



The Impact of the International Financial Crisis on Child
Poverty in South Africa

Margaret R Chitiga Mabugu
University of Pretoria

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ABSTRACT

This paper reports on a study to provide insights into the magnitude of the shocks associated with the crisis in macroeconomic terms in South Africa, the country's capacity to withstand or cushion these shocks, and the extent of fragility in terms of poverty levels and child wellbeing. The analysis combines macro-economic and micro-economic tools to assess the extent of the crisis' impact on the country. The study finds that the poverty headcount ratio increases little in the moderate crisis scenario, but substantially under the severe scenario. However, under both scenarios there is a relatively successful return to close to the Business as Usual trend. It is important to note though that under both scenarios, more poverty sensitive measures (the poverty gap ratio and the poverty severity ratio) decline more, and remain in negative territory longer, showing that the major impact of the crisis is on the poorest, and that this impact is most difficult to overcome.

1. Introduction

The United States of America subprime mortgage crisis which began in August 2007 degenerated into a full-scale global financial crisis between August and October 2008. Commentators have referred to this crisis as the worst the world has witnessed in the last 80 years¹. The crisis has resulted in significant asset depreciation, closures of companies, rising unemployment and a sharp slowing down of economic growth, with most highly industrialised countries entering a recession.

After a lag, the crisis began to be felt by South Africa. The country has especially been affected by the sharp fall in demand for its export products, the fall in prices of key export commodities and falling foreign investment. The economy was recently plunged into a recession for the first time in 17 years and its macroeconomic forecasts have had to be revised downwards substantially. The declining growth has potentially negative implications for incomes, employment, and investment; and on social programmes partly through the slowdown's effect on tax revenues for government.

Poverty in South Africa is much higher than would be expected for a country with its level of per capita gross domestic product (GDP), and exists with high inequality. Child poverty, in turn, is still much higher than poverty amongst adults. This context makes it imperative to deal with this phenomenon of child poverty, to prevent large numbers of children growing up in dire circumstances that prevent them from developing their potential.

Child poverty is also higher on the global agenda in the light of the world economic crisis. This study deals with the impact of the world economic crisis on child poverty in South Africa, linking a macro-economic Computable General Equilibrium (CGE) model to micro-economic analysis to identify the

channels through which economic performance may impact on child poverty and to estimate its likely magnitude.

The remainder of the document is divided into six sections. Section 2 describes the data used for the model while section 3 discusses the model. Section 4 reports and discusses results of various simulations and section 5 concludes.

2. Data

The Social Accounting Matrix (SAM), used for the CGE model, is based on the 2005 Supply and Use (SU) tables obtained from Statistics South Africa and other national data sets from various sources such as the Reserve Bank. The SAM has 54 activities and 54 commodities; two factors of production, labour and capital; four agents (households, enterprises, government and the rest of world); and two accumulation accounts (change in inventories and gross fixed capital formation (GFCF)).

The various parameters of the model are calibrated from the SAM but for free parameters, we use the available information provided by econometricians. For the trade parameters, we use Gibson (2003), for the low-bound export supply while demand elasticities are obtained from Behar and Edwards (2004). To our knowledge, estimates for parameters used in production functions and in households' demand functions are not available for South Africa. Therefore, our study borrows these values from the literature surveyed by Annabi et al. (2006). Finally, unemployment rates are drawn from the labour force survey report by Statistics South Africa (2005).

One of the main transmission channels of the crisis is a decrease in export and import prices and demand. Table 1 presents trade relations between South Africa and the rest of the world in 2005. It specifies the import penetration rate as well as the sectoral share of imports in total imports. Moreover, it details the sectoral export intensity rates measured as a share of exports in production in each sector and the share of each sector exports in total exports.

Table 1 : Structure of the South African trade² (%)

| Sectors | Exports Intensity rates, as a share of total sectoral production (%) | Sectoral Exports shares as a portion of total exports (%) | Imports penetration rates, as a share of total sectoral supply (%) | Sectoral Imports shares as a portion of total imports (%) |
|--------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------|
| Agriculture, forestry & fishing | 21,89 | 4,14 | 5,84 | 1,09 |
| Coal mining | 48,96 | 5,01 | 4,47 | 0,26 |
| Gold & uranium ore mining | 98,65 | 6,58 | 0,53 | 0,00 |
| Other mining | 50,65 | 12,82 | 30,55 | 11,08 |
| Food | 8,50 | 2,38 | 6,02 | 2,52 |
| Beverages & tobacco | 22,16 | 2,29 | 2,54 | 0,42 |
| Textiles | 16,58 | 0,70 | 14,40 | 1,15 |
| Wearing apparel | 12,89 | 0,54 | 11,41 | 1,27 |
| Leather & leather products | 35,87 | 0,44 | 17,45 | 0,26 |
| Footwear | 5,12 | 0,05 | 20,39 | 0,72 |
| Wood & wood products | 12,94 | 0,61 | 8,98 | 0,50 |
| Paper & paper products | 15,95 | 1,45 | 8,81 | 0,96 |
| Printing, publishing & recorded media | 4,89 | 0,22 | 14,78 | 1,10 |
| Coke & refined petroleum products | 17,39 | 2,59 | 5,34 | 1,30 |
| Basic chemicals | 30,81 | 4,60 | 21,66 | 4,32 |
| Other chemicals & man-made fibres | 11,54 | 2,09 | 12,53 | 3,95 |
| Rubber products | 23,54 | 0,48 | 22,56 | 0,91 |
| Plastic products | 5,54 | 0,36 | 9,13 | 0,73 |
| Glass & glass products | 11,56 | 0,19 | 12,64 | 0,29 |
| Non-metallic minerals | 7,71 | 0,46 | 11,18 | 0,87 |

| | | | | |
|---------------------------------------------------------------------|-------|-------|-------|-------|
| Basic iron & steel | 62,48 | 10,48 | 11,56 | 1,24 |
| Basic non-ferrous metals | 47,03 | 2,94 | 19,44 | 1,10 |
| Metal products excluding machinery | 19,02 | 1,79 | 13,88 | 1,66 |
| Machinery & equipment | 67,47 | 7,11 | 35,35 | 12,83 |
| Electrical machinery | 13,23 | 0,97 | 17,18 | 2,25 |
| Television, radio & communication equipment | 53,25 | 0,88 | 39,74 | 5,26 |
| Professional & scientific equipment | 84,86 | 0,90 | 30,42 | 2,40 |
| Motor vehicles, parts & accessories | 20,46 | 6,72 | 23,08 | 15,32 |
| Other transport equipment | 27,40 | 0,68 | 33,73 | 3,24 |
| Furniture | 48,87 | 1,71 | 9,48 | 0,56 |
| Other industries | 18,34 | 1,94 | 12,97 | 3,01 |
| Electricity, gas & steam | 0,96 | 0,11 | 0,02 | 0,00 |
| Water supply | 0,00 | 0,00 | 0,00 | 0,00 |
| Building construction | 0,05 | 0,02 | 0,26 | 0,09 |
| Wholesale & retail trade | 1,21 | 1,01 | 0,06 | 0,05 |
| Catering & accommodation services | 21,33 | 1,45 | 22,81 | 2,49 |
| Railway transport | 15,39 | 0,58 | 9,16 | 0,35 |
| Road transport | 7,42 | 1,93 | 1,55 | 0,37 |
| Transport via pipeline | 16,04 | 0,04 | 0,00 | 0,00 |
| Water transport | 13,52 | 0,53 | 31,67 | 2,80 |
| Air transport | 20,37 | 0,65 | 32,11 | 2,18 |
| Transport support services | 9,87 | 0,80 | 12,74 | 1,21 |
| Communication | 7,01 | 2,21 | 6,13 | 2,00 |
| Finance & insurance | 6,26 | 0,61 | 9,71 | 1,40 |
| Business services | 3,90 | 4,61 | 1,70 | 1,97 |
| Medical, dental & other health & veterinary services | 0,60 | 0,11 | 1,01 | 0,20 |
| Community, social & personal services | 3,69 | 1,22 | 6,47 | 2,29 |

Source: Own computations from SAM(2005)

From the table above, we can point out that gold (98% of its production), scientific equipment (84%) or machinery and equipment (67%) heavily rely on exports. A decrease in world demand or in international prices for these commodities will thus have a huge impact on the balance of payments and on economic activity. In the same way, some commodities depend on imports such as radio and equipment (39%), or other mining (30%). For these sectors, a decrease in international prices will stimulate imports and increase competition from foreign suppliers on domestic market. Since South Africa exports most of its mineral and precious metals, together representing 40.9% of total exports, an external shock on mineral prices would thus have strong effects on the economy.

