advantage of eliminating undercoverage error of the targeting approach and the provide a higher individual transfer for younger children.

In general, a note of caution regarding these results is in order, given that cash transfers and other demand-side policies will be most effective in the presence of complementary improvements from the supply side.

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## ANNEX I: ADDITIONAL TABLES

**Table 1: Country profile, 2008 (unless specified)**

	Burkina Faso	Ghana	Cameroon
Population, total (millions)	15.2	23.4	18.9
Population growth (annual %)	2.9	2.1	2.0
Surface area (sq. km) (thousands)	274.0	238.5	475.4
GNI per capita, Atlas method (current US\$)	480.0	670.0	1,150.0
GNI per capita, PPP (current international \$)	1,160.0	1,430.0	2,180.0
Poverty ( <i>% of population below national poverty line</i> )***	46.0	29.0	39.9
Life expectancy at birth, total (years)	52.0*	57.0	50.0*
Primary completion rate, total (% of relevant age group)	37.0	78.0	55.0*
Ratio of girls to boys in primary and secondary education (%)	84.0	95.0	85.0*
GDP (current US\$) (billions)	8.0	16.1	23.4
GDP growth (annual %)	4.5	6.2	3.9
Inflation, GDP deflator (annual %)	5.1	18.0	1.7
Agriculture, value added (% of GDP)	33.3**	32.0	20.0
Industry, value added (% of GDP)	22.4**	26.0	33.0
Services, etc., value added (% of GDP)	44.4**	42.0	48.0
Gross capital formation (% of GDP)	18.1**	32.0	19.0
External debt stocks, total (DOD, current US\$) (millions)	1,461.0*	4,479.0*	3,162.0*
Exports of goods and services (% of GDP)	24.4**	37.0	29.0
Imports of goods and services (% of GDP)	26.8**	63.0	28.0
Workers' remittances and compensation of employees, received (current US\$) (millions)	50.0	128.0	167.0
Foreign direct investment, net inflows (BoP, current US\$) (millions)	600.0*	970.0*	433.0*
Official development assistance and official aid (current US\$) (millions)	930.0*	1,151.0*	1,933.0*

*Source:* World Development Indicators database, April 2009; Country profile at a glance, World Bank, September 2008 Note: \* = 2007; \*\*=2006; \*\*\* Burkina Faso and Ghana, most recent estimate (latest year available, 2001-07); Cameroon, Country brief, World Bank (February 11, 2010) available at: <http://web.worldbank.org>.

**Table 2: Selected macroeconomic facts in 2008 (per cent of GDP)**

	Consumption	Investment	Net exports	Openness
Burkina Faso	97.5	17.1	-15.8	34.0
Cameroon	79.4	14.6	5.1	44.1
Ghana	103.2	35.0	-36.9	117.1

*Source:* Social Accounting Matrices, 2008 for Burkina Faso and Ghana, 2007 for Cameroon.

**Table 3: Savings (per cent of GDP)**

	Private	Public	Foreign
Burkina	8.7	-0.8	10.8
Cameroon	12.9	4.6	-2.1
Ghana	1.8	-4.0	36.9

*Source:* Social Accounting Matrices, 2008 for Burkina Faso and Ghana, 2007 for Cameroon.

**Table 4: External trade structure (per cent)**

Cameroon			Burkina Faso			Ghana		
	Import	Export		Import	Export		Import	Export
Subsistence agriculture	0.4	1.3	Cereals	1.4	0.2	Cereals	0.5	0.0
Commercial agriculture	0.0	4.7	Fruits and vegetables	0.0	0.3	Tubers	0.0	0.7
Farming of animal	0.0	0.0	Other food products	0.4	0.1	Nuts	0.0	2.3
Forestry	0.1	2.2	Cotton	0.2	0.0	Fruit	0.0	0.9
Fishing	0.0	0.0	Other commercial agriculture	0.1	4.3	Vegetable	0.0	0.3
Oil	28.7	43.2	Cattle	0.0	2.1	Meat	1.8	0.0
Other mining and quarrying	2.0	0.0	Other livestock	0.0	0.6	Rice	3.9	0.0
Meat and fish	2.1	0.2	Forestry	0.0	0.0	Plantain	0.0	0.0
Grain mills	4.6	0.0	Fishing	0.0	0.0	Cocoa	0.0	27.5
Cocoa, coffee, tea and sugar	1.0	0.9	Mining and quarrying	0.4	2.7	Other agriculture	1.7	0.6
Oils and fats	0.5	0.0	Beverage and tobacco	2.8	0.9	Forestry	0.0	16.0
Cereals	0.2	0.0	Textile	0.0	60.1	Fishing	0.0	3.8
Dairy, fruits and vegetables	1.9	0.4	Electricity, gas, and water	0.0	0.0	Mining and quarrying	4.6	21.0
Beverage	1.4	0.3	Other formal manufacturing	86.6	13.3	Food manufacturing	10.9	2.3
Tobacco	0.4	0.0	Informal manufacturing	0.0	3.2	Non food manufacturing	76.3	14.9
Textile	2.6	0.5	Formal building and construction	0.0	0.0	Electricity,gas,water	0.2	0.0
Leather	0.1	0.0	Informal building and construction	0.0	0.0	Building/construction	0.0	0.0
Woods	0.0	15.4	Formal trade	0.0	0.0	Trade	0.0	0.0
Paper	2.4	0.0	Informal trade	0.0	0.0	Reparation	0.0	9.8
Petroleum	1.9	11.6	Formal transport	6.8	8.1	Transport	0.0	0.0
Chemical	10.0	0.4	Informal transport	0.0	0.0	Communication	0.0	0.0
Plastic	1.0	2.2	Telecommunication	0.3	1.0	Business services	0.0	0.0
Non ferrous metal	1.6	0.6	Finance	0.1	0.0	Real estate	0.0	0.0
Metal	7.9	5.3	Accommodation	0.0	0.0	Public services	0.0	0.0
Machinery	11.6	0.1	Formal business	0.8	0.9	Education	0.0	0.0
Equipment	1.2	0.0	Informal business	0.0	0.4	Health	0.0	0.0
Transport	5.0	0.0	Semi-public services	0.0	1.5			
Furniture	0.4	0.0	Public services	0.0	0.0	<b>All</b>	<b>100.0</b>	<b>100.0</b>
Electricity, gas, and water	0.0	0.0	<b>All</b>	<b>100.0</b>	<b>100.0</b>			
Building and construction	0.0	0.0						
Trade	0.0	0.0						
Reparation	0.0	0.0						
Accommodation	0.4	0.4						
Transport	3.7	5.1						
Telecommunication	0.3	0.2						
Finance	1.8	1.3						
Real estate	0.0	0.0						
Business services	4.7	3.5						
Government services	0.0	0.0						
Education	0.0	0.0						
Health	0.0	0.0						
Social services	0.0	0.0						
<b>All</b>	<b>100.0</b>	<b>100.0</b>						

