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## Social Cash Transfers for the Poorest in Uganda

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May 2009



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# **Social Cash Transfers for the Poorest in Uganda**

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## **Abstract**

This paper mainly focuses on the various ways through which a social cash transfer program can be designed and financed. We identify four types of households which are considered to be vulnerable to be targeted with cash transfers. This includes households with orphans, old individuals, young and labor constrained. Extending a cash transfer to these households would lead to less poverty over the simulation period. These programs which would be constrained to less than 0.5 percent of GDP would have a small impact on the overall economy. By increasing taxes to finance the program this would wipe out the potential benefits of the cash transfer program of reducing poverty.

## **I. Introduction**

Though ranked among the best performing economies in Sub-Saharan Africa, Uganda's social development indicators including infant, child and maternal mortality remain among the worst in the world (Human Development Report, 2007). Further, Uganda's Chronic Poverty report (2005) estimates that 26% of the total population of Uganda (over 7 million people) lives in chronic poverty, with a sizable proportion being Orphans and Other Vulnerable Children (OVC). The failure to transform robust macroeconomic performance into social economic transformation has contributed to increased income poverty and social exclusion. It is therefore critical that we identify sections of the population that are considered to be vulnerable and design programs that can partly address poverty among the vulnerable.

Social protection instruments such as social cash transfers are recognized as an effective response to a range of social and economic problems which arise from livelihood shocks and stresses. Social cash transfer programs aim to provide basic social protection to those sections of the population who, for reasons beyond their control, are not able to provide for themselves. People in need of basic social protection usually live in labor-constrained households, that is, households with no adult members fit for productive work. Due to their limited self help capacity, these households cannot access any of the labor-based poverty reduction programs offered by governments or aid organizations. The bulk of households in need of basic social protection are headed by the elderly, widows, children, or individuals who are disabled or chronically sick.

In particular, unconditional cash transfers are rapidly gaining support as a response to chronic poverty, food insecurity and AIDS in high HIV-prevalence countries of east and southern Africa, where most governments lack the resources to implement comprehensive social security systems, and the coping capacities of families and communities are severely over-stretched. In addition, in Uganda, just like many

other low income African countries, three factors are placing an undue burden on the elderly. First, the burden on the elderly has enormously increased with the increase in mortality of prime age adults due to HIV AIDS pandemic and regional conflicts. Second, the traditional safety net of the extended family has become ineffective and unreliable for the elderly. Third, the elderly have increasingly been called upon to shoulder the responsibility of the family as they became the principal breadwinners and caregivers for young children. Consequently, combining growth strategies with social protection represents one of the surest ways to achieve economic and social development. Such efforts are particularly important especially given that the 7 million chronically poor Ugandans could have a “recoil” effect on the rest of the population impeding economic growth and adversely affecting development outcomes.

Cash transfers are still widely regarded as an under-exploited tool for providing cost-effective basic social protection to critically poor sections of the population with most governments and development partners favoring food aid. It is against this background that this study seeks to examine the feasibility of social cash transfers as a means of providing social protection amongst the chronically poor so as to eradicate poverty.

The paper focuses identifies four major groups of households considered to be vulnerable. First we identify households which have orphans (where both father and mother are dead). The second type of vulnerable household is the one with the elderly. The third type of vulnerable household is the one with young population and poor. Lastly are the households that are labor constrained or with a dependency ratio of more than 3. We target these households with a cash transfer that is equivalent to 30 percent of the median expenditure of the household group. In all cases, the poverty of the households would be reduced. Given the transfer program is restricted to 0.5 percent of GDP, the macroeconomic effects of these social transfer programs are considered to be marginal. The program is financed by running a higher deficit. Raising taxes to finance these programs would indeed wipe

out the potential benefits of a social cash transfer program through the distortions of income or consumption by also the vulnerable households.

The rest of the paper is structured as follows. Section II provides some related literature on cash transfers. Section III provides a summary of the objectives of the study. Section IV provides a summary of the results from the UNHS which describes the vulnerable groups. Section V is a summary of the model used. Section VI provides the main results. Lastly is the conclusion.

## **II. Related Research**

Many developing countries, especially the LDCs in sub-Saharan Africa, including Uganda, have to date not made much progress with regard to achieving the Millennium Development Goals (MDGs). This is often cited as one of the reasons why a number of international initiatives urge governments and development organizations operating in these countries to prioritize basic social protection. Some of these initiatives argue from a human rights perspective and/or from the perspective of specific vulnerable groups like the elderly or orphans. Others focus on the link between social protection and pro-poor growth. However, all these different schools of thought conclude that social cash transfers have a positive impact on development and are an underexploited tool for achieving rapid and cost-effective reductions of hunger and critical poverty. The transfers also complement other forms of assistance by providing basic social protection to households that cannot be reached by mainstream development and poverty reduction programs. This section reviews some of these studies and initiatives both in Sub-Saharan African and other parts of the world.

Schubert (2008), examines the sequence of policy decisions that have to be taken in the process of developing an integrated national social protection programme in which social cash transfers are one instrument among others for Malawi and Zambia. Decisions examined include the priority setting, mix of interventions, and

nature of interventions (project based or institutionalized) and the choice of implementing agencies. Regarding the priority setting, four groups of households are identified: moderately poor, labor constrained, ultra poor who can perform productive work, and the ultra poor who lack the ability to respond to development projects or programs because of their inability to engage in productive work<sup>1</sup>.

Schubert (2008) argues that social protection interventions should give priority to the ultra poor households. This is especially the case since the core objectives of social protection is include reduction and eventual eradication of ultra poverty and preventing the moderately poor households from sliding into ultra poverty.

Regarding the mix of interventions, Schubert (2008) argues that different types of households require various types of interventions. He argues for instance that the third category of households requires temporary transfers so as to meet their immediate basic needs such as food while the fourth household category requires regular and reliable social transfers which will empower them to meet their basic needs and to invest in human capital—health and education of their children.

On the question of whether interventions should be project based or institutional, Schubert (2008) points out that social assistance should be seen as permanent service such as education or health rather than as a project with an effective strategy. As such, social assistance should be seen as a core Government function to be implemented by Government officers. However, NGOs can implement emergency related temporary transfer programs in cash or kind, or get involved in programs targeting the third household category. It is important to note that social cash transfer schemes for fourth household category should be implemented by

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<sup>1</sup> Households in the first category though poor are considered to be in a “favorable” position since they are able to respond to self-help oriented projects and programs in order to overcome their poverty and hunger. Households in the second category are labor-constrained and are therefore unable to respond to labor-based interventions. Such households are usually headed by a pensioner, who receives a small pension, or households that are regularly supported by the extended family. The third category households suffer from ultra poverty in spite of the fact that they have household members able to perform productive work. This category includes small-scale farmers and fishermen. Improving the economic situation of such households requires programs specifically tailored for vulnerable but viable households. The last category of households suffers from ultra poverty. At the same time they cannot respond to development projects or programs because they have no household members able to perform productive work. In addition, such households have little or no self-help capacity.