2005 GDP projections for South Africa were used to build the Business As Usual (BAU) scenario, to which simulation results will be compared. To replicate GDP growth rate projections, we combine population growth and capital accumulation with an endogenous rate of growth of total factor productivity.

Investments by destination as well as depreciation rates by activities are taken from the South African Reserve Bank. Given that official data projected a smaller growth for population than what was anticipated for capital, the BAU scenario shows a decrease in unemployment. Moreover, as production factors become more efficient, prices decrease (in real terms). These pieces of information are important in order to understand the results.

Earlier work involving one of the authors³ has shown the pattern of child poverty in South Africa. It illustrates that the poverty headcount and poverty shares based on the headcount are highest amongst the youngest age cohort, followed by children age 5-14 and 15-17. The profile also confirms the racial dimension of child poverty, which is much higher amongst black children but also high amongst coloured children. The poverty depth and severity measures are also far higher for children from these groups. There is little gender difference in child poverty. Child poverty is still more prevalent, deeper and more severe in rural areas – nearly two thirds of children identified as poor live in rural areas. Its rural face is

the most prominent feature of child poverty in South Africa, and this especially applies when the depth and severity of poverty are considered: the rural poor are further below this poverty line than the urban poor, and the share of the rural child poverty headcount thus rises as the poverty line is set lower. There are large variations across provinces in child poverty.

Testing the robustness of the child poverty profile to selection of the poverty line found the age, race, gender, and urban/rural dimensions to be robust. In the poverty-relevant range, there is clear first order dominance in each of these cases, implying that the rankings of poverty are invariant to the poverty line chosen and to whether the poverty measure used is P0, P1 or P2 (we adopt the common practice of using the Foster-Greer-Thorbecke (FGT) poverty measures, where P0 is the poverty headcount ratio, P1 the poverty gap ratio or poverty depth, and P2 the poverty severity ratio or squared poverty gap ratio). The results for the provincial rankings are slightly more complex, with some of the rankings varying with the poverty line or measure chosen (i.e. there is not always clear poverty dominance). The headcount, depth and severity of poverty are all higher amongst children in the youngest age cohort (0-4) followed by children age 5-14 and then by those aged 15-17.

There is mounting evidence that poverty had been declining substantially since 2000, and this decline was largely caused by the expansion of social grants, in particular the CSG. These grants have been reducing poverty in a time of good economic growth. However, the disruption to growth and the world economic crisis may have reversed some of the poverty improvement. However, a hypothesis of the present research is that the grants also provide a measure of protection against economic shocks. The logic is simply that grants are a form of income diversification, and that like all forms of such diversification, they offer protection for the beneficiaries against risks of reduced income, e.g. due to losing employment. Because of the positive impact that the CSG has had on poverty, its magnitude will be shown against some of the impacts of the global crisis in the analysis of these impacts.

3. Methodology:

1. The Macro-modelling:

To evaluate the impacts of the world economic crisis on South Africa, we built a sequential dynamic CGE model based on the dynamic Poverty and Economic Policy (PEP 1-t) standard model by Decaluwé et al (2009), changing several assumptions to better reflect the South African economy. The model has two production factors, capital and labour; the latter is disaggregated into informal, unskilled, semi-skilled and highly skilled workers.

The production function technology is assumed to be of constant returns to scale and is presented in a four-level production process. At the first level, output is a Leontief function of value added and total intermediate consumption. At the second level, a CES (Constant Elasticity of Substitution) function represents the imperfect substitution between composite labour and capital. At the third level, composite labour demand is also a CES function between composite skilled and composite unskilled labour. Note that the composite skilled demand is a CES with a low elasticity between skilled and semi-skilled workers, reflecting the fact that it is difficult to substitute semi-skilled for skilled workers. We also use a CES to describe the composite unskilled labour demand between informal and unskilled workers.

South Africa faces high unemployment and with very strong unions. As a result, wages and salaries are strongly rigid downwards. To take this rigidity into account, we assume that wages cannot decline below some minimum. Thus, if production decreases, producers will not be able to adjust through a reduction in wage levels, and will therefore have to retrench some workers.

As South Africa is a small country, world prices are assumed exogenous. However we believe that South African exporters face a less than infinite foreign demand equation for exports. In order to increase their

market share on the world market, exporters need to reduce their FOB prices for exports. Factor supplies are fixed in the first period and then grow at the population rate for labour force and using an accumulation equation for capital⁴. Transfers between institutions and government consumption in volume are fixed at the base year and then grow at the population rate. We assume that the rest of the world's savings is a fixed proportion of GDP.

As the dynamic CGE model does not take into account financial flows, it cannot directly capture the financial consequences of the world economic crisis on the South African economy. However the economic consequences of the slowdown of the world economy are captured through the real side of the CGE model. The main transmission channels of the world crisis to developing countries are through a decrease in demand for national exports, a reduction of world prices, a decrease of foreign direct investment and a tightening of the capacity to finance a current account deficit, a decrease in remittances and a drop in tourism revenues. However, for South Africa, the latter two channels are not relevant: South Africa does not receive important remittances from abroad, and due to a number of special sports events, tourism has not decreased substantially. Thus we will focus on the external trade and the foreign financing of domestic firms.

An innovation of our study is that we grouped production activities into four categories. Each category is defined by its degree of dependency/exposure to the global crisis and is assumed to be affected differently by the crisis. We base our choices of the scenario magnitude on data for South Africa. A visible effect of the crisis has been declines in several commodity prices since their peaks around July 2008. Most dramatic of all have been the decline, of around 60%, in the prices of platinum group metals (PGMs). The four groups are defined in Table 10 (see Appendix A).

Unaffected sectors (Group 1): It is assumed that these sectors faced neither a reduction in foreign demand nor a reduction in international prices. Basically, this group consists of gold, food and beverage commodities.

Weakly affected Sectors (Group 2): These sectors are not heavily dependent on foreign trade and not closely related to other sectors. Found here are agriculture, clothing and wood.

Mildly affected sectors (Group 3): Like the previous group, these sectors are not heavily dependent on foreign trade but are closely linked to other sectors. Such sectors will react to a reduction in consumption, investment expenditures or reduction in demand for intermediate goods. This group includes most transports products, trade and construction.

Strongly affected sectors (Group 4): These sectors are closely linked to international markets either on the export or the import side. Here we find fossil fuels, other mining, machinery and equipment.

Mildly affected sectors represent around 60% of total output, while strongly and mildly affected sectors together represent 80% of total exports.

Two scenarios are presented and are distinguished by the magnitude of the recession (severe or moderate). The moderate scenario is consistent with the view that growth is beginning to pick up, albeit moderately, from the end of 2009 onwards. We also model a severe scenario that reflects a protracted slow global growth era and implies tight public budgets for some time to come. It is important to investigate what impact that scenario might have on the sustainability of interventions to protect children and poor families.

The next set of tables presents the details of the proposed scenarios.