Source: Social Accounting Matrices, 2008 for Burkina Faso and Ghana, 2007 for Cameroon

Note: rates are expressed as percentage of total imports and exports respectively

**Table 5: Poverty gap in the base year and changes in the simulated scenarios (in per cent)**

	Burkina Faso	Cameroon	Ghana
<b>base-year</b>	<b>9.2</b>	<b>17.9</b>	<b>11.2</b>
<b>BaU 2009</b>	0.4	0.0	-0.5
<b>BaU 2010</b>	0.1	0.1	-0.7
<b>BaU 2011</b>	-0.1	0.2	-1.0
<b>Crisis 2009</b>	2.2	1.0	1.0
<b>Crisis 2010</b>	2.7	1.1	2.7
<b>Crisis 2011</b>	2.5	1.2	3.2
<b>Food Subsidy 2009</b>	1.6	0.9	1.0
<b>Food Subsidy 2010</b>	2.3	1.0	2.8
<b>Food Subsidy 2011</b>	1.7	1.1	3.2
<b>Cash Transfer 2009</b>	-0.3	-1.5	-0.3
<b>Cash Transfer 2010</b>	0.2	-1.5	1.4
<b>Cash Transfer 2011</b>	-0.3	-1.4	1.9

*Source:* authors' calculation.

*Note:* values for the simulated scenarios are reported as percentage difference to the base-year value.

**Table 6: Absolute number of children, total and by age groups**

	children 0-14	children 0-5	children 6-10	children 11-14
<b>Burkina Faso</b>	6,222,134	2,641,011	2,237,215	1,343,908
<b>Cameroon</b>	7,813,425	3,449,030	2,674,214	1,690,182
<b>Ghana</b>	9,276,320	3,588,388	3,311,598	2,376,335

*Source:* authors' calculation.

**Table 7: Results of "proxy-means" regression to identify poor in Burkina Faso**

	Urban	Rural
Regions		
Hauts Bassins	0.000	0.000
Boucle du Mouhoun	0.029 ***	-0.136 ***
Sahel	-0.010 ***	0.028 ***
Est	0.281 ***	-0.103 ***
Sud Ouest	-0.075 ***	0.050 ***
Centre Nord	0.123 ***	0.009 *
Centre Ouest	0.203 ***	0.047 ***
Plateau central	0.000	-0.218 ***
Nord	0.043 **	-0.263 ***
Centre Est	0.008 ***	-0.189 ***
Centre	0.036 ***	-0.341 ***
Cascades	-0.081 ***	-0.090 ***
Centre Sud	0.000	-0.360 ***
hh_ageabove14	-0.063 ***	-0.032 ***
hh_agebelow15	-0.053 ***	-0.035 ***
Lotie	0.057 ***	0.000
Toilet	0.375 ***	1.121 ***
Floor	0.197 ***	0.210 ***
Wall	0.209 ***	0.085 ***
Roof	0.018 ***	0.021 ***
Electricity	0.298 ***	0.056 ***
Water	0.247 ***	0.311 ***
n_rooms	0.404 ***	0.278 ***
Automobile	0.354 ***	0.139 ***
Motorcycle	0.299 ***	0.295 ***
Distance	0.045 ***	0.044 ***
Constant	11.133 ***	11.453 ***
"cut-off point"	11.322	11.322

Source: Authors' calculations from EBCVM 2003.

Notes:

- Dependent variable: logarithm of total household expenditure (per adult equivalent) divided by the relevant regional price deflator
- Econometric model: quantile regressions set at 0.11 for urban areas and at 0.30 for rural areas
- Coefficients significant at 1% (\*\*\*), 5% (\*\*), 10% (\*) level
- Pseudo  $R^2$  for "urban" 0.35; for "rural" 0.10
- The "cut-off point" is in logarithmic form and corresponds to 82672 FCFA, the 2003 poverty line
- To identify the individuals who are poor, it is sufficient to multiply the variables for each household by their respective coefficients. If the total sum is less than 11.322 the household is considered as poor, otherwise it is considered as non poor.

**Key:**

*Regions* = binary variables for each region with labels "Haut Bassins" (the comparison category) to "Centre Sud"

*hh\_ageabove14* = number of household members aged 15 and over

*hh\_agebelow15* = number of household members aged 14 and under

*lotie* = binary variable equal to 1 if household lives in a lotie residence zone; 0 otherwise

*toilet* = binary variable equal to 1 if household has a private flush toilet; 0 otherwise

*floor* = binary variable equal to 1 if household lives in a house with a cement or tiled floor; 0 otherwise

*wall* = binary variable equal to 1 if household lives in a house with a cement or brick walls; 0 otherwise

*roof* = binary variable equal to 1 if household lives in a house with a cement/sheet metal roof; 0 otherwise

*electricity* = binary equal to 1 if household lives in a house with electricity; 0 otherwise

*water* = binary equal to 1 if household has access to own or shared drinkable water; 0 otherwise

*n\_rooms* = number of rooms per household member

*automobile* = binary equal to 1 if household has an automobile; 0 otherwise

*moto* = binary equal to 1 if household has a motorcycle; 0 otherwise

*distance* = binary equal to 1 if household lives 15 minutes or less from public transport; 0 otherwise

**Table 8: Results of "proxy-means" regression to identify poor in Cameroon**

	Urban	Rural
Regions		
Douala	0.000	0.000
Yaoundé	0.054 ***	0.000
Adamaoua	-0.170 ***	-0.177 ***
Centre	-0.166 ***	-0.121 ***
Est	-0.102 ***	-0.178 ***
Extrême-Nord	-0.088 ***	-0.326 ***
Littoral	-0.347 ***	-0.053 ***
Nord	-0.143 ***	-0.263 ***
Nord-Ouest	-0.359 ***	-0.348 ***
Ouest	-0.116 ***	0.015
Sud	-0.049 ***	0.000
Sud-Ouest	-0.140 ***	-0.079 ***
hh_ageabove14	-0.058 ***	-0.053 ***
hh_agebelow15	-0.097 ***	-0.052 ***
Toilet	0.120 ***	0.106 ***
Floor	0.094 ***	0.117 ***
Wall	0.122 ***	0.080 ***
Roof	0.110 ***	0.170 ***
Electricity	0.273 ***	0.156 ***
Water	0.250 ***	0.297 ***
n_rooms	0.017 ***	0.092 ***
Automobile	0.551 ***	0.660 ***
Motorcycle	0.188 ***	0.306 ***
Distance	0.025 **	0.034 ***
Constant	12.501 ***	12.500 ***
"cut-off point"	12.504	12.504

Source: Authors' calculations from ECAM III 2007

*Notes:*

- Dependent variable: logarithm of total household expenditure (per adult equivalent) divided by the relevant regional price deflator
- Econometric model: quantile regressions set at 0.11 for urban areas and at 0.42 for rural areas
- Coefficients significant at 1% (\*\*\*), 5% (\*\*), 10% (\*) level
- Pseudo R<sup>2</sup> for "urban" 0.26; for "rural" 0.26
- The "cut-off point" is expressed in logarithmic form and corresponds to 269,443 (FCFA), the poverty line for 2007
- To identify the individuals who are poor, it is sufficient to multiply the variables for each household by their respective coefficients. If the total sum is less than 12.504 the household is considered as poor, otherwise it is considered as non poor.