Government. He argues that the most promising approach may be to select a Government agency which is politically well established and has potential that can be strengthened by systematic and long term capacity building.

Evidence from the Zambia and Malawi cash transfer schemes—which are designed to accommodate the above four policy decisions—reveal a significant positive impact with regard to food security, health, shelter and education of the members of the beneficiary households. Evaluations also show that the assets of beneficiary households have increased dramatically. This has improved their productive capacity and reduced their vulnerability to shocks. Non-recipient households have benefited because the burden of caring for destitute households has reduced and the high economic multiplier effect of cash transfers has strengthened the local economy.

The largest cash transfer programme for children in East and Southern Africa (ESA) is South Africa's national child support grant, targeting more than 9 million children. Several other countries have smaller programmes, either demonstrations (Kenya, Malawi, Zambia), or established programmes with low coverage (Mozambique). Lesotho is currently designing a SCT that targets orphans and vulnerable children, while both Botswana and Namibia have either in-kind or cash assistance programmes for families that care for orphans. Several other countries are currently considering SCTs on a trial basis, including Angola, Rwanda, Tanzania, and Uganda. Such programmes, therefore, are very much part of the social policy dialogue in ESA.

As momentum gathers around SCTs in ESA, there are many technical questions about programme design parameters such as targeting, transfer levels and overall affordability (Handa & Stewart, 2008). Regarding orphans, an important policy question is how to expand such programmes so that they reach the children most in need of assistance. Some of the critical questions include: should governments explicitly target households with orphans for receipt of cash assistance? Or should

the programmes focus more broadly on poverty as the key underlying determinant of vulnerability?

Handa & Stewart (2008) use micro-simulations to get answers to these questions. In particular, macro-simulations are used to determine who would be reached under different targeting schemes in terms of demographics and poverty, using household surveys from selected countries. The schemes analyzed are stylized versions of those currently operating in ESA: (i) labor-constrained households (Malawi, Zambia); (ii) households with elderly or disabled members (Mozambique); (iii) households with orphans (Botswana); and (iv) households with children (Kenya). A fixed budget of 0.5 per cent of GDP, with 20 per cent administrative costs, is used. A flat transfer of 30 per cent of median consumption of the bottom quintile in each country is provided.

Handa & Stewart's (2008) findings reveal that for Uganda and Malawi, more children of any kind are reached by either the child- or orphan-centered scheme, particularly children in the poorest consumption decile. In both countries the orphan scheme reaches all orphans in the bottom decile, but fewer children in that decile. In Malawi, the orphan scheme reaches only about 25 per cent of children in the poorest decile, as it does in Uganda, pointing to the potential trade-off in targeting poor families with children versus those with orphans only. The study also reveals that trade-off becomes less clear when all children in the bottom three deciles are considered. Handa & Stewart (2008) conclude that if policymakers give greater weight to children in the ultra-poorest category and if good targeting is possible, then the scheme that favors children over orphans will reach more children in the poorest decile relative to an orphan-targeted scheme. Such a scheme would also reach about 50 per cent of orphans in the bottom decile.

In addition, Handa & Stewart (2008) show that for all four countries, the proportional gain in per capita consumption among recipient households is higher for strategies that target children explicitly, as compared to strategies that target labour-

constrained, age-and disability-vulnerable or orphan households. This underscores the fact that the child focused scheme connects with poorer households, suggesting that orphans are not necessarily clustered in the bottom consumption decile. Similar results are obtained when the squared poverty gap (SPG) is analysed—this is the poverty indicator that is most sensitive to changes in welfare among the very poorest. In all four countries the greatest improvements in SPG are brought about by strategies that target households with children, while strategies that target labour-constrained households have the least effect.

Handa & Stewart's (2008) simulate the impact of SCTs on school enrolment, using a probit model to estimate the relationship between expenditure and schooling. A comparison of the estimated impact across targeting strategies in all countries under study indicates that reaching households with children has a greater impact on school enrolment than other strategies. Other schemes yield lower increases in school attendance because they reach fewer children, and those they do reach are relatively affluent.

In summary, SCTs in ESA that target households with orphans reach the highest number of orphans, but they include households in the third consumption decile while excluding many of the poorest children living in the bottom two deciles. Targeting poor families with children, however, leads to a greater concentration of resources among the very poorest households and the highest coverage of children in the bottom decile. This underscores the key dilemma faced by policymakers particularly in a context where social protection is driven by the HIV and AIDS-mitigation agenda. There is a tradeoff between pure poverty targeting, or targeting poor households with children, and targeting households with orphans. This trade-off is especially important when the focus is on the ultra-poorest households—those in the bottom consumption decile.

Social pensions though designed to address old age poverty, have implications on education and health outcomes even among children. Many of the resources

support human capital development for children and help them grow into more productive adults. Botswana, Lesotho, Mauritius and Namibia are among the SSA countries that pay universal pensions. South Africa offers a means-tested pension scheme. Research shows that social pensions in these countries reduce hunger and extreme poverty while improving health care, education and gender equality.

A key concern associated with SCTs is feasibility: are SCTs affordable, and if so, how much would it cost? It is important to note that the cost of implementing a SCT will depend upon diverse factors particularly the scope and coverage of the scheme. Several studies have analyzed the possible costs of a basic social security package for low-income countries, including those in Africa<sup>2</sup>. For instance, an ILO study (ILO, 2008b), conducted as a part of the social protection expenditure and performance review in Zambia, analyzed the cost of hypothetical cash benefits (but the child benefit limited to the first child). This study revealed that in the longer run it would cost no more than 1.5 per cent of GDP, excluding administrative costs. A similar exercise for Tanzania (ILO, forthcoming) put the costs for the same package at a little more than 1.8 per cent of GDP.

A related concern is the share of government spending devoted to social protection in low income countries. The total government spending (including social security funds) of lower-income countries in sub-Saharan Africa is 25–30 per cent of GDP. However, most of these countries allocate a very small percentage of the available domestic and external resources to financing the provision of social protection. Many countries allocate less than 1 per cent of GDP for cash transfers and in-kind social assistance. All but a few governments allocate less than 2 per cent of GDP<sup>3</sup>. In addition to the meager allocations to social security, the benefits reach only a small part of the population—in most cases, only government employees and those in the private sector who have regular contractual employment. Virtually none of the

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<sup>2</sup> See for instance ILO (2008a) and ILO (2008b).