Table 2 : Moderate scenario

| | Changes in world prices of exports and | Changes in world demand for exports |
|--|----------------------------------------|-------------------------------------|
|--|----------------------------------------|-------------------------------------|

| | imports | |
|-------------------|--------------------------------------|-------------------------------------|
| Weakly affected | -2% in 2008 and 2009 | |
| Mildly Affected | -3.5% in 2008-2009 and +2.1% in 2010 | -2% in 2008-2009, and +2.1% in 2010 |
| Strongly affected | -5% in 2008-2009 and +2.1% in 2010 | -2% in 2008-2009, and +2.1% in 2010 |

Table 3: Severe Scenario:

| Sectors | Changes in world prices for exports and imports | Changes in world demand for exports |
|-------------------|--------------------------------------------------------|--------------------------------------------|
| Weakly affected | -10% in 2008 and 2009 | |
| Mildly Affected | -15% in 2008 and 2009 | -10% in 2008-2009, and +1% in 2010 |
| Strongly affected | -20% in 2008 and 2009 | -10% in 2008-2009 |

In terms of foreign financing of domestic firms, we assume that foreign transfers to firms decrease by 5% in 2008-2009 and then increase by 2.1% 2010 in the moderate scenario. In the severe scenario, we assume that they decrease by 10% in 2008-2009 and then increases by 1% from 2009 to 2010. This reduction corresponds to a tightening of the liquidity available to firms to finance their investment program and has an indirect impact on investment (through a decrease in savings from firms) and on the current account, as it reduces the financial resources available to finance imports and will require an increase in exports to compensate. After 2010, world prices recover to their BAU values and world demand increases at the population growth rate.

2. Extrapolation from the macro-economic impacts to child poverty:

Brief overview of data, assumptions and methodology for the micro-model⁵

Primarily, the major purpose of the micro-modelling was to estimate the impact of the economic changes simulated by the CGE model on households. Essentially, three channels were modelled here:

- Changes in prices, which were taken to apply across the board to all households, the differences arising only from the composition of their spending, though initial prices have been estimated by cluster (area), thus implying that different incomes were required to reach the poverty line in

different clusters, given the different prices faced. (Note that adult equivalence scales were also applied to allow for differential food needs by age and gender.)

- Changes in wages in different skill categories (the CGE models allow for four types of labour, three reflecting different skills composition, the fourth the informal labour market).
- Changes in employment, for the three formal labour market categories. (It was assumed that formal sector workers who lose their jobs do not revert to the informal sector but become unemployed.)

A fourth channel not modelled was possible changes in non-labour earnings on household poverty. However, non-labour earnings other than grants are uncommon amongst poorer segments of the population.

The micro-analysis uses the expenditure and income data from the first wave of the National Income Dynamics Survey (NIDS) involving 7 305 households. No unit price data are provided. Price was therefore generated using the minimum monthly expenditure for an item or expenditure category reported in each district as a proxy for the unit district price. As much as is possible, district prices were generated using only response data (imputed expenditures were not used). In cases where the expenditure data for all sampled households within a particular district were imputed in the survey dataset, the median price for the entire sample was used. Expenditure on food in NIDS was further found to be more highly aggregated than the expenditure data of the Income and Expenditure Survey (IES), which may lead to poorer proxies of prices, given the high degree of heterogeneity within food categories.

To estimate the impact of the global crisis on monetary child poverty, changes in household and individual consumption in response to changes in commodity prices and household income must be captured. Models of household consumption behaviour provide estimates of price and income

elasticities that are used to compute pre-crisis real individual consumption. The methodological approach on the micro-side draws largely from the work of Cockburn, Fofana and Tiberti (forthcoming UNICEF and PEP working paper), Bibi, Cockburn, Fofana and Tiberti (forthcoming UNICEF and PEP working paper), and Bibi, Cockburn, Coulibaly and Tiberti (2009), and this section will to some extent paraphrase their methodology. Given the macro-micro simulation results on changes in commodity prices, wages and labour market status, the post-crisis real individual income can be compared with the base year (pre-crisis) equivalent, to determine the impact of the crisis on poverty.

The micro analysis distinguishes 14 food and 1 non-food group. Aggregate household consumption was converted to per capita equivalents using a “caloric requirements” approach based on WHO calorie requirements tables by age and sex. (FAO/WHO/UNU 1985)

The Almost Ideal Demand Systems (AIDS) approach of Deaton and Muellbauer (1980) was used for converting individual consumption into real consumption and comparing it over time. The share of each good category in terms of total household consumption and the district median unit price for all food categories were required for estimating the parameters of the demand system. The AIDS model was estimated following Deaton (1997) and relies on the spatial variability of prices within a country in order to estimate the parameters. A three-stage least squares model was used for this purpose. The poverty rate before the crisis was calculated by dividing real consumption by the poverty line for the reference area, resulting in a new poverty line for all individuals (Bibi et al, 2009: 74). To calculate poverty rates after the crisis, individual consumption in real terms was re-estimated after replacing the price vector with the new vector of prices (obtained from the macro model) and the change in total household income.

Price and wage changes are relatively small and the poverty analysis will show that they have little impact on poverty. By far the major impact on poverty comes from the changes in employment. For this

reason, much of the modelling attention had to be focused here. Probit models of the probability of employment for each employed and unemployed worker for jobs in various skills categories were estimated. These models were then used to identify those employed workers in each skill category most likely to lose their jobs when employment declines relative to the labour force. A similar procedure was used to determine the likely beneficiaries of new jobs and the wages of those who may gain jobs once economic growth returns. Because of the poor fit of the wage estimates within skills categories, wages of employed workers were assumed to remain as they had been recorded, rather than giving them the estimated wage from the wage equations, as is often done in micro-simulations.

The 2008 data was taken to approximately reflect the 2007 situation before the crisis. Because the micro-simulations essentially deal with a static model, projections were not attempted beyond 2011. As will be shown, by that time poverty would have returned to its usual course under the moderate scenario, and would have almost returned to initial levels in the severe scenario.

4. Results

Given the magnitude of the different shocks, each scenario will generate differential outcomes on output, the entire price structure and, consequently, factor reallocation. However, the final impact on households will depend on their factor endowments and their sources of income, including transfers, as well as their consumption patterns.

Impact on prices

As mentioned, this CGE model assumes that in order to gain foreign market share, South African exporters must reduce their FOB prices, taking into account prices of competitors and the world elasticity of demand for South African goods. Table 4 summarises the impact of the two scenarios on SA FOB prices. As can be seen, there is a huge decrease in exports prices, following the drop in international

prices and demand, and the decrease is of course much greater for the severe scenario. For the strongly affected sectors the drop of FOB prices is a little less than the drop in world export prices (-5% in 2008 and 2009 for world prices and -4% and -2.7% for the FOB prices in the moderate scenario). This implies that South African firms are losing ground with respect to their competitors and do not adjust fully to the new conditions, the downward rigidity of the wage rate limiting the adjustment capacity of the firms. The same is true for the severe scenario. It will be shown later that in terms of volume of exports, the drop of South African exports is greater than the reduction in the world demand. Note also that for non-affected sectors, the decrease in FOB prices is essentially due to the decrease in the cost of trade and transportation margins. In the two scenarios, world prices of exports increase by 2.1% in 2010 and resume their BAU level for the following years (up to 2015). This positive trajectory of world export prices nearly eliminates the effect of the preceding drop, but even in the long run, FOB prices remain below their BAU level.

