

# Poverty relief through social grants in South Africa: Is there an alternative?

Paper to be presented at the DPRU Conference, Johannesburg 22<sup>nd</sup>-24<sup>th</sup> October 2002

This (huge) paper resides on two files. The document file is named Meth\_DPRU-Paper.doc. Accompanying it is an Excel file called GrowDistribute(1995-2005)-R.xls. That file contains a simulation model for examining the effects on income of various social grants against a yardstick created by a distribution neutral (trickle-down) growth strategy.

Charles Meth  
Division of Economics  
University of Natal, Durban  
16<sup>th</sup> September 2002

## Table of contents

Introduction.....	1
1. Setting the scene.....	2
What to do about poverty and inequality.....	4
2. The international debate: Revisiting the growth/inequality nexus.....	7
The growth elasticity of poverty .....	10
3. Crossover periods and trickle-down growth.....	12
Poverty reduction: Estimating ‘crossover periods’ .....	12
A digression on ‘trickle down’ growth.....	13
4. Simulating the destitute out of their destitution .....	14
Modelling in a complex, far from equilibric world.....	16
Building a forum in which (competing) growth models can be tested.....	18
Value-driven non-linear transformations.....	20
Structure of a calculating engine for poverty relief .....	21
Tools for evaluating competing growth strategies .....	33
5. DNG vs Redistribution: Heavy odds against the underdog.....	36
Run 1: Distribution neutral growth vs. the child support grant.....	37
Run 2: Distribution neutral growth vs. a grant to the deserving poor.....	39
Run 3: Distribution neutral vs. a basic income grant.....	41
6. DNG vs Redistribution: Moving in the underdog’s favour.....	44
Run 4: Distribution neutral growth vs. the child support grant.....	45
Run 5: Distribution neutral growth vs. a grant to the deserving poor.....	46
Run 6: Distribution neutral vs. a basic income grant.....	46
Run 7: Distribution neutral vs. a basic income grant once more .....	46
References.....	49

**GEAR's concern**

“Present trends in the economy lead to employment growth of 100 000 to 130 000 per year, with unemployment rising to 37 percent by the year 2000 and an increased casualisation of the workforce. On this trajectory poorly rewarded employment in survival activities grows nearly twice as fast as formal sector job opportunities. Weakening employment opportunities for the poor imply that income distribution is likely to worsen, impacting particularly severely on the rural poor, young work-seekers and those without education or skills.” (GEAR, 1997, p.17)

**GEAR's promise**

“In this integrated macroeconomic strategy, employment growth accelerates, reaching 409 000 jobs annually in the year 2000 and reversing the upward tendency in the unemployment rate. Over the next five years [1998-2003?] some 833 000 more jobs are created in the higher growth strategy than would otherwise be possible” (GEAR, 1997, p.17)

***Introduction***

This paper is a slightly reworked chapter from a book about South Africa called ‘What to do until the doctor comes: Relief for the unemployed and for poorly-paid workers’.<sup>1</sup> The ‘doctor’ referred to in the title is rapid, job-creating economic growth, an elusive healer. The book, referred to below as WTD, started life as a background paper for the Committee of Inquiry into Comprehensive Social Security in South Africa (The Taylor Committee), of which I was a member. WTD looks at the latest available information on unemployment (Chapter 2); the vulnerable, especially in workerless and informal worker households (Chapter 3); social protection of the unemployed and poorly-paid (Chapter 4); workfare and the changing form of the welfare state (Chapter 5), and policy to deal with poverty, inequality and unemployment (Chapter 6). The present paper is Chapter 7 in WTD, while Chapter 8 explores the limits to redistribution.

Written expressly as an engagement with the authorities, a central theme of WTD is the question of the division of resources between direct measures (like social grants) to address poverty (poverty alleviation), and indirect measures such as the empowerment of South Africa’s previously excluded majority so that they can be gainfully absorbed into rewarding and sustainable economic activity (poverty reduction). The argument in the book (and it will not be defended here), is that government leans too strongly towards the latter. By doing so, it is argued (Chapter 6), its proposals for the comprehensive social security it is constitutionally bound to provide, come to resemble (in certain important respects) the parsimonious ‘welfare’ states of Anglo-Saxon persuasion (the USA, in particular). Demeaning references to social grants as ‘mere handouts’, likely to cause ‘dependency’, pepper official statements about an important component of the comprehensive social security system government has to create. By describing as debates over the ‘values’ informing the

---

<sup>1</sup> By the time the conference takes place, the book will have been published electronically on the website of the School of Development Studies in the University of Natal, Durban ([www.nu.ac.za/csds](http://www.nu.ac.za/csds)).

shape of the social security system, matters that are in actual fact empirical questions about the most effective way of complying with the requirements of the Constitution, the state encourages participants in the debate to air their prejudices, rather than engage in the much more difficult task of providing evidence for assertions lightly made.

This paper attempts to contribute to the task of constructing one of the pieces of evidence on which a judgement about which policy measures are most appropriate, is to be made. The paper is structured as follows:

**Section 1** sets the scene by presenting some of the findings on unemployment and poverty from WTD. It then takes a general look at the problem of what to do about the poor.

**Section 2** looks at the way in which the international literature on growth and inequality is developing, drawing attention to the fact that for poverty alleviation, it is not the growth rate that matters, but rather the distribution corrected growth rate.

**Section 3** examines some work on crossover periods (the time it will take the poor to cross the poverty threshold at different growth rates), and then spends some time considering the concept of trickle-down growth.