<sup>3</sup> Six countries in SSA allocate more than 2 per cent of GDP to non-health social protection: Morocco (3.0%), Egypt (4.5%), South Africa (5.0%), Mauritius (5.3%), Tunisia (7.4%), and Seychelles (9.3%). Uganda allocates 0.4 per cent of her budget to the provision of non-health social security.

benefits go to the majorities, particularly those working in subsistence agriculture and the urban poor.

Sufficient financing necessary to build up basic social security systems and gradually reach all of those in need would require shifts in the current allocations of budgetary resources. Hagemeyer (2008) argues that this will necessitate more than one intervention: first, rationalizing existing social programmes, by making them less costly and/or more effective in meeting poverty reduction goals. This will require integrating or coordinating current social assistance or social insurance programmes to avoid overlap and waste; cutting administrative costs in existing contributory pension programmes; and improving design and overall governance. Second, reassessing all current government spending programmes to determine whether they serve the broader policy objectives of reduced poverty and inequality to minimize “cash” transfers to the rich (for example, fuel subsidies).

### **III. Objectives of Study**

#### **III.1 General Objective**

This study seeks to examine feasibility and poverty consequences of social cash transfer schemes amongst the chronically poor households in Uganda. Efforts will be made to study the poverty consequences of these schemes on children and the elderly (relative to other groups) in Uganda.

#### **III.2 Specific Objectives**

In particular, this study seeks to:

- i. Assess the feasibility of social cash transfers in Uganda especially the cost of the transfers;

- ii. Quantify the poverty effects of cash transfers amongst the chronically poor households.

#### **IV Who Are the Vulnerable in Uganda to be targeted**

Four strategies are used to identify households that are considered to be vulnerable. Using the 2005 Uganda National Household Survey (UNHS) we identify the following groups:

1. Labor constrained households, which have no able-bodied members between the ages of 15 and 60, inclusive, or have a dependency ratio greater than three.
2. Households with age-vulnerable or disabled adults. Age-vulnerable households have a female member above the age of 55 or a male member above the age of 60.<sup>4</sup>
3. Households with children. “Vulnerable children” are defined as the poorest children, hence this scheme effectively targets poor households with children less than 18 years of age.
4. Households with orphans are where both parents mother and father are dead and are also very poor.
5. Poorest households

The first four schemes represent versions of existing cash transfer programs that have been done in other countries within the region. Scheme 1 is being used in Malawi and as a pilot in Zambia. Scheme 2 is used in Mozambique. Scheme 3 has been used in Kenya. Scheme 4 has been implemented in Botswana. Using the 2005 UNHS data, Table 1 provides a summary of the extent of vulnerability in Uganda. As shown in the table, its clearly revealed that the extent of vulnerability in Uganda cannot be underestimated. For instance, about 34 percent of the households in Uganda have a dependency ratio of more than 3. This implies that the number of households with a significant proportion who are old and young and few able bodied workers is significant. Among the poor population, 22 percent have a dependency

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<sup>4</sup> From the UNHS survey its difficult to identify the chronically ill.

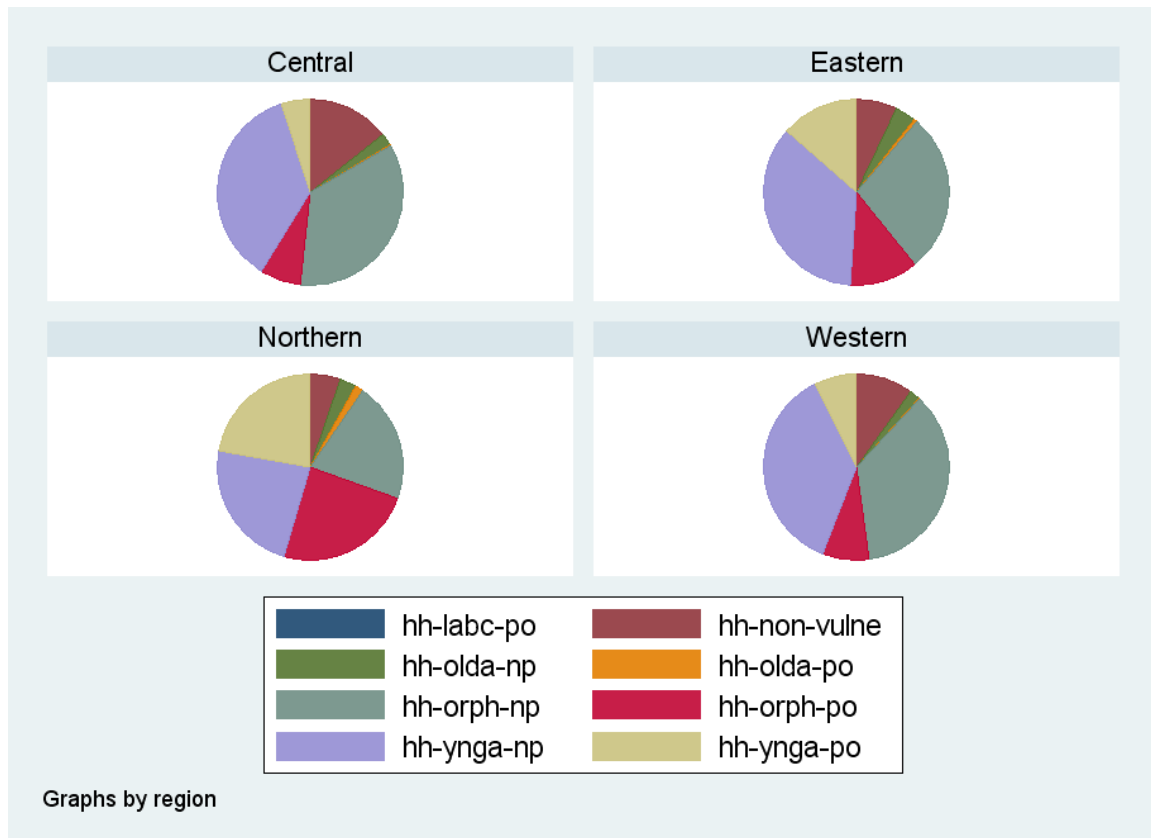
ratio of greater than 3. Households without any old person are about 70 percent of the total. However, households with at least 1 old person are about 30 percent. Among the poor, about 30 percent of them have an old person. Households without any young person are 13 percent. Not surprising, poverty is more prevalent in households with a high number of children.