Table 4: Impact on export prices (% change from BAU)

| Commodities | Initial export shares | Moderate | | | | Severe | | | |
|-------------------|-----------------------|----------|------|------|------|--------|-------|------|------|
| | | 2008 | 2009 | 2010 | 2015 | 2008 | 2009 | 2010 | 2015 |
| Non-affected | 11.0 | -0.9 | -0.9 | -0.4 | -0.3 | -3.2 | -3.7 | -1.4 | -1.6 |
| Weakly affected | 9.0 | -1.9 | -1.7 | -0.2 | -0.1 | -8.5 | -8.7 | -0.7 | -0.5 |
| Mildly affected | 31.8 | -3.3 | -2.1 | -0.5 | -0.3 | -14.0 | -13.9 | -2.2 | -2.1 |
| Strongly affected | 48.2 | -4.0 | -2.7 | -0.3 | -0.3 | -16.6 | -16.3 | -1.6 | -1.8 |
| All | 100.0 | -3.3 | -2.2 | -0.4 | -0.3 | -13.6 | -13.5 | -1.7 | -1.7 |

The drop of world prices of imports will reduce the domestic cost of imported goods even if the reduction is, in percentage points, a little less than the reduction in world price. For the moderate scenario, in 2008, we observe that import prices drop more than local prices for strongly and mildly affected sectors. As expected, these sectors experience a relative increase in imports compared to domestic purchases. The opposite pattern is observed for the weakly affected or non-affected sectors. It is important to note for the latter that there is a decrease in import prices due to margins.

Impact on exports, imports and local demand:

As expected, results reported in Table 5 show that exports decrease strongly for products belonging to the strongly affected sectors, and deeper in the severe scenario. In 2008, at the beginning of the crisis, exports decrease by 21.5% for strongly affected sectors under the severe scenario. The drop in world demand has a direct effect on exports and the lower reduction in FOB prices with respect to world prices also reduces the performance of exports.

It is important here to understand the behaviour of the non-affected sectors. Globally speaking, they benefit from the difference between local prices (that are sharply decreasing) and export prices (that are hardly affected)). The real exchange rate depreciates strongly and this movement favours only those exporting sectors that are not affected by the reduction in foreign demand and international prices. For instance, the gold sector, a non-affected sector, sees its volume of exports increasing by 3.1% in 2008 in the moderate scenario and by 10.6% in the severe scenario.

Table 5: Impact on exports (% change from BAU)

| Commodities | Initial exports shares | Moderate | | | | Severe | | | |
|--------------|------------------------|----------|------|------|------|--------|-------|------|------|
| | | 2008 | 2009 | 2010 | 2015 | 2008 | 2009 | 2010 | 2015 |
| Non-affected | 11.0 | 3.3 | 3.2 | 1.3 | 0.9 | 12.4 | 13.8 | 4.7 | 5.4 |
| Weakly | 9.0 | -0.0 | -0.6 | 0.8 | 0.3 | -3.8 | -3.2 | 3.3 | 2.2 |
| Mildly | 31.8 | -2.6 | -1.1 | -0.5 | -0.9 | -13.3 | -14.6 | -4.6 | -5.0 |
| Strongly | 48.2 | -5.2 | -3.9 | -0.9 | -1.1 | -21.5 | -23.0 | -7.0 | -6.8 |
| All | 100.0 | -3.0 | -1.9 | -0.4 | -0.7 | -13.6 | -14.5 | -4.0 | -4.1 |

A sharp decrease is also noted on the import side. As will be shown later, total income of households will drop substantially, leading to a huge reduction in total absorption and a reduction of demand for imported goods. In the moderate scenario this demand reduction is sufficient to compensate for the positive expansion effect of lower import prices. Altogether, imports fall by 2.1% in the strongly and mildly affected sectors. However this decrease will be greater for non-affected and weakly affected sectors as the local price falls more than the import price. One should also keep in mind the constraint

set on the current account balance, which is assumed to remain fixed relative to GDP. This assumption implies that if the country's exports decrease, then its imports would have to follow the same path.

As explained previously, the contraction on the demand side translates into fewer imports. This will affect domestic demand even more dramatically due to the increased competitiveness of foreign products created by the reduction in import prices. The decrease in the total demand for goods will have consequences for sectoral production. One would actually expect production to decrease most strongly for sectors strongly dependent on exports. On the other hand, sectors that are not directly affected by the crisis might be affected by a reduction of demand from other sectors, for instance in terms of intermediate consumption. Finally, all the groups are affected by the crisis and see their production decrease⁶. The decrease in the production of most of the sectors will have a number of consequences. First, firms that see their exports and production fall will retrench workers as they are unable to adjust the nominal wage of labour.

As unions are strong, producers will not be able to decrease wage rates to adjust to the fall in prices and demand, so they will have to dismiss more workers. Only non-affected sectors, and notably the gold sector, benefit from the crisis. We saw earlier that gold production was increasing, and this leads to job creation in this sector.

The process of retrenchments will not be uniform across the different labour categories (Table 6). Highly skilled workers are the ones who suffer the least from the crisis. Although there are important job losses during 2008 and 2009 (and 2010 for the severe scenario), the economy rapidly faces a shortage of skilled workers. This situation represents particularly what happened during this period in South Africa.

Table 6: Impact on total labour demand (% change from BAU)

| YEARS | High Skilled | | Skilled and Semi-Skilled | | Low skilled | |
|-------|--------------|--------|--------------------------|--------|-------------|--------|
| | MOD | SEV | MOD | SEV | MOD | SEV |
| 2008 | -4.40 | -20.73 | -4.90 | -19.57 | -5.86 | -23.87 |

| | | | | | | |
|------|-------|--------|-------|--------|-------|--------|
| 2009 | -2.36 | -20.82 | -3.96 | -20.50 | -4.23 | -24.65 |
| 2010 | 0 | -5.49 | -1.33 | -7.86 | -1.04 | -8.24 |
| 2015 | 0 | 0 | -1.21 | -6.59 | -0.99 | -5.28 |

In the BAU, for each labour category, we observe that unemployment is decreasing through time due to the fact that capital grows faster than labour. Results reported in Table 7 show that for highly skilled workers only, in the base year, the unemployment rate is very low (1%) and actually decreases in the BAU to reach 0% in 2007. In 2009, in the severe scenario, for skilled workers, their unemployment rate reaches a little more than 20%.

Table 7: Unemployment rate (%)

| YEARS | High Skilled | | Skilled and Semi-Skilled | | Low skilled | |
|-------|--------------|-------|--------------------------|-------|-------------|-------|
| | MOD | SEV | MOD | SEV | MOD | SEV |
| 2005 | 1.00 | 1.00 | 15.00 | 15 | 26.4 | 26.4 |
| 2008 | 4.40 | 20.73 | 17.18 | 29.96 | 28.16 | 41.90 |
| 2009 | 2.36 | 20.82 | 15.50 | 30.05 | 26.07 | 41.83 |
| 2010 | 0.0 | 5.49 | 12.23 | 18.04 | 22.73 | 28.36 |
| 2015 | 0.0 | 0.0 | 7.02 | 12.08 | 18.42 | 21.96 |

Recall that there are actually four types of labour in the model, the three described above and informal labour. Assuming no unemployment of informal labour, the impact of the crisis for this type of labour will be on their wage rate⁷, which falls sharply (-5% in 2008 in the moderate, and -22% for the severe scenario).

In the same way, it is not surprising to see a decrease in the rate of return of capital in most sectors, as most of them are affected by the crisis either through a drop in selling prices or demand.

Taking these results into account, we can now analyse what happens to the different agents following the crisis.

As mentioned previously, the rate of return to capital is sharply decreasing. Firm income is thus strongly affected, as this component represents 88% of their total income. Moreover, one of the channels through which the crisis operates is modelled as a decrease in transfers from abroad. Thus, we expect firms' income to decrease even more. Firm income decreases by 16% in 2008 in the severe scenario, and even in the long run it cannot return to its BAU level.

Firm savings are obtained after removing from their income the amount of direct taxes paid to the government as well as transfers to other institutions (mainly households and the rest of the world). We expect a dramatic fall in firm saving which is more pronounced in the short run. This decrease in firm savings will have important consequences for total investment. Indeed, firm savings represent 80.5% of total investment. Here again, we can see that, even in the moderate scenario, the effect of the crisis remains in the long run as, firm savings remains below its BAU level (-1.5%).

Households receive income from labour and transfers from firms, government and the rest of the world. We assume that transfers from government and the rest of the world are fixed, whereas transfers from firms are a proportion of firm income.