**Key:**

*Regions* = binary variables for each region with labels "Douala" (the comparison category) to "Sud-Ouest"

*hh\_ageabove14* = number of household members aged 15 and over

*hh\_agebelow15* = number of household members aged 14 and under

*toilet* = binary variable equal to 1 if household has a private flush toilet/improved latrine; 0 otherwise

*floor* = binary variable equal to 1 if household lives in a house with a cement or tiled floor; 0 otherwise

*wall* = binary variable equal to 1 if household lives in a house with a cement or brick walls; 0 otherwise

*roof* = binary variable equal to 1 if household lives in a house with a cement or sheet metal roof; 0 otherwise

*electricity* = binary equal to 1 if household lives in a house with electricity; 0 otherwise

*water* = binary equal to 1 if household has access to own tap (snec) for drinkable water; 0 otherwise

*n\_rooms* = number of rooms per household member

*automobile* = binary equal to 1 if household has an automobile; 0 otherwise

*moto* = binary equal to 1 if household has a motorcycle; 0 otherwise

*distance* = binary equal to 1 if household lives less than 3 km from the paved road if urban or less than 6 km if rural; 0 otherwise

**Table 9: Results of the "proxy-means" regression to identify poor individuals in Ghana**

	Urban	Rural
Regions		
Western	0.000	0.000
Central	0.350 ***	0.363 ***
Greater Accra	-0.066 *	0.000 ***
Volta	0.301 ***	0.086 ***
Eastern	0.188 ***	0.338 ***
Astanti	0.345 ***	0.358 ***
Brong Ahafo	0.305 ***	0.000
Northern	0.000	-0.300 ***
Upper East	0.000	-0.527 ***
Upper West	-0.469 ***	-0.572 ***
hh_ageabove14	-0.116 ***	-0.040 ***
hh_agebelow15	-0.064 ***	-0.050 ***
hh_size_2	0.000	0.000
hh_size_3	-0.147 ***	0.000
hh_size_4	-0.140 ***	0.000
hh_size_5	-0.239 ***	0.000
hh_size_6	-0.184 ***	0.000
Education_hh_head	-0.256 ***	-0.129 ***
Wall	0.207 ***	0.061 **
Roof	0.000	-0.069 ***
Electricity	0.558 ***	0.049 **
Water	0.000	0.332 ***
Kerosene	0.311 ***	0.000
n_rooms	0.252 ***	0.585 ***
Automobile	0.677 ***	0.000
Motorcycle	0.000	0.568 ***
Constant	15.113 ***	15.148 ***
"cut-off point"	12.504	12.504

Source: Authors' calculations from GLSS 2005/06

Note:

- Dependent variable: logarithm of total household expenditure (per adult equivalent) divided by the relevant regional price deflator
- Econometric model: quantile regressions set at 0.174 for urban areas and at 0.30 for rural areas
- Coefficients significant at 1% (\*\*\*), 5% (\*\*), 10% (\*) level
- Pseudo R<sup>2</sup> for "urban" 0.24; for "rural" 0.24
- The "cut-off point" is in log form and corresponds to 3708900 old Ghana cedis, the 2005/6 poverty line
- To identify the poor, it is sufficient to multiply the variables for each household by their respective coefficients. If the total sum is less than 15.126 the household is considered as poor.
- In order to apply these estimated coefficients in the new monetary regime using the new Ghana cedis, all that is required is to divide the poverty line by 10'000 and get the new cut-off point in log terms (= 5.916)

**Key:**

*Regions* = binary variables for each region taking label "Western" (the comparison category) to "Upper West"

*hh\_ageabove14* = number of household members aged 15 and over

*hh\_agebelow15* = number of household members aged 14 and under

*hh\_size* = binary variables for number of household members. "hh\_size\_6" is for 6 or more

*education\_hh\_head* = binary variable equal to 1 if household head had no education or only MSLC (urban)

*wall* = binary variable equal to 1 if household lives in a house with a cement or sandcrete walls; 0 otherwise

*roof* = binary variable equal to 1 if household lives in a house with a roof in leaves; 0 otherwise

*electricity* = binary equal to 1 if household lives in a house with electricity; 0 otherwise

*water* = binary equal to 1 if household has access to own source of water; 0 otherwise

*kerosene* = binary equal to 1 if household uses kerosene as main source of lighting; 0 otherwise

*n\_rooms* = number of rooms per household member

*automobile* = binary equal to 1 if household has an automobile; 0 otherwise

*moto* = binary equal to 1 if household has a motorcycle; 0 otherwise



## ANNEX II: SIMULATION SCENARIOS

Aid and development assistance, international remittances, and external trade (prices and volumes) are identified as the main transmission channels of the economic crisis to developing countries. Hypotheses on the future evolution of these variables form the scenarios simulated in the study. Their recent trends are highlighted and scenarios on their variations are made for future periods.

The study simulates two sets of hypotheses: the baseline and the crisis scenarios. The baseline scenario, also called the scenario without crisis or the “business as usual” scenario (BaU) is based on the hypothesis that the changes in variables linking developing economies to the global economy follow recent pre-crisis trends. According to its July 2009 report, the IMF forecasts an uneven stabilization and slow recovery of the global economy. On the basis of this information on the situation of the global economy, our crisis scenario assumes: a crisis in 2008/2009; a stabilization of the crisis in 2009/2010 with a rebound of import commodity prices in the second half of 2009 (charts 6, 7 and 8); and a recovery in the second half of 2010 for the macro variables, i.e. FDI, aid and development assistance, private transfers and exports. The following sections discuss these scenarios in detail.