**Table 1: Vulnerable Population in Uganda**

	Non-Poor	Poor	Total
<b>A. Labor Constrained</b>			
Dependency ratio<3	61.7	77.9	65.6
Dependency ratio>3	38.3	22.1	34.4
<b>B. Households with old individuals</b>			
0 old people	70.2	69.3	70.0
1 old person	18.3	20.9	18.9
2 old people	7.5	7.7	7.5
3 old people	2.3	1.3	2.1
4 old people and above	1.7	0.8	1.5
<b>C. Households with young individuals (less than 18 years)</b>			
0 child	15.2	4.0	12.6
1 child	12.2	7.0	10.9
2 children	15.4	13.2	14.9
3 children	16.3	17.0	16.4
4 children	13.3	18.6	14.5
5 children and above	27.6	40.4	30.7
<b>D. Households with orphans</b>			
0 orphan	59.6	51.2	57.6
1 orphan	5.3	4.2	5.0
2 orphans	5.6	6.4	5.8
3 orphans	7.5	8.1	7.6
4 orphans	6.4	9.2	7.0
5 orphans and above	15.7	21.0	16.9

Lastly, a significant proportion of households have orphans. This is partly due to the AIDS/HIV pandemic and wars in the Northern region. The incidence of poverty increases with the number of orphans in a household.

Also of interest is to know the regional distribution of the vulnerable populations. The index in the chart is as follows (hh=household, po=poor, np=nonpoor, olda=old individuals, labc=labor constrained, orph=orphans, ynga=young and non-vulne=non vulnerable). From the four charts below, its very clear that the North has more households than any other region which are poor with young children or orphans.



## V. The Uganda Social Accounting Matrix (SAM) 2007

We use a SAM which was published by UBOS in 2002, and later updated in 2007. A Social Accounting Matrix (SAM) is a table which summarizes the economic activities of all agents in the economy. These agents typically include households, enterprises, government, and the rest of the world (ROW). The relationships included in the SAM include purchase of inputs (goods and services, imports, labour, land, capital etc.); production of commodities; payment of wages, interest rent and taxes; and savings and investment. Like other conventional SAMs, the Uganda SAM is based on a block of production activities, involving factors of production, households, government, stocks and the rest of the world.



For the purpose of the simulations used, the main adjustment to the SAM made in this paper is to replace the households with the vulnerable groups identified above. We derive the consumption weights and labour incomes from the UNHS by the new classification of households and apply these weights to the aggregate household spending and income in the 2007 macro SAM. The Uganda SAM identifies three labour categories disaggregated by skilled, unskilled and self employed. Land and capital are distributed accordingly to the various household groups.

## **VI. Salient Features of the CGE Model**

The CGE model used in the present study is based on a standard CGE model developed by Lofgren, Harris, and Robinson (2002). This is a real model without the financial or banking system (See Table A1). It cannot be used to forecast inflation. The CGE model is calibrated to the 2007 SAM. GAMS software is used to calibrate the model and perform the simulations.

### *Productions and commodities*

For all activities, producers maximize profits given their technology and the prices of inputs and output. The production technology is a two-step nested structure. At the bottom level, primary inputs are combined to produce value-added using a CES (constant elasticity of substitution) function. At the top level, aggregated value added is then combined with intermediate input within a fixed coefficient (Leontief) function to give the output. The profit maximization gives the demand for intermediate goods, labour and capital demand. The detailed disaggregation of production activities captures the changing structure of growth due to the pandemic.

The allocation of domestic output between exports and domestic sales is determined using the assumption that domestic producers maximize profits subject to imperfect transformability between these two alternatives. The production possibility frontier of the economy is defined by a constant elasticity of transformation (CET) function between domestic supply and export.

On the demand side, a composite commodity is made up of domestic demand and final imports and it is consumed by households, enterprises, and government. The Armington

assumption is used here to distinguish between domestically produced goods and imports. For each good, the model assumes imperfect substitutability (CES function) between imports and the corresponding composite domestic goods. The parameter for CET and CES elasticity used to calibrate the functions used in the CGE model are exogenously determined.

#### *Factor of production*

There are 6 primary inputs: 3 labour types, capital, cattle and land. Wages and returns to capital are assumed to adjust so as to clear all the factor markets. Unskilled and self-employed labor are mobile across sectors while capital is assumed to be sector-specific.

#### *Institutions*

There are three institutions in the model: households, enterprises and government. Households receive their income from primary factor payments. They also receive transfers from government and the rest of the world. Households pay income taxes and these are proportional to their incomes. Savings and total consumption are assumed to be a fixed proportion of household's disposable income (income after income taxes). Consumption demand is determined by a Linear Expenditure System (LES) function. Firms receive their income from remuneration of capital; transfers from government and the rest of the world; and net capital transfers from households. Firms pay corporate tax to government and these are proportional to their incomes.

Government revenue is composed of direct taxes collected from households and firms, indirect taxes on domestic activities, domestic value added tax, tariff revenue on imports, factor income to the government, and transfers from the rest of the world. The government also saves and consumes.

#### *Macro closure*

Equilibrium in a CGE model is captured by a set of macro closures in a model. Aside from the supply-demand balances in product and factor markets, three macroeconomic balances are specified in the model: (i) fiscal balance, (ii) the external trade balance, and (iii) savings-investment balance. For fiscal balance, government savings is assumed to adjust to equate the different between government revenue and spending. For external balance, foreign savings are fixed with exchange rate adjustment to clear foreign exchange markets. For

savings-investment balance, the model assumes that savings are investment driven and adjust through flexible saving rate for firms. Alternative closures, described later, are used in a subset of the model simulations.

### *Recursive Dynamics*

To appropriately capture the dynamic aspects of aid on the economy, this model is extended by building some recursive dynamics by adopting the methodology used in previous studies on Botswana and South Africa (Thurlow, 2003). The dynamics is captured by assuming that investments in the current period are used to build on the new capital stock for the next period. The new capital is allocated across sectors according to the profitability of the various sectors. The labour supply path under different policy scenarios is exogenously provided from a demographic model. In addition, total factor productivity is also exogenously provided according to the assumed impact of AIDS. The model is initially solved to replicate the SAM of 2007.