As household income is mainly based on labour income, we expect it to decrease. Moreover, as mentioned previously, firm income is decreasing and so are the dividends it pays. Thus, household income decreases sharply in both scenarios. This decrease negatively affects household consumption and savings and thus total absorption through a reduction in consumption and investment.

Government revenue is expected to decrease. Indeed, direct taxes are decreasing (as a share of households and firm income), and taxes on products are also decreasing for most sectors (due to the decreases in imports and production). Half of government income comes from direct taxes and around a third from indirect taxes on products. The drop in these two components will contribute to a total decrease in government revenue and a substantial increase in its deficit.

Impact on total investment and GDP:

Given all the preceding impacts it is no surprise to observe a huge decrease in total investment. What is relevant to note here is that even though the crisis is in effect only in 2008 and 2009 and the recovery starts in 2010, impacts on investment remain in the long run. Indeed, under both scenarios one still observes lower investment in 2015 than under the BAU.

Now focusing on GDP, we know that the South African projections for GDP were around 4.5% growth per year. The world economic crisis produces a huge drop in GDP. For both scenarios, GDP falls in 2008 and 2009 and then increases again, but it does not return to its BAU value even by 2015. In other words, without positive shocks or deliberate and successful government interventions that stimulate the economy and counteract the negative impact of the world crisis, GDP will not recover to what it would have been in the absence of the crisis, under the BAU (Business as Usual) scenario.

On the other hand we could eventually argue that in the long run the reduction in investment will lead to a reduction in the capital stock due to the continuous depreciation of the capital stock. A reduction in the speed of accumulation of capital could eventually lead to a change in the rate of return of capital causing the firms and households to increase their savings. The same argument could also apply to the behaviour of foreign firms that could eventually rebuild their capital stock helping their domestic partners to increase their investment. If this happens, then the permanent effects mentioned here of the crisis could eventually become temporary if the households and firms try to rebuild their stock of capital at their regular level.

Results from the micro-model

Broad trends

Child poverty in 2007 was estimated at 52.6%, using the moderately low poverty line of R250 per capita per month in 2000 Rand terms or R377 in January 2008 (to apply to the NIDS data)⁸. In the absence of an economic crisis, this headcount rate of child poverty would be declining modestly every year, based on combining the macro- and the micro-simulations. In 2008 it would have declined to 52.2%, in 2009 to 51.9%, and by 2011 it would have declined to 51.8%, according to the BAU simulations. Thus, Business as Usual would have meant a slow but continuing decline in child poverty (poverty of individuals was estimated to decline from 46.8% to 45.9% from 2007 to 2011).

One should compare the impact of the international economic crisis against the initial child poverty levels, and also against the business as usual, i.e. the natural trend of the economy and economic policy. The overall trends under the different scenarios are summarised in Table 8. The most severe effects of the crisis are in 2008 and 2009, while by 2010 some of the impacts on poverty are already partly being reversed, even under a severe scenario.

Figure 1 shows the trends in the poverty headcount ratio for each of the three scenarios. The choice of scale is intended to allow a visual inspection of the different impacts, but note that the range covered here is fairly small. However, it accentuates the stark difference between the severe and moderate scenarios, though even under the severe scenario the headcount ratio declines by 2011 to not much higher than its initial level in 2007.

Table 8: Trends in poverty under three scenarios, 2007-2011

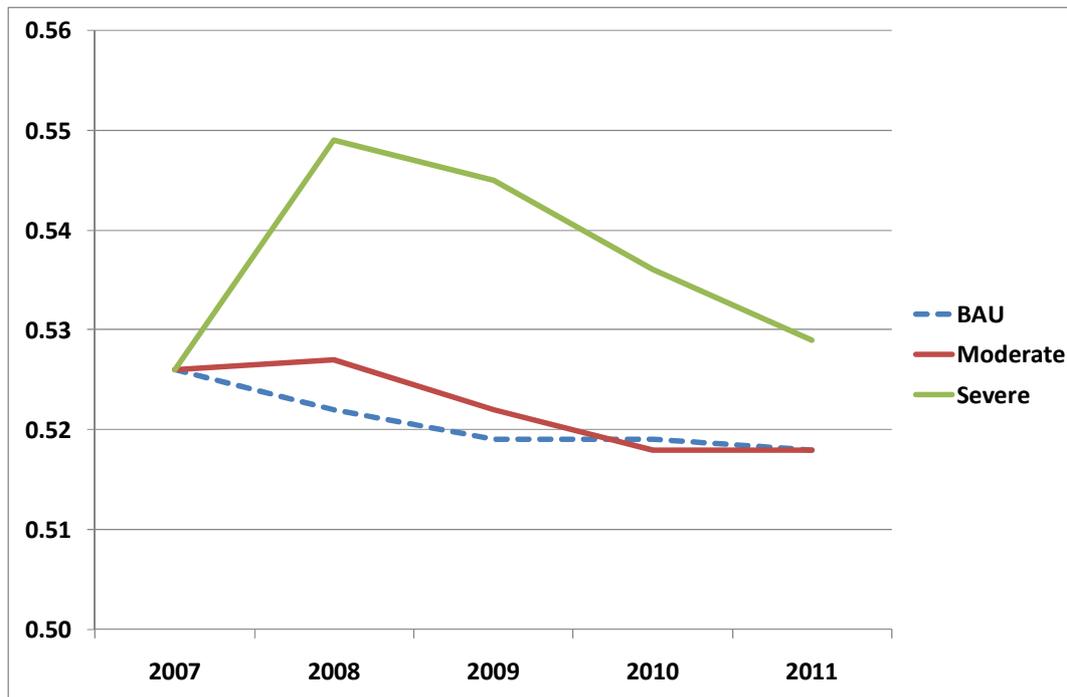
| | | | BAU | % change (relative to 2007) | Moderate scenario | % change (relative to 2007) | Severe scenario | % change (relative to 2007) |
|-------------|------------------|----|-------|-----------------------------|-------------------|-----------------------------|-----------------|-----------------------------|
| 2007 | Individual level | PO | 0.468 | 0.0% | | | | |

| | | | | | | | | |
|-------------|------------------|----|-------|-------|-------|-------|-------|--------|
| | | P1 | 0.183 | 0.0% | | | | |
| | | P2 | 0.095 | 0.0% | | | | |
| | Child level | P0 | 0.526 | 0.0% | | | | |
| | | P1 | 0.205 | 0.0% | | | | |
| | | P2 | 0.107 | 0.0% | | | | |
| 2008 | Individual level | P0 | 0.463 | -1.1% | 0.471 | 0.6% | 0.508 | 8.5% |
| | | P1 | 0.182 | -0.5% | 0.208 | 13.7% | 0.287 | 56.8% |
| | | P2 | 0.095 | 0.0% | 0.125 | 31.6% | 0.212 | 123.2% |
| | Child level | P0 | 0.522 | -0.8% | 0.527 | 0.2% | 0.549 | 4.4% |
| | | P1 | 0.205 | 0.0% | 0.230 | 12.2% | 0.294 | 43.4% |
| | | P2 | 0.106 | -0.9% | 0.137 | 28.0% | 0.208 | 94.4% |
| 2009 | Individual level | P0 | 0.462 | -1.3% | 0.465 | -0.6% | 0.510 | 9.0% |
| | | P1 | 0.182 | -0.5% | 0.197 | 7.7% | 0.287 | 56.8% |
| | | P2 | 0.095 | 0.0% | 0.113 | 18.9% | 0.212 | 123.2% |
| | Child level | P0 | 0.519 | -1.3% | 0.522 | -0.8% | 0.545 | 3.6% |
| | | P1 | 0.204 | -0.5% | 0.219 | 6.8% | 0.304 | 48.3% |
| | | P2 | 0.106 | -0.9% | 0.125 | 16.8% | 0.215 | 100.9% |
| 2010 | Individual level | P0 | 0.462 | -1.3% | 0.460 | -1.7% | 0.479 | 2.4% |
| | | P1 | 0.181 | -1.1% | 0.181 | -1.1% | 0.216 | 18.0% |
| | | P2 | 0.094 | -1.1% | 0.094 | -1.1% | 0.133 | 40.0% |
| | Child level | P0 | 0.519 | -1.3% | 0.518 | -1.5% | 0.536 | 1.9% |
| | | P1 | 0.203 | -1.0% | 0.203 | -1.0% | 0.238 | 16.1% |
| | | P2 | 0.105 | -1.9% | 0.105 | -1.9% | 0.145 | 35.5% |
| 2011 | Individual level | P0 | 0.459 | -1.9% | 0.460 | -1.7% | 0.472 | 0.9% |
| | | P1 | 0.179 | -2.2% | 0.180 | -1.6% | 0.206 | 12.6% |
| | | P2 | 0.093 | -2.1% | 0.094 | -1.1% | 0.122 | 28.4% |
| | Child level | P0 | 0.518 | -1.5% | 0.518 | -1.5% | 0.529 | 0.6% |
| | | P1 | 0.201 | -2.0% | 0.202 | -1.5% | 0.228 | 11.2% |
| | | P2 | 0.104 | -2.8% | 0.104 | -2.8% | 0.135 | 26.2% |