- *Foreign investments*

In the baseline scenario, recent statistics on country-specific FDI flows for Ghana and Burkina Faso (represented by the black curve in figures 1 and 2) are used to make projection on their future trend (represented by the blue curve in figures 1 and 2). Therefore, we projected that, in the absence of the crisis, foreign investments would have grown annually between 9 and 11 per cent for both Ghana and Burkina Faso (table 1). For Cameroon, we assume that the FDIs grow at an average rate of 5.9 per cent derived from a macroeconomic framing made by the Ministry of Economy and Planning (MINEPAT/DGEPIP/DAPE 2009).<sup>24</sup>

According to the UNCTAD Investment Report, FDI fell by 15 per cent in 2008 and a similar trend is expected for 2009 if one refers to the recent downward trend in “Mergers and Acquisitions”, a main component of FDI (figure 2). In the crisis scenario (table 1), the changes in “Mergers and Acquisitions” between the first quarters of 2008 and 2009 are adopted to predict the effects of the crisis during the first period (2008-09), i.e. a 42 per cent fall for both Burkina Faso and Ghana. It is then assumed that FDI flows stagnate in the second period (2009-10), and resume the country pre-crisis growth trend in the third period (2010-11), around 9 per cent. According to forecasts by the Ministry of Economy and Planning in Cameroon (MINEPAT/DGEPIP/DAPE 2009), the growth rate of FDI projected for Cameroon in 2009 is nil, and equal to 5.3 and 2.8 per cent, respectively, in 2010 and 2011.

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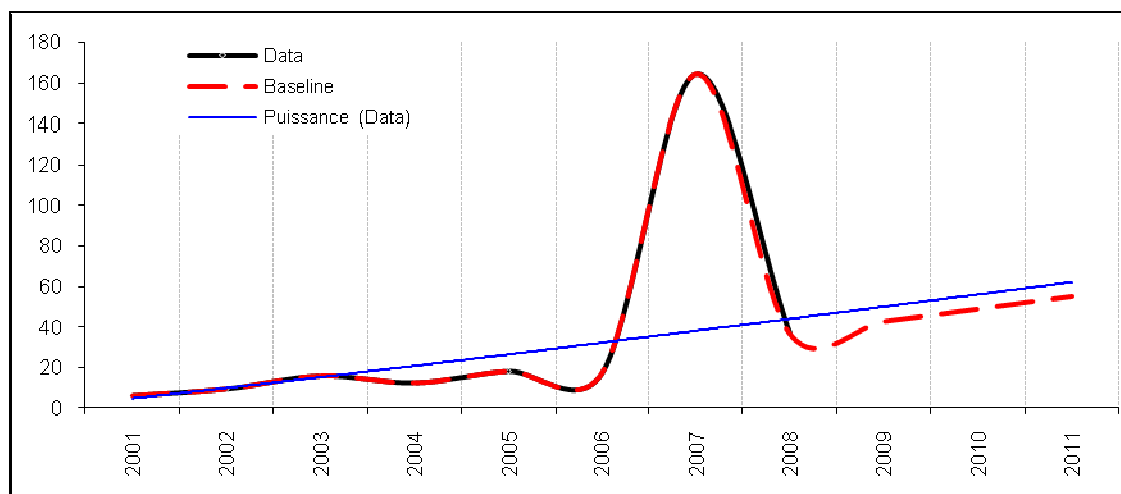
<sup>24</sup> MINEPAT/DGEPIP/DAPE. 2009. « Cadrage macroéconomique dynamique du Compte d’opérations financières ». Republic of Cameroon.

**Table 1: Foreign investment, annual percentage change**

	Baseline			Crisis		
	2009	2010	2011	2009	2010	2011
Burkina Faso	10.5	9.6	8.9	-42.0	0.0	8.9
Cameroon	5.9	5.9	5.9	0.0	5.26	2.8
Ghana	11.0	9.9	9.0	-42.0	0.0	9.0