## **VI Simulations Results**

In this section we briefly discuss the effects of providing social cash transfers to households in Uganda. From the background, we identified four major groups that we consider to be vulnerable. The social accounting matrix was also adjusted to accommodate these types of households. In particular, we identify eight types of households. First are the households which are labor constrained. In this regards we consider households whose dependency ratio is more than three. Second we consider households which have a lot of children and differentiate them into two categories poor and non-poor. The third type of households is for orphans where both father and mother are dead. These are also differentiated between poor and non-poor. The fourth category is where we have men or women aged more than 55 and 60 years respectively and whether the household is poor or non-poor. We also have a broad category of households that are not considered to be vulnerable along any of these categories.

We run five simulations which are described as follows. First, we target cash to households which are poor and have several orphans. The incremental cash increase is the difference between the poverty line and total spending of the given household. The rationale behind this increment is that it would put the household above the poverty line and the household would no longer be considered vulnerable. This simulation is named ORPHAN. The second simulation is where cash transfer is provided to households with old individuals (OLD). We target the transfer to only households that are considered to be poor. The third simulation is where we target households with a young population and also considered to be poor. The groups are combined and the simulation is named (VULN). The fourth simulation is where households that are poor and labor constrained are targeted (LABCONS).

For each transfer program, we set a value at approximately 30 percent of the median consumption among the households targeted. The choice of 30 percent is guided by the figures that have been used in other transfer programs (see UNESCO-ESARO, 2008) which are usually 20-40 percent of average consumption per person.

For all the simulations above, we assume that there is no adjustment in the tax system to finance the cash transfer mechanism. This would imply that the government would have to run a higher deficit financed either by borrowing domestically or from foreign sources. However, to fully understand the implications of such a program, it's necessary to run simulations where the program is fully funded by raising taxes and there is no increase in the borrowing requirement by government. In that regard, we consider two scenarios. First is where the cash transfer is financed by increasing direct taxes. In this case the income taxes which are largely paid by formal employees are increased to cater for the increased expenditure outlays as a result of the cash transfer program. We extend the financing option to the three targeting mechanisms mentioned in the first three simulations. The second alternative is by using indirect taxes that are much broader

to finance the cash transfer program.<sup>5</sup> Under these financing schemes, the model takes into account the second-round effects of the cash transfer. In essence, the higher tax regime would have an impact on both consumers and firms, and thereby reduce the overall net benefit of the program.

The focus in reporting the results is mainly on the poverty implications of the households and the macroeconomic implications of the different financing options of the cash transfer program. We are also interested to know the extent to which such a program is progressive given the types of households that benefits.

### **Baseline**

The baseline (business as usual scenario) assumes that there is no cash transfer program. Hence for all the years, we assume that the government would maintain the same level of spending in line with the real growth rate. We also assume that this growth path in spending is financed by increasing foreign financing at the same rate. The rationale behind this is to maintain the same level of the deficit without introducing any distortionary taxes. We set a budget constraint where the total spending on the transfer program does not exceed 0.5 percent of GDP. This figure has been found to be politically acceptable in other countries which are implementing similar programs. For all the simulations this assumption will apply. We apply the growth rates derived from the demographic model to the labor categories available in the SAM to derive detailed labor profiles according to labor type. We assume that the semi-skilled and unskilled would exhibit similar labor growth rates under the different scenarios.

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<sup>5</sup> The third option which is not considered in this paper would have been the reallocation of spending without necessarily increasing the tax burden. However this is beyond the scope of this paper.

## Targeting Vulnerable Households (Orphans)

We first run a simulation where the cash transfer program is targeted to households with orphans and old people. Targeting poor households with orphans highlights the social protection agenda driven by the vulnerability to HIV and AIDS. As shown in Table 1, the number of households that do not have any orphan are 58 percent. Households with at least an orphan are about 42 percent. The bulk of these children are staying with their extended relatives. However, to properly target such a transfer, it's important to differentiate between the poor and non-poor. Notwithstanding the imperfections in targeting the program, we find that under this scenario poverty within seven years could be reduced by 1 percentage points. The reduction in poverty is particularly more pronounced for the households targeted (with orphans). The other aspect of this simulation is that the improvement in the poverty of the households with orphans is not necessarily attained at the expense of households in other groups. Compared to the baseline, the other groups remain at the same level like in the baseline. Intuitively, this result may suggest that since the program is not funded by taxing the population, there are no direct distortionary effects on either the rich or poor. The indirect effects are only realized at the macroeconomic level. As a result of increased spending by the government, the deficit increases and due to the higher borrowing requirement, this would crowd out private investments, hence leading to a lower growth rate in investments compared to the baseline.

**Table 2: Poverty Indices Under Various Scenarios**

	BASE	ORPHAN	OLD	VULN	LABC	TAX-FINANCING
	Poverty P0					
2008	31.14	31.14	31.14	31.14	31.14	31.14
2009	30.17	29.17	29.67	29.67	29.67	30.17
2010	28.93	27.93	28.43	28.43	28.43	29.07
2011	27.55	26.55	27.05	27.05	27.05	27.61
2012	25.31	24.31	24.81	24.81	24.81	25.49
2013	23.99	22.99	23.49	23.49	23.49	24.29
2014	22.54	21.54	22.04	22.04	22.04	23.15
2015	21.66	20.66	21.16	21.16	21.16	22.08

The aggregate GDP level under this scenario does not change much as the reduction in investment levels are compensated by the increasing private

consumption levels by the targeted households. If these cash transfers were being saved and invested in subsequent periods, we would probably have noticed a change in growth rate. However, being that the cash is targeted to poor groups who can barely meet their consumption needs, it would be utilized largely on consumption without much savings. Hence, from a policy perspective, unless these transfers are made conditional on investing for example in human capital development or physical capital, such programs would not add much to the growth rate of the country. The only difference would be the reallocation of resources from lower investments due to the higher government borrowing requirement to higher consumption levels by poor households.

Since the cash transfer program is targeted to the poorest groups of households, we also do not find any significant changes in the production activities across sectors. Ideally one would expect that increasing the social cash transfers would have two indirect effects at a sectoral level. First, it could stimulate demand and therefore lead to sectors producing more as a result of the higher demand. In addition, with free cash available to these households, they could change their behaviors and perhaps demand for more leisure time relative to the time devoted to work. However, given that the magnitude of the increase is small, we do not observe any significant changes in production through these two channels.