Note: % change is shown relative to BAU in 2007

Source: Own projections

Figure 1: The poverty headcount ratio (P0) for 2007 to 2011 under three scenarios: Business as Usual, Moderate Scenario and Severe Scenario



The impact of the moderate scenario on the child poverty headcount is quite small in 2008, if one focuses on the headcount ratio only and uses this slightly below conventional poverty line⁹. The child poverty headcount ratio (P0) hardly increases (by 0.1 percentage points or 0.2% only), but in contrast, there is a 12% increase in the child poverty gap ratio (P1) and a 28% increase in the child poverty severity ratio (P2). This indicates that much of the change in the economic situation in 2008 under the moderate scenario occurs at lower levels of income, i.e. quite some way below the poverty line. Thus those deepest in poverty are also most affected. Under this moderate scenario, child poverty actually starts improving in 2009, i.e. the headcount ratio drops to 52.2%, only 0.3% above the level of poverty that would have applied under the Business as Usual scenario and below the initial poverty headcount ratio. Yet some impact on the poverty gap ratio as well as the poverty severity ratio for children remains. This indicates that though fewer children are in poverty than in 2007, the situation has worsened for the worst off children. If the poverty line had therefore been drawn at a much lower level,

the poverty headcount also would have risen. In 2010 there is further moderation of the poverty headcount, but now the poverty gap ratio and the poverty severity ratio also improve relative to 2007.

Under the more severe economic growth scenario, the child poverty headcount ratio would rise by 4.4% (2.3 percentage points) to 54.9% in 2008 relative to 2007, the poverty gap ratio by 43% and the poverty severity ratio by 94%. This again illustrates the severe consequences for children at the bottom of the income distribution, i.e. far below conventionally used poverty lines. Clearly, under the severe economic scenario, very poor children are greatly affected by the effect of the crisis in 2008. In 2009, there is little further change in the poverty figures: The severity of the continuing recession largely cancels out the natural improving trend in poverty. The poverty headcount is now only 3.6% worse than was the case in 2007, but the more poverty-sensitive measures still increase – the poverty gap ratio by almost half while the poverty severity ratio doubles. Compared to Business as Usual, the backlog still grows even P0, leaving a greater gap to negotiate to get back on trend.

By 2011 the poverty headcount ratio under this severe economic growth impact scenario has returned almost to its original levels, being only 0.6% above where it was in 2007, while the poverty gap ratio P1 has risen by 11% and the poverty severity ratio P2 by 26%. Thus even under the severe scenario, the impact of the economic crisis would have been sharply reduced by 2011, except at the very bottom of the income distribution.

Poverty dominance

Figure 2 shows the effect of the moderate scenario in 2008 and 2009 against the initial situation, in terms of cumulative density functions (CDFs). If one CDF line lies clearly above another, poverty by any of the conventional measures is higher, irrespective of the poverty line chosen. Such a situation is referred to as stochastic poverty dominance. The three lines depicting the initial situation and the moderate scenarios in 2008 and 2009 are barely distinguishable, except at the very lowest income

levels, where there is clear poverty dominance. These scenarios show relatively small changes which would probably fall within the 95% confidence levels of the initial cumulative density function. In contrast to that, the situation in terms of child poverty would have been much worse, if there had been no CSG: The line depicting that situation lies well above all the other three lines. Thus the moderate scenario for the economic crisis shows an impact that is far too small to undo the beneficial effects for children of the earlier introduction and expansion of the CSG.

Figure 2: Cumulative density functions (curves) for child poverty in 2007, 2008 and 2009, under a Moderate Scenario, and a comparison with the beneficial effects of the CSG

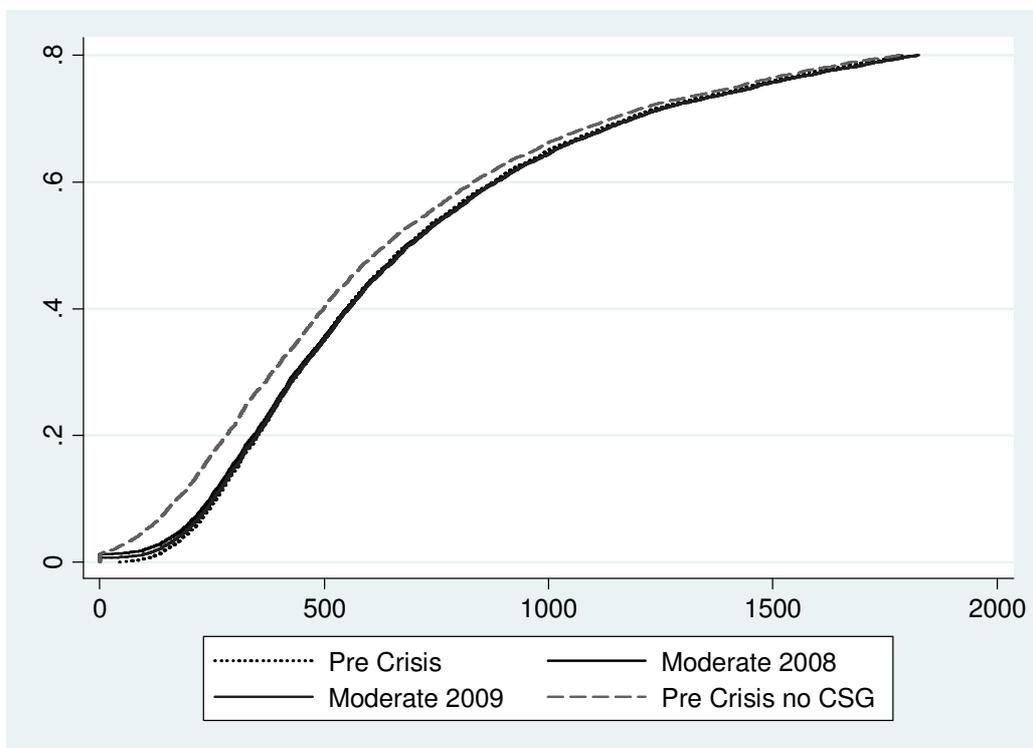
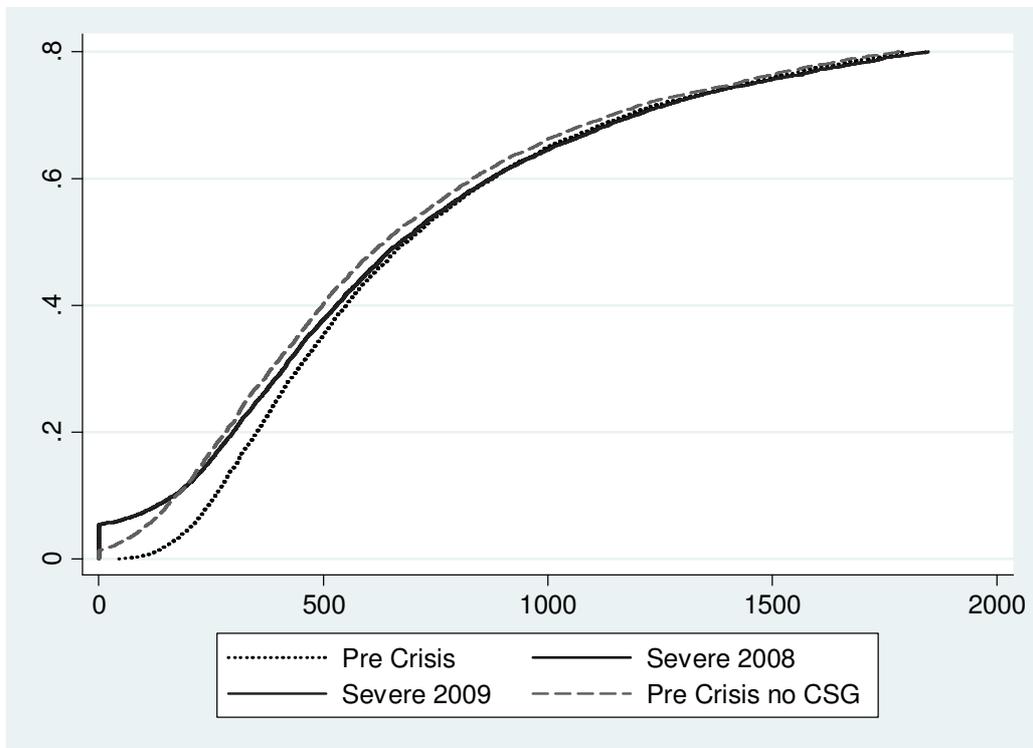