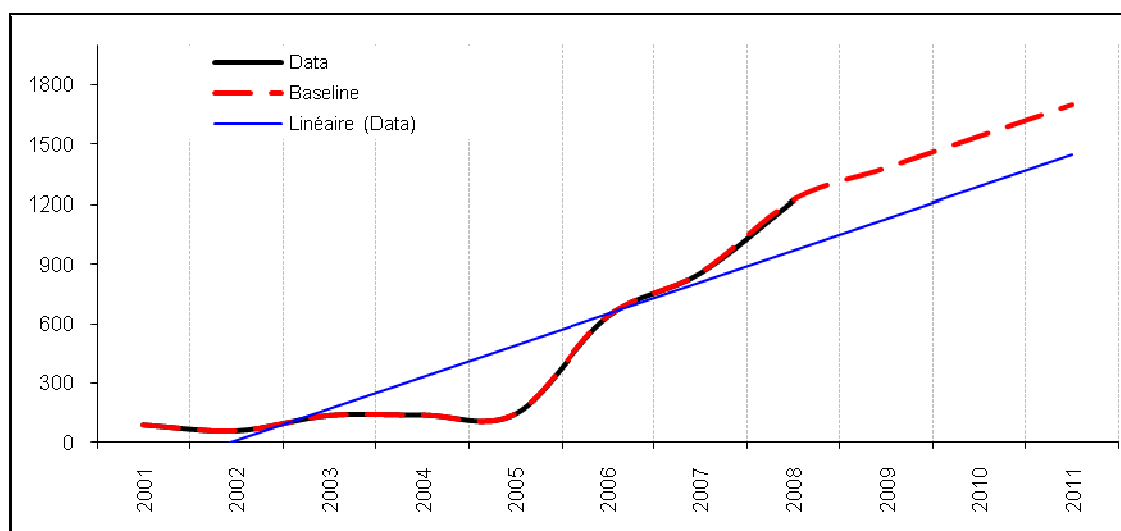
Source: Authors' elaborations

**Figure 1: FDI baseline scenario, Burkina Faso (Billions, CFA Franc)**



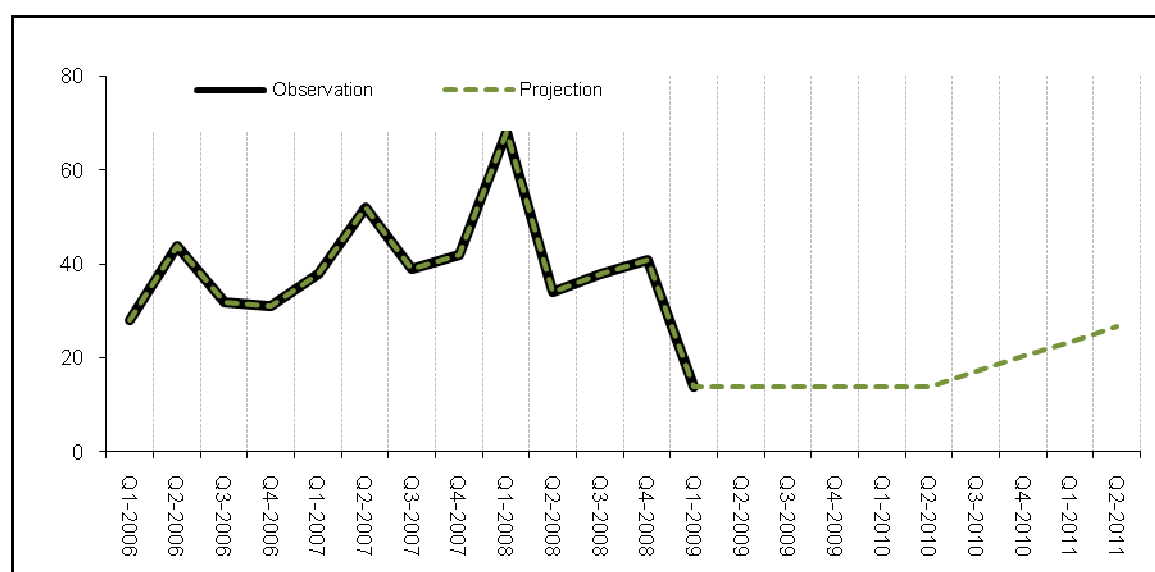
Source : Data from "Direction Generale de l'Economie et de la Planification". Note :  $R^2 = 0.57$

**Figure 2: FDI baseline scenario, Ghana (Millions US\$)**



Source: Data from the Ministry of Finance and Economic Planning (2009). Note:  $R^2 = 0.79$

**Figure 3: Cross-border mergers and acquisitions (Billions US\$)**



Source: UNCTAD report (April 2009)

- *Aid and development assistance*

Projections on the changes in aid flows follow the pre-crisis trend in the BaU scenario, as described above (figure 4).<sup>25</sup> Thus we project average growth rates of aid flows of 7 per cent in Burkina Faso and 3 per cent in Ghana (table 2). For Burkina Faso and Ghana, the crisis scenarios are based on forecasts made by the European Report on Development (October 2009) and presented in table 2. Aid flows and development assistance are expected to fall by 13 and 14 per cent respectively for Burkina Faso and Ghana in the period 2008/09. After stagnation in period 2009/10, we forecast a rebound in 2010/11 to the trends of 7 and 3 per cent, respectively. For Cameroon, forecasts by the Ministry of Economy and Planning do not concern aid trends. Public grants are expected to grow by 19 per cent before collapsing by 17 and 12 per cent in 2010 and 2011, in both the BaU and crisis scenarios.

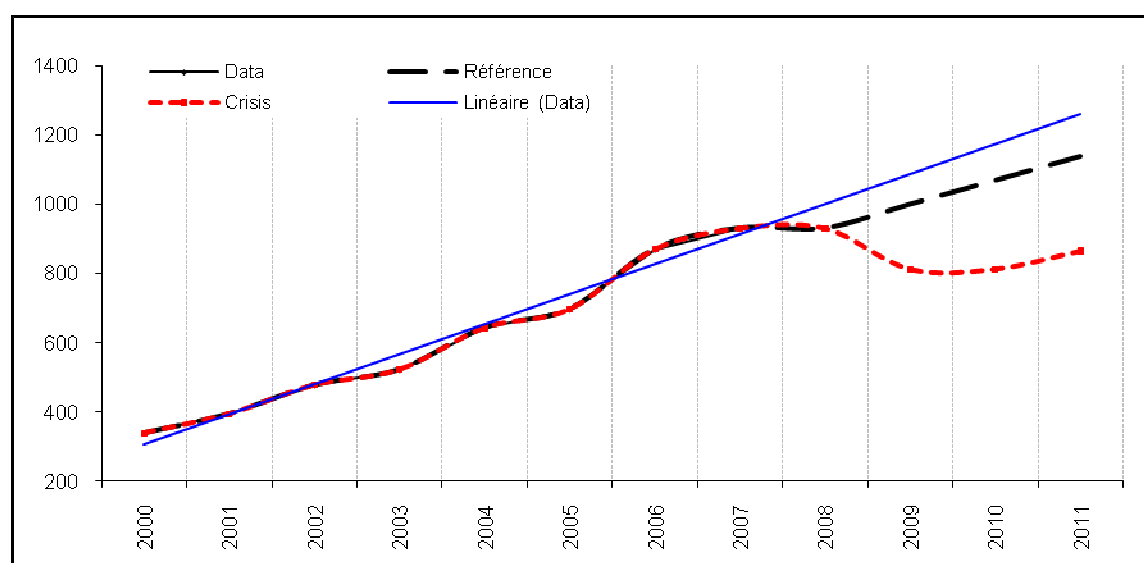
**Table 2: Aid flows, annual percentage change**

	Baseline			Crisis		
	2009	2010	2011	2009	2010	2011
Burkina Faso	7.4	6.9	6.5	-12.7	0.0	6.5
Cameroon	19.0	-17.2	-12.2	19.0	-17.2	-12.2
Ghana	2.7	2.7	2.6	-14.0	0.0	2.6

Source: Crisis scenario in Burkina Faso and Ghana from European Report on Development (October 2009).

<sup>25</sup> The distributions that best fit the data show r-squares equal to 0.87 and 0.26, respectively, for Burkina Faso and Ghana.

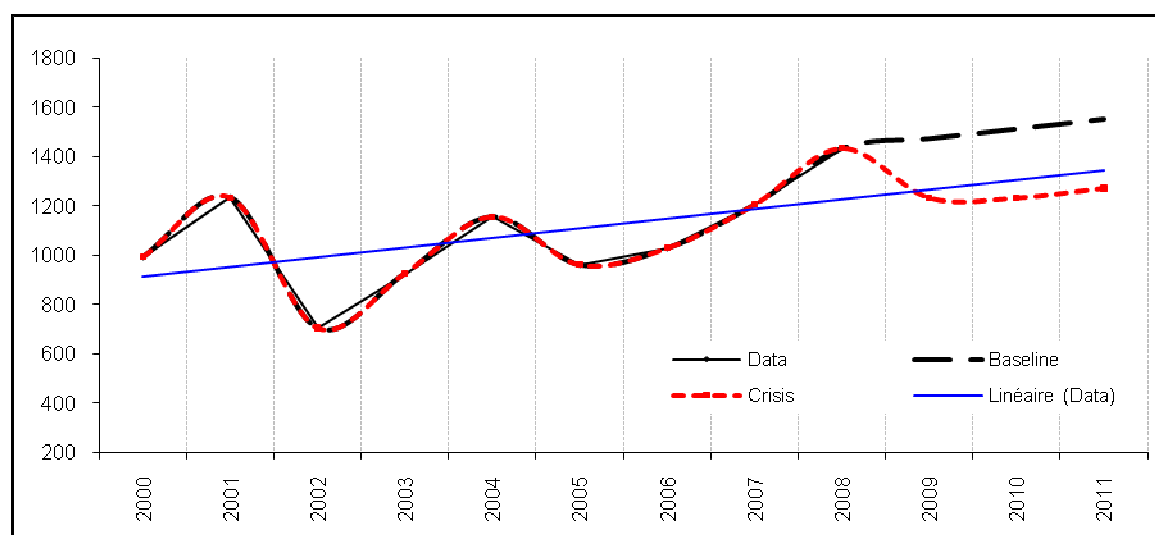
**Figure 4: Aid and development assistance, Burkina Faso (Millions US\$)**