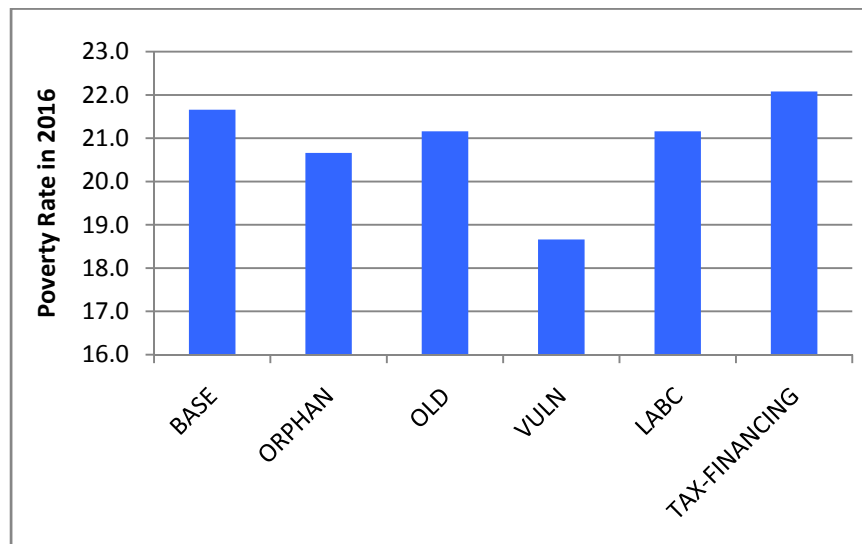
### **Targeting Households with Old Individuals**

As shown in Table 1, households with at least old members greater than 55 years of age are significant in number (about 30 percent). However, it's important to note that in Uganda most old people tend to be looked after by the extended family system. Therefore to identify a proper targeting mechanism for this group it's important to first screen households based on whether they are poor or non-poor. In essence, if the old household member is staying in a household that is not poor, would not qualify for the cash transfer.

Similar to the previous simulations, this would also have an impact on the overall effect on poverty during the seven years of the simulation. Poverty would decline by 0.5 percentage point compared to the baseline. It's important to note that the effect for this experiment is more marginal compared to other simulations like for targeting households with many youth. This is partly because the number of households being targeted in this case is fewer.

### Targeting Households with Young Population

A case can be made to target the poorest households with young population. However, as shown from in Table 1, a significant proportion of households have children (88 percent). Rolling out such a program to all households with young children would require significant resources beyond the resource envelop. We therefore only target the poorest households with children in this simulation with resources equivalent to 0.5 percent of GDP. To the extent that this program is implemented, we find that this would have a large impact on the reduction of poverty. Poverty would be reduced by 3 percent over the five year period compared to the baseline. The larger impact is partly explained by the larger number of households compared to the previous simulation.





### **Targeting Labor Constrained**

Lastly we implement a simulation where we target households that are considered to be labor constrained. In this case we consider all households who are only composed of children of less than 18 years, or only adults above 60 years or with a dependency ratio that is more than 3. In this simulation we find that there would be a reduction in poverty of 0.5 percent.

### **Increasing Taxes to Finance Social Transfer Programs**

As noted from the previous sections, its very clear that the way a social cash transfer program is financed matters a lot. There are several ways in which the government can finance a social cash transfer program. One of them is by raising the direct taxes by an equivalent amount and the fiscal deficit remains the same. This tax is largely paid by formal sector workers irrespective of whether they are rich or poor. Another source of financing is by increasing indirect taxes like VAT. Indirect taxes tend to have much wider coverage since they target the consumption side. For the case of Uganda, most of the food items are zero rated, and therefore we could expect that the poor do not experience much of the burden for this tax. The third alternative is by increasing government spending and the corresponding increase in the deficit as done in the first three simulations.

This simulation is implemented by using the closure rule where government deficit is the same and the tax rates adjust to close the gap as a result of the social cash transfer program. Raising taxes to finance social cash transfer programs is actually not the best policy option. This is because the tax burden would be born by all individuals including those who are targeted by the program. Poverty levels attained by all the households targeted would be much less than when the cash transfer is financed by higher borrowing.

## **VII Conclusion and Policy Implications**

This paper mainly focuses on the various ways through which a social cash transfer program can be designed and financed. We look at three different modes of

targeting where households are targeted by number of orphans in a household, number of young individuals in a household, labor constrained households, and households with old individuals of age higher than 60 years. The households are categorized into poor and non-poor. We also look at the various ways of financing these programs. The first alternative is where we increase the government spending to accommodate the social cash transfer program by running a higher fiscal deficit. The second alternative is where direct or indirect taxes are increased to cover the increased shortfall in the fiscal deficit.

The key finding suggests that increasing government spending to finance social cash transfer program could indeed be welfare enhancing for the targeted households. Given the small size of the increase in total spending, the macroeconomic effects of such programs are considered to be marginal. As noted in the results, for programs where the coverage of households is small (like labor constrained) the impact on overall poverty is marginal. However, when the program is rolled out to a larger program of for example households with youth, this would have much larger impact on the reduction of poverty.

The ideal alternative could be a reallocation of spending and thereby maintaining the same level of the deficit. Increasing taxes to finance the social cash transfer program is not welfare enhancing. The burden of the taxes and their distortionary effects would far outweigh the benefits of the program.

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Table A1 continued. CGE model sets, parameters, and variables

Symbol	Explanation	Symbol	Explanation
<b>Greek Symbols</b>			
$\alpha_a^a$	Efficiency parameter in the CES activity function	$\delta_{cr}^t$	CET function share parameter
$\alpha_a^{va}$	Efficiency parameter in the CES value-added function	$\delta_{fa}^{va}$	CES value-added function share parameter for factor $f$ in activity $a$
$\alpha_c^{ac}$	Shift parameter for domestic commodity aggregation function	$\gamma_{ch}^m$	Subsistence consumption of marketed commodity $c$ for household $h$
$\alpha_c^q$	Armington function shift parameter	$\theta_{ac}$	Yield of output $c$ per unit of activity $a$
$\alpha_c^t$	CET function shift parameter	$\rho_a^a$	CES production function exponent
$\beta^a$	Capital sectoral mobility factor	$\rho_a^{va}$	CES value-added function exponent
$\beta_{ch}^m$	Marginal share of consumption spending on marketed commodity $c$ for household $h$	$\rho_c^{ac}$	Domestic commodity aggregation function exponent
$\delta_a^a$	CES activity function share parameter	$\rho_c^q$	Armington function exponent
$\delta_{ac}^{ac}$	Share parameter for domestic commodity aggregation function	$\rho_c^t$	CET function exponent
$\delta_{cr}^q$	Armington function share parameter	$\eta_{fat}^a$	Sector share of new capital
$\nu_f$	Capital depreciation rate		
<b>Exogenous Variables</b>			
$\overline{CPI}$	Consumer price index	$\overline{MPSADJ}$	Savings rate scaling factor (= 0 for base)
$\overline{DTINS}$	Change in domestic institution tax share (= 0 for base; exogenous variable)	$\overline{QFS}_f$	Quantity supplied of factor
$\overline{FSAV}$	Foreign savings (FCU)	$\overline{TINSADJ}$	Direct tax scaling factor (= 0 for base; exogenous variable)
$\overline{GADJ}$	Government consumption adjustment factor	$\overline{WFDIST}_{fa}$	Wage distortion factor for factor $f$ in activity $a$
$\overline{IADJ}$	Investment adjustment factor		
<b>Endogenous Variables</b>			
$AWF_{ft}^a$	Average capital rental rate in time period $t$	$QG_c$	Government consumption demand for commodity
$DMPS$	Change in domestic	$QH_{ch}$	Quantity consumed of