Figure 3 shows the CDFs that compare the 2007 situation with the impact of the severe scenario in 2008 and 2009. Here the impact of the crisis is much clearer and there appears to be complete poverty dominance. Irrespective of the poverty measure or poverty line chosen, except for very high poverty lines, there is a large (and probably statistically significant) effect on poverty; among the very poor it is even larger than the beneficial effects of the CSG.

Figure 3: Cumulative density functions (curves) for child poverty in 2007, 2008 and 2009, under a Severe Scenario, and a comparison with the beneficial effects of the CSG



In summary, then, the cumulative density functions indicate that the effect of the moderate scenario is not all that large. In contrast, the impact of the severe scenario is large, particularly at the lower levels; clearly we are dealing here with poverty impacts which affect the poorest the most.

Comparing two poverty lines

Table 9 shows the differences in results using two alternative poverty lines. This confirms what the CDFs and the magnitude of the impacts on P1 and P2 relative to Po have already intimated, that the major impact of the crisis is closer to the bottom of the income distribution. For the lower of the two poverty lines shown here¹⁰, the impact of the severe scenario is to increase the poverty headcount ratio by 16.8% in 2008 rather than by the 4.4% estimated using the higher poverty line; the poverty severity ratio rises by 195% rather than 94%.

Table 9: Child poverty scenarios (Moderate Impact and Severe Impact of Crisis) at two poverty lines, 2007-2011, compared to Business as Usual in 2007

| | | Higher poverty line | % change from BAU | Lower poverty line | % change from BAU |
|-------------------------------|-----------|---------------------|-------------------|--------------------|-------------------|
| 2007 BAU | P0 | 0.526 | 0.0% | 0.364 | 0.0% |
| | P1 | 0.205 | 0.0% | 0.119 | 0.0% |
| | P2 | 0.107 | 0.0% | 0.055 | 0.0% |
| Moderate scenario 2008 | P0 | 0.527 | 0.2% | 0.376 | 3.3% |
| | P1 | 0.230 | 12.2% | 0.149 | 25.2% |
| | P2 | 0.137 | 28.0% | 0.088 | 60.0% |
| Moderate scenario 2009 | P0 | 0.522 | -0.8% | 0.369 | 1.4% |
| | P1 | 0.219 | 6.8% | 0.136 | 14.3% |
| | P2 | 0.125 | 16.8% | 0.076 | 38.2% |
| Moderate scenario 2010 | P0 | 0.518 | -1.5% | 0.357 | -1.9% |
| | P1 | 0.203 | -1.0% | 0.117 | -1.7% |
| | P2 | 0.105 | -1.9% | 0.054 | -1.8% |
| Moderate scenario 2011 | P0 | 0.518 | -1.5% | 0.354 | -2.7% |
| | P1 | 0.202 | -1.5% | 0.117 | -1.7% |
| | P2 | 0.104 | -2.8% | 0.054 | -1.8% |
| Severe scenario 2008 | P0 | 0.549 | 4.4% | 0.425 | 16.8% |
| | P1 | 0.294 | 43.4% | 0.222 | 86.6% |
| | P2 | 0.208 | 94.4% | 0.162 | 194.5% |
| Severe scenario 2009 | P0 | 0.545 | 3.6% | 0.424 | 16.5% |
| | P1 | 0.304 | 48.3% | 0.221 | 85.7% |
| | P2 | 0.215 | 100.9% | 0.162 | 194.5% |
| Severe scenario 2010 | P0 | 0.536 | 1.9% | 0.386 | 6.0% |
| | P1 | 0.238 | 16.1% | 0.158 | 32.8% |
| | P2 | 0.145 | 35.5% | 0.095 | 72.7% |
| Severe scenario 2011 | P0 | 0.529 | 0.6% | 0.376 | 3.3% |
| | P1 | 0.228 | 11.2% | 0.147 | 23.5% |
| | P2 | 0.135 | 26.2% | 0.086 | 56.4% |

Note: The higher poverty line is the one used throughout the text, equivalent to about R250 in 2000 Rand terms. The lower poverty line is equivalent to a per capita poverty line of R247 per month in January 2008, or R163 per capita per month in 2000 Rand.

Poverty amongst children is more severe in rural than in urban areas. In 2007, before the crisis, poverty amongst children in urban areas was 44.9% versus 58.7% in rural areas. Given differential price effects, there appears to be a smaller difference at the lowest level, indicating that urban children generally face higher price levels. The economic crisis appears to have a similar effect in terms of who crosses the

poverty line in urban and in rural areas, as the rise in P0 is quite similar in magnitude. However, the crisis affects already poor children in rural areas much more: P2 rises by 55% in urban areas in 2009 and by 136% in rural areas, under the severe scenario, and under the moderate scenario all poverty measures improve somewhat in urban areas, while P2 deteriorates by 31% in rural areas.

The greater impact of the crisis at lower income levels and in rural areas may at first glance seem to be counter-intuitive. Further investigation shows that though much of the income loss occurs in urban areas and even among skilled workers, these people are better protected against job losses by the fact that they often belong to households that have a variety of other income sources, e.g. additional earners and non-earnings income. Apart from social grants, which have a similar effect of diversifying income among the poor, the poor and rural dwellers are in many cases quite weakly protected against job loss. It is thus not surprising that they are pushed below, or further below, the poverty line when losing their jobs.

It is possible that the job-queue method employed to allocate job losses (i.e. using a probit model to determine who is most likely to lose their jobs) may somewhat over-estimate rural rather than urban job losses amongst the lower-skilled categories of workers. On the other hand, the modelling does not take into account that through remittances of earnings to rural areas, urban job losses, price effects versus labour market effects

Distinguishing the part of the effect caused by price changes and job losses shows that the impact of job losses is by far the greater of the two.

5-Conclusion:

The effects of the world economic crisis on the South African economy are really harsh even in the moderate scenario. Indeed, the decrease in world prices combined with the drop in world demand leads to a fall in production for most sectors. This reduces employment and unemployment rates increase. Households see their income drop, and the situation is worse for informal workers that do not have the protection of an effective wage floor that unions provide. They face a huge drop in their wage rate (earnings). Firms also suffer from the crisis as their income and savings decrease strongly.