Source: see table 2

Note:  $R^2 = 0.98$

**Figure 5: Aid and development assistance, Ghana (Millions US\$)**



Source: see table 2

Note:  $R^2 = 0.26$

- *International remittances*

In the same vein, baseline projections for remittances follow the pre-crisis trend as portrayed in figures 6 and 7 with annual increases averaging around 6 and 7 per cent in Burkina Faso and Ghana. For Cameroon, we assume stagnation in continuation of the pre-crisis trend based on the 2007 and 2008 figures from the online World Bank remittances database.

The crisis scenario for Burkina Faso and Ghana is based on the low case forecasts made by the World Bank report on remittances, i.e. a reduction by 11.6 per cent in period 2008-09 (table 3). Then, international remittances stagnate in 2009-10 and rebound in 2010-11 following the pre-crisis trend (around 6 per cent). For the case of Cameroon, the crisis

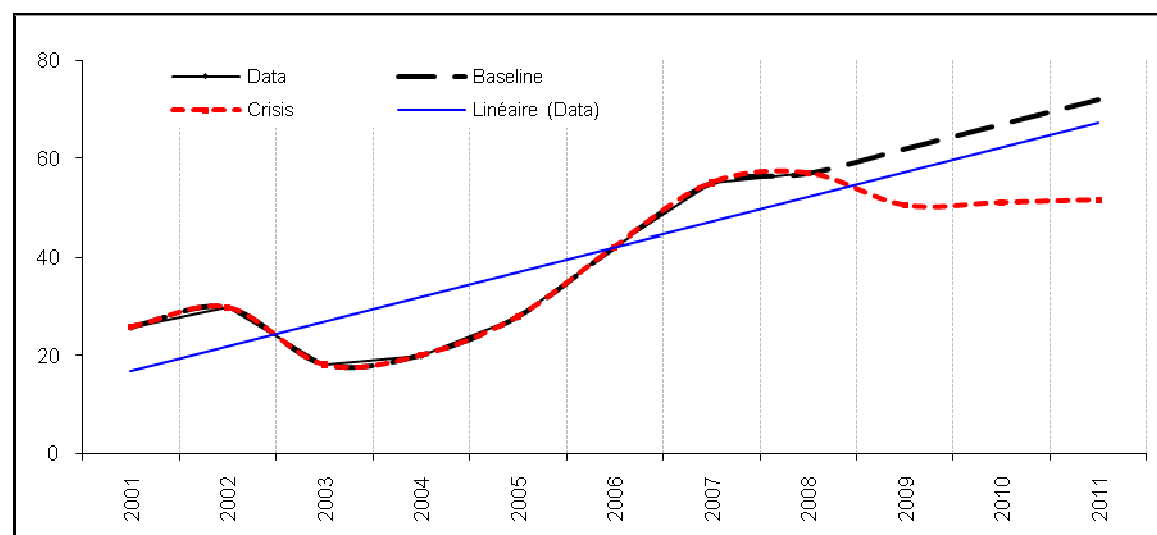
scenario is based on forecasts by the Ministry of Economy and Planning, i.e. a 25.3 per cent reduction in 2009 and another reduction by 39 per cent in 2010, followed by a 69.9 per cent increase in 2011.

**Table 3: International remittances, annual percentage change**

	Baseline			Crisis		
	2009	2010	2011	2009	2010	2011
Burkina Faso	7.5	7.0	6.5	-11.6	0.0	6.5
Cameroon (*)	0.0	0.0	0.0	-25.3	-39.2	69.9
Ghana	7.0	6.4	5.8	-11.6	0.0	5.8

*Source:* Crisis scenario in Burkina Faso and Ghana from World Bank report on remittances, low case forecast (July 2009). Crisis scenario in Cameroon: forecast of the Ministry of Economy and Planning (MINEPAT/DGEPIP/DAPE 2009).

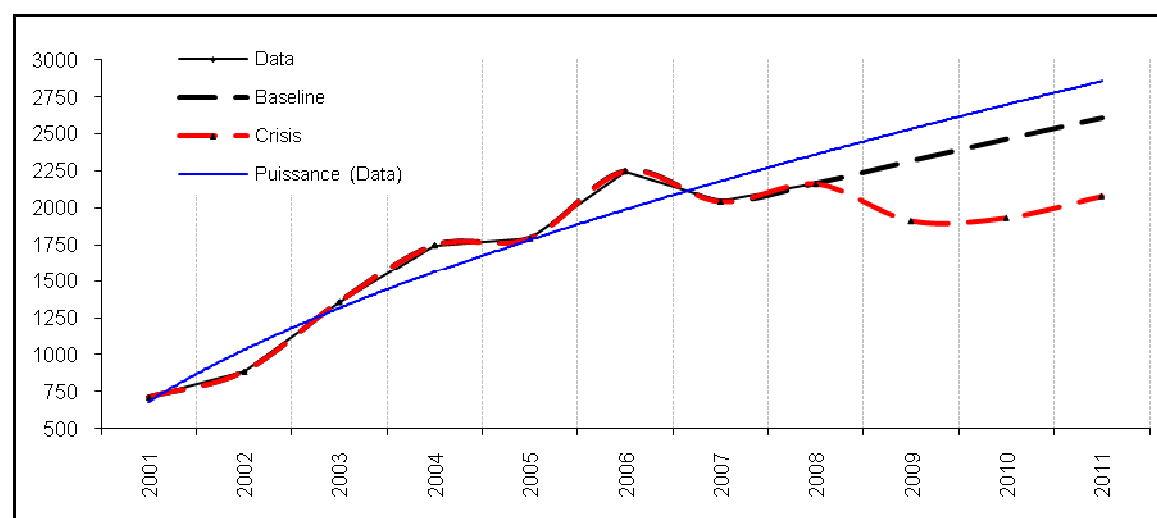
**Figure 6: International remittances, Burkina Faso (Millions US\$)**