	institution savings rates (= 0 for base; exogenous variable)		commodity c by household h
<i>DPI</i>	Producer price index for domestically marketed output	$QHA_{ach}$	Quantity of household home consumption of commodity c from activity a for household h
<i>EG</i>	Government expenditures	$QINTA_a$	Quantity of aggregate intermediate input
$EH_h$	Consumption spending for household	$QINT_{ca}$	Quantity of commodity c as intermediate input to activity a
<i>EXR</i>	Exchange rate (LCU per unit of FCU)	$QINV_c$	Quantity of investment demand for commodity
<i>GSAV</i>	Government savings	$QM_{cr}$	Quantity of imports of commodity c
$QF_{fa}$	Quantity demanded of factor f from activity a		

Table A1 continued. CGE model sets, parameters, and variables

Symbol	Explanation	Symbol	Explanation
Endogenous Variables Continued			
$MPS_i$	Marginal propensity to save for domestic non-government institution (exogenous variable)	$QQ_c$	Quantity of goods supplied to domestic market (composite supply)
$PA_a$	Activity price (unit gross revenue)	$QT_c$	Quantity of commodity demanded as trade input
$PDD_c$	Demand price for commodity produced and sold domestically	$QVA_a$	Quantity of (aggregate) value-added
$PDS_c$	Supply price for commodity produced and sold domestically	$QX_c$	Aggregated quantity of domestic output of commodity
$PE_{cr}$	Export price (domestic currency)	$QXAC_{ac}$	Quantity of output of commodity c from activity a
$PINTA_a$	Aggregate intermediate input price for activity a	$RWF_f$	Real average factor price
$PK_{ft}$	Unit price of capital in time period t	<i>TABS</i>	Total nominal absorption
$PM_{cr}$	Import price (domestic currency)	$TINS_i$	Direct tax rate for institution i ( $i \in$ INSDNG)

$PQ_c$	Composite commodity price	$TRII_{ii'}$	Transfers from institution i' to i (both in the set INSDNG)
$PVA_a$	Value-added price (factor income per unit of activity)	$WF_f$	Average price of factor
$PX_c$	Aggregate producer price for commodity	$YF_f$	Income of factor f
$PXAC_{ac}$	Producer price of commodity c for activity a	$YG$	Government revenue
$QA_a$	Quantity (level) of activity	$YI_i$	Income of domestic non-government institution
$QD_c$	Quantity sold domestically of domestic output	$YIF_{if}$	Income to domestic institution i from factor f
$QE_{cr}$	Quantity of exports	$\Delta K_{fat}^a$	Quantity of new capital by activity a for time period t

Table A2. CGE model equations

Production and Price Equations	
$QINT_{ca} = ica_{ca} \cdot QINTA_a$	(1)
$PINTA_a = \sum_{c \in C} PQ_c \cdot ica_{ca}$	(2)
$QVA_a = \alpha_a^{va} \cdot \left( \sum_{f \in F} \delta_{fa}^{va} \cdot (\alpha_{fa}^{vaf} \cdot QF_{fa})^{-\rho_a^{va}} \right)^{\frac{1}{\rho_a^{va}}}$	(3)
$W_f \cdot \overline{WFDIST}_{fa} = PVA_a \cdot QVA_a \cdot \left( \sum_{f \in F'} \delta_{fa}^{va} \cdot (\alpha_{fa}^{vaf} \cdot QF_{fa})^{-\rho_a^{va}} \right)^{-1} \cdot \delta_{fa}^{va} \cdot (\alpha_{fa}^{vaf} \cdot QF_{fa})^{-\rho_a^{va}-1}$	(4)
$QF_{fa} = \alpha_{fa}^{van} \cdot \left( \sum_{f' \in F} \delta_{ff'a}^{van} \cdot QF_{f'a}^{-\rho_{fa}^{van}} \right)^{\frac{1}{\rho_{fa}^{van}}}$	(5)
$W_{f'} \cdot WFDIST_{f'a} = W_f \cdot WFDIST_{fa} \cdot QF_{fa} \cdot \left( \sum_{f'' \in F} \delta_{ff''a}^{van} \cdot QF_{f''a}^{-\rho_{fa}^{van}} \right)^{-1} \cdot \delta_{ff'a}^{van} \cdot QF_{f'a}^{-\rho_{fa}^{van}-1}$	(6)
$QVA_a = iva_a \cdot QA_a$	(7)
$QINTA_a = inta_a \cdot QA_a$	(8)
$PA_a \cdot (1 - ta_a) \cdot QA_a = PVA_a \cdot QVA_a + PINTA_a \cdot QINTA_a$	(9)
$QXAC_{ac} = \theta_{ac} \cdot QA_a$	(10)
$PA_a = \sum_{c \in C} PXAC_{ac} \cdot \theta_{ac}$	(11)
$QX_c = \alpha_c^{ac} \cdot \left( \sum_{a \in A} \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}} \right)^{\frac{1}{\rho_c^{ac}-1}}$	(12)
$PXAC_{ac} = PX_c \cdot QX_c \left( \sum_{a \in A'} \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}} \right)^{-1} \cdot \delta_{ac}^{ac} \cdot QXAC_{ac}^{-\rho_c^{ac}-1}$	(13)
$PE_{cr} = pwe_{cr} \cdot EXR - \sum_{c' \in CT} PQ_{c'} \cdot ice_{c'c}$	(14)
$QX_c = \alpha_c^t \cdot \left( \sum_r \delta_{cr}^t \cdot QE_{cr}^{\rho_c^t} + (1 - \sum_r \delta_{cr}^t) \cdot QD_c^{\rho_c^t} \right)^{\frac{1}{\rho_c^t}}$	(15)
$\frac{QE_{cr}}{QD_c} = \left( \frac{PE_{cr}}{PDS_c} \cdot \frac{1 - \sum_r \delta_{cr}^t}{\delta_c^t} \right)^{\frac{1}{\rho_c^t-1}}$	(16)