A relevant fact to note is that even if the crisis only lasts for two years (2008 and 2009), its effects remain even in the long run, notably due to the permanent impact of the drop in investment.

The extent of the impact on child poverty depends much on the economic scenario that one assumes. The moderate crisis scenario, which allows for a quick return to economic growth, has far less severe impacts on child poverty, and indeed on poverty in the whole society. On the other hand, in the severe crisis scenario, where the crisis is both deeper and more sustained, there is quite a strong impact on child poverty, but most of this impact occurs at very low levels of income, i.e. amongst the very poorest children.

It is worth investigating the impact of the CSG on poverty. This grant severely reduces child poverty, both because of its good targeting and because children are often more concentrated in poorer households. One can see from the cumulative density functions that the impact of not having the CSG is as large as that of the severe crisis. Without the CSG, the child poverty headcount ratio would have been 59.6% in 2007 rather than the 52.6% it was recorded at¹¹. This implies a 13.3% increase in the headcount ratio, a 58% increase in the poverty gap ratio and a 107% increase in the poverty severity ratio. Clearly, the CSG is most effective for those deepest in poverty.

In contrast to this, the severe crisis would have increased the poverty headcount to 54.5% in 2009. This is still a much better situation than would have occurred if there had been no CSG, even in the absence of an economic crisis. Thus the impact of the CSG outweighs that of the economic crisis, and the CSG may even have reduced the impact of the crisis by keeping people out of poverty due to the grants, even if their other incomes alone would have placed them in poverty. This is effectively the same as the typical behaviour one finds in order to react against crises, namely trying to diversify income to reduce vulnerability. Such income diversification for the poor through the grants has a positive effect on their ability to deal with crises of this nature.

Child poverty is high and has long been a source of concern in South Africa, thus the progress made in the past decade to reduce it, largely through expanding the child grant system, was very important. Some of this progress may have been reversed by the economic crisis, thus its impacts needed to be studied, so that if need be, policy responses considered. From the combination of macro- and micro-modelling in this study, it is apparent that the impact of the economic crisis did not completely reverse the positive impact of the grants. Yet it is evident that the economic crisis did indeed have an impact on monetary poverty in South Africa. The moderate scenario shows a modest impact, with the biggest impact on the poorest. In the case of the severe scenario, the impact is much greater and it affects the very poor, again by far, the most. The CSG moderates the poverty effects of the economic crisis, both by reducing poverty levels before the impact of the grants themselves, and by also diminishing the effect of the crisis itself on child poverty.

A strong conclusion from this study is that the choice of poverty line and poverty measure matters. Many of the impacts of the global crisis are not evident around a poverty line drawn at too high a level: In terms of the headcount ratio, few households crossed into poverty. It was far more often the case that those affected were already below such a relatively high poverty line, thus the change in their

economic welfare would not be observed if the focus was only on the headcount ratio and a high poverty line. More poverty sensitive measures such as P1 (the poverty gap ratio) and P2 (the poverty severity or squared poverty gap ratio) showed bigger changes in poverty, as did the headcount ratio when the poverty line was drawn at a lower and more appropriate level. Setting the poverty line too high and using the headcount ratio as the major poverty measure may thus have the effect of leaving much of the changes in poverty unobserved, when these take place largely amongst the poorest.

How likely are the two scenarios discussed in this report? One should first consider that the macro-model specifically attempted to isolate the effects of the global financial crisis, separate from, for instance, earlier but enduring effects, that of a fuel and a food crisis that occurred at international level. Thus actual outcomes may be worse. It appears, from present knowledge, as if the moderate scenario may better reflect the course of the international economy than the severe scenario. Also, the macro-model works at an annual basis and does not allow for lags within a year; in this respects, the exact location of the deepest trough may not fully reflect reality. Further, it appears as if the economic impact of the crisis has been less than under the severe scenario, yet the employment effects appear considerably worse than the moderate scenario. This may be the result of even greater wage rigidities (increasing wages during an economic crisis) than allowed for in the macro-model.

It needs to be emphasised that this study did not consider household and individual responses to poverty, which may have unknown impacts on actual poverty outcomes, particularly for children. But household formation, dissolution and fracturing can all occur in response to changing economic situations.

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1 Appendix

Table 10: Sectors grouped according to severity of the impact of the crisis

| Group | Sectors | Number of sectors |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Group 1: (Non affected sectors) | Gold & uranium ore mining Food Beverages & tobacco | 3 |
| Group 2: Sectors weakly affected | Agriculture, forestry & fishing Textiles Wearing apparel Leather & leather products Footwear Wood & wood products Paper & paper products Water supply Furniture | 9 |
| Group 3: Sectors mildly affected: | Building construction Electricity, gas & steam Basic non-ferrous metals Metal products excluding machinery Other industries Basic chemicals Printing, publishing & recorded media Other chemicals & man-made fibres Rubber products Plastic products Glass & glass products Non-metallic minerals Wholesale & retail trade Catering & accommodation services Railway transport Road transport Transport via pipeline Water transport Air transport Transport support services Communication Finance & insurance Business services Medical, dental & other health & veterinary services Community, social & personal services | 31 |
| Group 4: Sectors strongly affected | Coal mining Other mining Coke & refined petroleum products Basic iron & steel Machinery & equipment Electrical machinery Professional & scientific equipment | 10 |

| | | |
|--|-----------------------------------------------------------------------------------------------------------------|--|
| | Other transport equipment Television, radio & communication equipment Motor vehicles, parts & accessories | |
|--|-----------------------------------------------------------------------------------------------------------------|--|

¹ See for example, IMF 2008

² Please note that this table only refers to tradable sectors, thus government's activities are not represented

³ This paragraph draws from joint work with Judith Streak and Derek Yu (cf. Streak et al. 2009).

⁴ We use the Jung and Thorbecke (2001) specification

⁵ The methodology used here was heavily influenced by participation in a workshop in Accra, Ghana, and by advice rendered by members of the Poverty and Economic Policy (PEP) network. See in particular for the micro economic approach the two forthcoming papers: Cockburn, J., I. Fofana and L. Tiberti, "The Impact of the Global Crisis on Child Poverty in West and Central Africa", forthcoming as PEP (www.pep-net.org) and Innocenti (<http://www.unicef-irc.org/>) working papers; Bibi, S., J. Cockburn, I. Fofana and L. Tiberti, "Impacts of the Global Crisis and Policy Responses on Child Welfare: A Macro-Micro Simulation Framework", forthcoming as PEP (www.pep-net.org) and Innocenti (<http://www.unicef-irc.org/>) working papers.

⁶ Note here that we have a difference in the non affected group between gold and the rest. Indeed, gold production increases. This sector does not depend on local purchases, thus it does not face a decrease in local demand. For food and beverages, their production decreases due to the decline in local demand (households).

⁷ Wages and earnings in the informal sector are both referred to as wages in the text

⁸ This is a poverty line often quoted in the literature. The "lower bound" poverty line of Statistics South Africa of R322 quoted by Woolard & Leibbrandt (2006) and derived by Hoogeveen & Ozler is some 30% higher, and the "upper bound" one at R593 per capita per month in 2000 some 140% higher

⁹ In practice, poverty lines are derived in this model for each cluster of households in the sample, considering price levels in their area as reflected in the consumption patterns. The per capita lines mentioned here are those derived directly from the data without considering prices, by determining what poverty line would give the same child poverty headcount ratio.

¹⁰ This line is equivalent to a poverty line of R247 per capita per month in January 2008, or R163 per capita per month in 2000 Rand, compared to the higher poverty line that is R250 per capita per month in 2000 Rand.

¹¹ This of course does not take into account possible effects of the changes in behaviour or the changes in family composition that may have resulted under a different scenario.