*Source:* see table 3

*Note:*  $R^2 = 0.67$

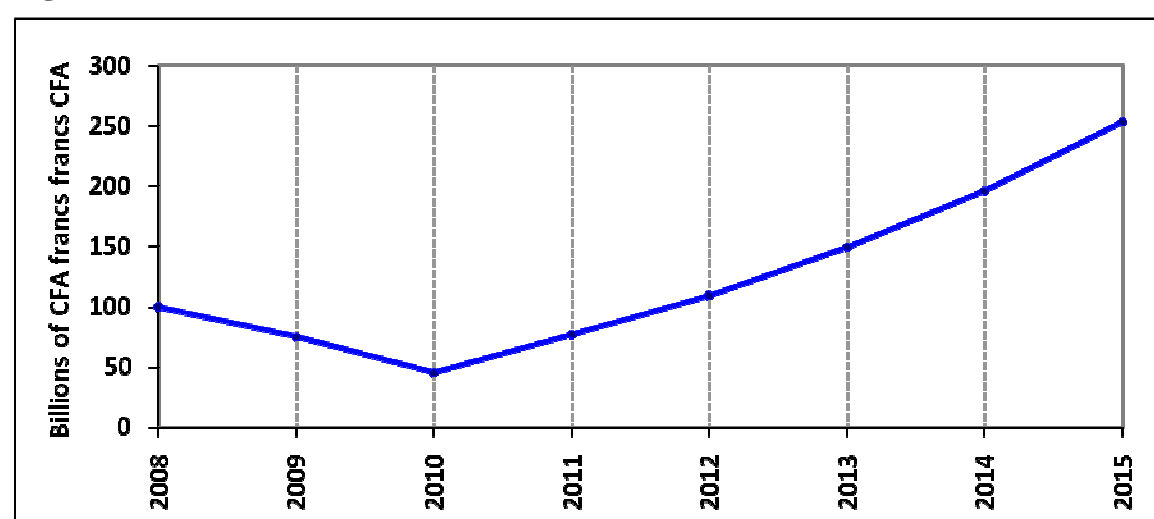
**Figure 7: International remittances, Ghana (Millions US\$)**



*Source:* see table 3

*Note:*  $R^2 = 0.95$

**Figure 8: Forecast of international remittances, Cameroon (Billions of CFA francs)**



Source: Ministry of Economy and Planning (MINEPAT/DGEPIP/DAPE), 2009. « Cadrage macroéconomique dynamique du Compte d'opérations financières ». Republic of Cameroon.

- *Export volumes*

Once again, baseline projections are based on the pre-crisis trend (2002-2008) with annual increases of 3-4 per cent in Burkina Faso, 11-12 per cent in Ghana, and around 5 per cent in Cameroon.

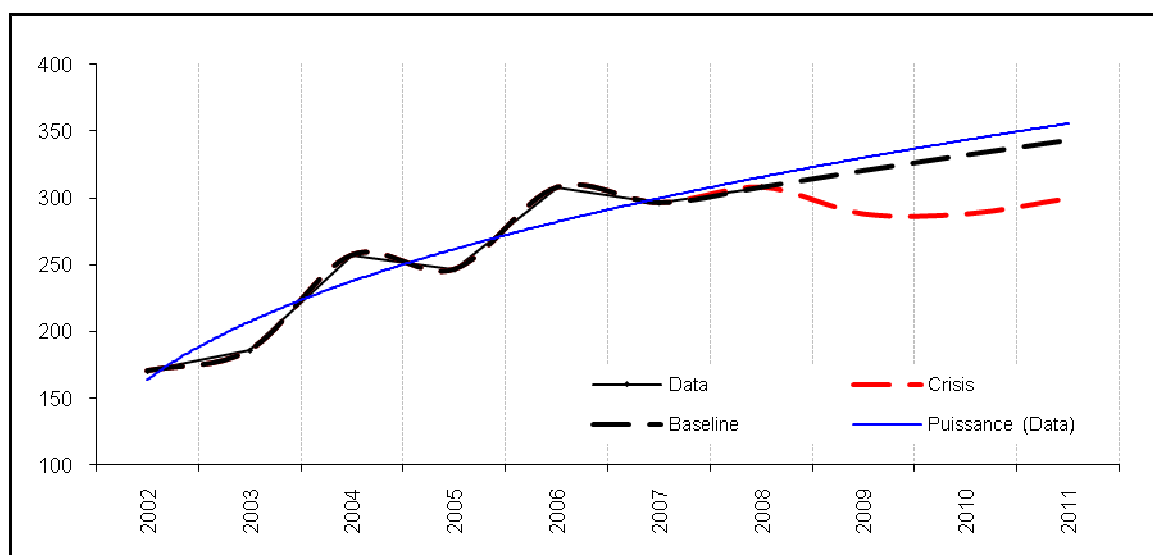
In the crisis scenario, world exports are expected to contract by 6.5 per cent in 2009 for emerging and developing countries according to the World Economic Outlook (IMF, July 2009). This represents a 10.6 percentage point reduction in export growth rates relative to the 4.1 per cent increase posted in 2008. We assume that this hypothesis is applicable to Burkina Faso, where exports were also growing at around 4 per cent in 2008. In contrast, the main export commodities in Ghana, i.e. gold and cocoa, have been less affected by the crisis so far. Furthermore, pre-crisis growth trends were much higher in Ghana. We therefore assume a somewhat smaller 7.3 percentage point reduction in export growth rates in Ghana, which brings 2009 export volume growth from 12.3 per cent in the BaU scenario to 5.0 per cent in the crisis scenario. In the case of Cameroon, the international demand for Cameroonian exports remains endogenous. Export volumes stagnate in 2009 as a result of the crisis and subsequently grow at a slower rate than in the BaU scenario.

**Table 4: Export volumes, annual percentage change**

	Baseline			Crisis		
	2009	2010	2011	2009	2010	2011
Burkina Faso	4.0	3.6	3.3	-6.5	0.0	3.3
Cameroon	5.0	4.6	4.7	0.1	3.4	3.1
Ghana	12.3	12.0	11.4	5.0	0.0	11.4