Table A3. CGE model equations (continued)

$QX_c = QD_c + \sum_r QE_{cr}$	(17)
$PX_c \cdot QX_c = PDS_c \cdot QD_c + \sum_r PE_{cr} \cdot QE_{cr}$	(18)
$PDD_c = PDS_c + \sum_{c' \in CT} PQ_{c'} \cdot icd_{c'c}$	(19)
$PM_{cr} = pwm_{cr} \cdot (1 + tm_{cr}) \cdot EXR + \sum_{c' \in CT} PQ_{c'} \cdot icm_{c'c}$	(20)
$QQ_c = \alpha_c^q \cdot \left( \sum_r \delta_{cr}^q \cdot QM_{cr}^{-\rho_c^q} + (1 - \sum_r \delta_{cr}^q) \cdot QD_c^{-\rho_c^q} \right)^{\frac{1}{\rho_c^q}}$	(21)
$\frac{QM_{cr}}{QD_c} = \left( \frac{PDD_c \cdot \delta_c^q}{PM_c \cdot (1 - \sum_r \delta_{cr}^q)} \right)^{\frac{1}{1 + \rho_c^q}}$	(22)
$QQ_c = QD_c + \sum_r QM_{cr}$	(23)
$PQ_c \cdot (1 - tq_c) \cdot QQ_c = PDD_c \cdot QD_c + \sum_r PM_{cr} \cdot QM_{cr}$	(24)
$QT_c = \sum_{c' \in C'} (icm_{c'c} \cdot QM_{c'} + ice_{c'c} \cdot QE_{c'} + icd_{c'c} \cdot QD_{c'})$	(25)
$\overline{CPI} = \sum_{c \in C} PQ_c \cdot cwts_c$	(26)
$\overline{DPI} = \sum_{c \in C} PDS_c \cdot dwts_c$	(27)
<b>Institutional Incomes and Domestic Demand Equations</b>	
$YF_f = \sum_{a \in A} WF_f \cdot \overline{WFDIST}_{fa} \cdot QF_{fa}$	(28)
$YIF_{if} = shif_{if} \cdot [YF_f - trnsfr_{rowf} \cdot EXR]$	(29)
$YI_i = \sum_{f \in F} YIF_{if} + \sum_{i' \in INSDNG'} TRII_{ii'} + trnsfr_{i'gov} \cdot \overline{CPI} + trnsfr_{i'row} \cdot EXR$	(30)
$TRII_{ii'} = shii_{ii'} \cdot (1 - MPS_{i'}) \cdot (1 - \overline{tins}_{i'}) \cdot YI_{i'}$	(31)
$EH_h = \left( 1 - \sum_{i \in INSDNG} shii_{ih} \right) \cdot (1 - MPS_h) \cdot (1 - \overline{tins}_h) \cdot YI_h$	(32)
$PQ_c \cdot QH_{ch} = PQ_c \cdot \gamma_{ch}^m + \beta_{ch}^m \cdot \left( EH_h - \sum_{c' \in C} PQ_{c'} \cdot \gamma_{c'h}^m \right)$	(33)
$QINV_c = IADJ \cdot \overline{qinv}_c$	(34)
$QG_c = \overline{GADJ} \cdot \overline{qg}_c$	(35)



Table A3. CGE Model Equations (continued)

$$EG = \sum_{c \in C} PQ_c \cdot QG_c + \sum_{i \in INSDNG} \overline{trnsfr}_{i \text{ gov}} \cdot \overline{CPI} \quad (36)$$

System Constraints and Macroeconomic Closures

$$YG = \sum_{i \in INSDNG} \overline{tins}_i \cdot YI_i + \sum_{c \in CMNR} tm_c \cdot pwm_c \cdot QM_c \cdot EXR + \sum_{c \in C} tq_c \cdot PQ_c \cdot QQ_c + \sum_{f \in F} YF_{\text{gov } f} + \overline{trnsfr}_{\text{gov row}} \cdot EXR \quad (37)$$

$$QQ_c = \sum_{a \in A} QINT_{ca} + \sum_{h \in H} QH_{ch} + QG_c + QINV_c + qdst_c + QT_c \quad (38)$$

$$\sum_{a \in A} QF_{fa} = QFS_f \quad (39)$$

$$YG = EG + GSAV \quad (40)$$

$$\sum_{r \in CMNR} pwm_{cr} \cdot QM_{cr} + \sum_{f \in F} \overline{trnsfr}_{\text{row } f} = \sum_{r \in CENR} pwe_{cr} \cdot QE_{cr} + \sum_{i \in INSD} \overline{trnsfr}_{i \text{ row}} + FSAV \quad (41)$$

$$\sum_{i \in INSDNG} MPS_i \cdot (1 - \overline{tins}_i) \cdot YI_i + GSAV + EXR \cdot FSAV = \sum_{c \in C} PQ_c \cdot QINV_c + \sum_{c \in C} PQ_c \cdot qdst_c \quad (42)$$

$$MPS_i = \overline{mps}_i \cdot (1 + MPSADJ) \quad (43)$$

Capital Accumulation and Allocation Equations

$$AWF_{ft}^a = \sum_a \left[ \left( \frac{QF_{fat}}{\sum_{a'} QF_{fa't}} \right) \cdot WF_{ft} \cdot WFDIST_{fat} \right] \quad (44)$$

$$\eta_{fat}^a = \left( \frac{QF_{fat}}{\sum_{a'} QF_{fa't}} \right) \cdot \left( \beta^a \cdot \left( \frac{WF_{f,t} \cdot WFDIST_{fat}}{AWF_{ft}^a} - 1 \right) + 1 \right) \quad (45)$$

$$\Delta K_{fat}^a = \eta_{fat}^a \cdot \left( \frac{\sum_c PQ_{ct} \cdot QINV_{ct}}{PK_{ft}} \right) \quad (46)$$

$$PK_{ft} = \sum_c PQ_{ct} \cdot \frac{QINV_{ct}}{\sum_{c'} QINV_{c't}} \quad (47)$$

$$QF_{fat+1} = QF_{fat} \cdot \left( 1 + \frac{\Delta K_{fat}^a}{QF_{fat}} - \nu_f \right) \quad (48)$$

$$QFS_{ft+1} = QFS_{ft} \cdot \left( 1 + \frac{\sum_a \Delta K_{fat}^a}{QFS_{ft}} - \nu_f \right) \quad (4)$$

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