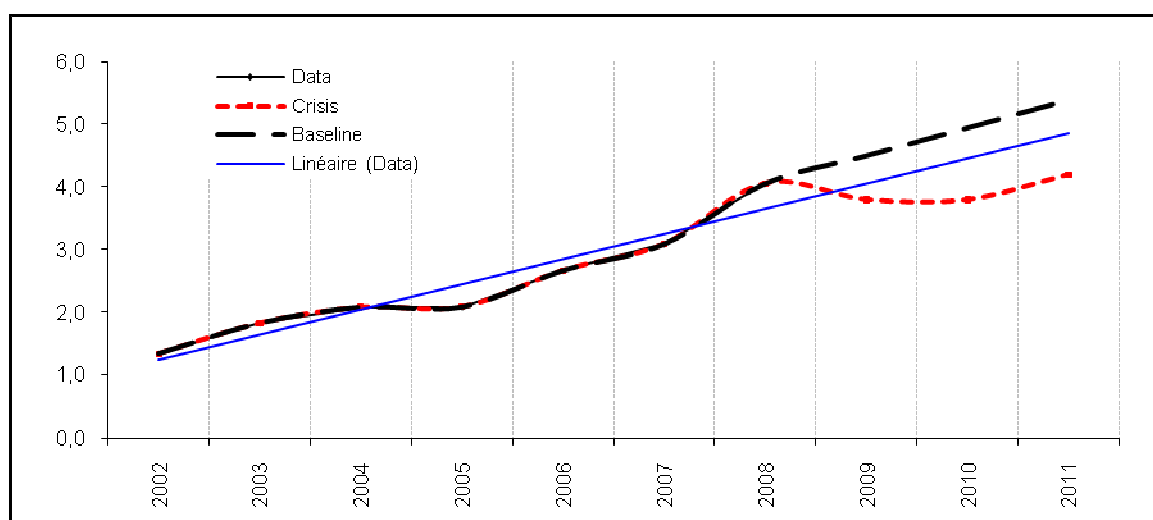
Source: authors' elaboration.

**Figure 9: Exports, Burkina Faso (Billions CFA Franc)**



Note:  $R^2 = 0.91$

**Figure 10: Exports, Ghana (Billions US\$)**



Note:  $R^2 = 0.92$

### Import prices

In the baseline scenario (without crisis), we assume that import prices will stagnate after the record high levels posted in 2008.

In the crisis scenario, changes in average import prices in 2009 are taken from IMF (2009c), then it is assumed that prices rebound beginning in 2010, as recent data suggest, to pre food-crisis trends (2000-2006).

**Table 5: Scenario on import prices, Burkina Faso (per cent)**

Products	Import share	2009 Price sources : IMF commodity prices	Change in prices (forecast)		
			2009	2010	2011
Cereals	1.4	Maize (corn), rice, barley, wheat	-18.1	4.9	4.9
Fruits and vegetables	0.0	Banana, orange	-13.2	8.8	8.8
Other subsistence agriculture	0.4	Maize (corn), rice, nuts	-6.4	6.2	6.2
Cotton	0.2	Cotton	-16.2	2.2	2.2
Other commercial agriculture	0.1	Agriculture raw materials	-18.8	1.2	1.2
Cattle	0.0	Beef	-2.9	5.7	5.7
Other livestock	0.0	Lamb, chicken, pork	-8.4	3.7	3.7
Forestry	0.0	Agriculture raw materials	-18.8	1.2	1.2
Fishing	0.0	Fish, prawns	-8.0	-7.2	-7.2
Mining	0.4	Metal products	-18.8	1.2	1.2
Beverage and tobacco	2.8	Beverages	-3.6	4.9	4.9
Other modern manufacturing	86.6	Energy, food, industrial inputs	-31.3	8.8	8.8
Building and construction	0.0	Non fuel price index	-23.4	6.2	6.2
Transport	6.8				
Communication	0.3				
Financial services	0.1				
Other modern private services	0.8				
<b>All</b>	<b>100</b>	<b>-</b>	<b>-18.1</b>	<b>4.9</b>	<b>4.9</b>

Source: authors' elaboration

**Table 6: Scenario on import prices, Ghana (per cent)**

Products	Import share	Price sources : IMF commodity prices	Change in prices (forecast)		
			2009	2010	2011
Cerals	0.5	Maize (corn), barley, wheat	-20.9	4.9	4.9
Meat	1.8	Beef, lamb, chicken, pork	-2.9	3.7	3.7
Rice	3.9	Rice	-13.4	7.5	7.5
Other agriculture	1.7	Food prices	-8.9	4.9	4.9
Mining	4.6	Metal prices	-32.2	12.7	12.7
Food manufactured	10.9	Commodity price index	-20.8	11.4	11.4
Non food manufactured	76.3				
Electricity	0.2				
<b>All</b>	<b>100</b>				

Source: authors' elaboration.



**Table 7: Scenario on import prices, Cameroon (per cent)**

Products	Import share	2009 Price sources : IMF commodity prices	Change in prices (forecast)		
			2009	2010	2011
Food agriculture	0.37	Maize (corn), rice, barley, wheat, peanuts, orange	-43.6	2.4	9.1
Cash crops agriculture	0.00	Cotton, cocoa, coffee arabica, coffee robusta, plam oil, banana	-11.9	8.1	5.4
Livestock	0.00	Lamb, chicken, beef, pork	-10.5	4.5	3.8
Forestry	0.10	Hides, logs	-6.9	-0.2	2.2
Fishing	0.00	Seafood	-4.8	-6.5	-1.2
Crude oil	26.48	Crude oil	-42.7	26.0	8.7
Other extractive products	1.93	Metal price	-24.1	29.6	11.1
Meat and fishes	2.20	Meat and sea foods	-10.1	4.5	3.4
Grains and flour	4.80	Cereals	-27.7	0.4	4.8
Cocoa, coffee, tea and sugar	1.07	Beverages, sugar	-8.8	10.9	5.8
Oleaginous products and animal foods	0.50	Vegetable oil	-36.4	9.9	6.8
Cereal-based products	0.16	Cereals	-27.7	0.4	4.8
Dairy products	1.92	Food-price-index-120	-19.9	7.5	5.3
Beverages	1.46	Agriculture raw material	-19.2	11.3	2.1
Tobacco	0.38	Industrial Inputs Price Index	-24.0	20.7	8.0
Textiles and clothing	2.73	Wood	-11.9	-1.6	4.2
Leather and footwear	0.16	Wood, hides, logs	-11.9	-1.6	4.2
Processed wood except furniture	0.03	Petroleum	-42.7	26.0	8.7
Paper	2.37	Non-fuel-price-index	-19.2	12.5	6.0
Refined oil	1.82	Rubber	-34.8	25.8	10.7
Chemicals	9.91	Metals	-24.1	29.6	11.1
Rubber and plastic	1.02	Commodity price index	-19.2	12.5	6.0
Non metallic minerals	1.70				
Metals	7.58				
Machines	12.94				
Audiovisual equipment	1.30				
Vehicles	5.65				
Furniture and miscellaneous products	0.43				
Electricity, gas and water	0.00				
Construction	0.02				
Trade	0.00				
Repair	0.00				
Hotels and restaurants	0.47				
Transport, warehouse, and communication	3.88				
Posts and telecommunications	0.27				
Financial services	1.80				
Real estate	0.00				
Services to firms	4.54				
<b>All</b>	<b>100.00</b>				

*Source:* authors' elaboration.