**Section 4** describes the workings of a simulation model designed to compare welfare outcomes for distribution neutral growth (DNG), as opposed to growth with redistribution resulting from social grant packages of three basic types—a child support grant, a grant to all ‘deserving’ poor, and a basic income grant. The section glances at the difficulties of modelling in a far from equilibric world, and considers as well, the tools for evaluating distributional outcomes. This digression considers as well, the creation of a forum in which a confrontation between models could take place. The aim would be to probe the limits of viability of different growth strategies.

**Section 5** compares DNG outcomes under the assumption of fast economic growth, with redistributive outcomes under the assumption that redistribution (the underdog) causes growth to slow down.

**Section 6** relaxes the assumption that redistribution slows growth drastically, and considers as well, the possibility that it could allow for growth that is as rapid as that achieved under a distribution neutral scenario.

## ***1. Setting the scene***

Unemployment, as everyone knows who looks at official statistics, is reported to be increasing in severity—numbers and rates of unemployed using both official and expanded definitions have risen in recent times. WTD examines these increases critically, and concluding that they cannot be taken at face value, argues that more adequate measures of the severity of unemployment need to be developed. In an attempt to contribute to this project, WTD tries to develop an index of unemployability, based on the characteristics of the unemployed, and using this measure, to estimate how many people there are in this lamentable condition. With

due warning of the dangers of using so crass an index to classify people, the technique yields an estimate of about two million people who appear to be so difficult to place in gainful economic activity *under present and foreseeable economic conditions* as to be considered unemployable. Reverting to the official statistics on unemployment for September 2001, we find some 3.4 million people, who, in response to the question ‘Why did ... not work during the previous seven days?’ replied that they lacked the skills or qualifications for available jobs. These people have self-classified themselves as unemployable *under present and foreseeable economic conditions*. This gives us a measure of the enormity of the task faced by the state as it attempts to empower the poor to the point where they can become self-reliant through sustainable income-generating activities.

So much for the unemployable. In an attempt to move beyond the limits of existing studies on income distribution in South Africa (constrained by the available data), Chapter 3 of WTD reports the discovery of the fact (stumbled onto) that the proportion of African households containing people of working age but in which no one was working, had increased from about 32 per cent in 1995 to about 39 per cent in 1999. While it cannot be said with certainty that this demonstrates increasing poverty (the change could have been caused by the break-up of households into smaller units), an analysis of the conditions of those in these unfortunate circumstances is highly revealing, once more, of the problems faced by the state into trying to empower these people.

Among the whole population in 1999, there were 4.6 million people in 1.3 million households where total monthly expenditure by the household was less than R400, where there people of working age but in which no-one was employed, not even in the most menial informal sector activity. In the expenditure category R401-800, there were a further 5.7 million people in 1.2 million households of similar description. In these 2.5 million households containing 10.3 million people, there were 2.6 million unemployed, 96 per cent of them African. A majority of the unemployed (1.4 million), had given up the search for work. Further research is underway, to probe more deeply into the conditions of these people, most of whom appear to survive on handouts—recipients of remittances and those with access to a social grant of some sort (the state old age pension, disability grants) are in the minority.

Faced with a problem of this magnitude, the Taylor Committee recommended a basic income grant. After Government had had a couple of months to study the Report of the Taylor Committee, it made an announcement to the effect that, amongst other things, it had postponed until January 2003, a decision on the issue of the Basic Income Grant (BIG), proposed by the Committee. Reporting the government spokesperson as claiming that the postponement “did not matter” because if government did decide to introduce the grant, it would only be implemented during the 2004/2005 tax year, the announcement appeared thus in the *Sunday Times* (July 28 2002):

“... while a decision has not yet been taken, the Cabinet’s “philosophical approach is different” from that of the Taylor committee.

[The spokesperson] said the thinking was that “able-bodied” South Africans should “enjoy the opportunity, the dignity and rewards of work” and only people who were disabled or ill should get handouts.

“It is a kind of approach that motivates (*sic*) against an income grant. We would rather create work opportunities,” he said. Job creation proposals to be considered include a “massive expanded public works programme”, which would include partnerships with the private sector.”

By these and other approaches such as its skills training programmes, the state apparently hopes to solve the problems of poverty, inequality and unemployment. The contention of the present paper is that unless it can find the key that would unleash economic growth rates in the region of six per cent a year, sustained for decades, it cannot hope by these means to do so. The seemingly inexorable increase in the numbers of unemployed, the outcome of the inability of current economic policies to solve the problem (for whatever reason), pushes to the foreground, the question of what can be done to ease the suffering associated with the phenomenon. In short, we must ask what is to be done about poverty and inequality while we wait for economic policy to find out how to deliver rapid, job-creating economic growth?

#### *What to do about poverty and inequality*

‘What to do about the poor’ has been debated for thousands of years. For many centuries it seems to have been agreed that those among them who have come to be described as the ‘deserving poor’ are entitled to relief.<sup>2</sup> Agreement about who, among the poor is ‘deserving’, and who ‘able-bodied’ (and hence, undeserving), is much more difficult to secure. The argument over who is ‘deserving’ of relief, and who is not, never far from the surface, must be faced anew whenever social security systems come under strain, particularly of a financial nature. Responsibility for the provision of relief has fallen and continues to do so, in one way or another, on the community at large. It being generally accepted that the deserving poor are entitled to relief, one finds little dissent over the *need* for government policies aimed at poverty reduction and alleviation. The same cannot be said about the *nature* of these policies.

As far as inequality (of income and wealth) is concerned, it is not self-evident that a reduction in inequality is desirable, and this despite the bitter struggles between egalitarians and defenders of the status quo, dating back to antiquity. In recent times, attempts have been made to show an association between inequality, economic inefficiency and slow economic development, but as Bourguignon (2000) observes:

“... empirical evidence ... is weak, and the policy implications of this burgeoning literature remain ambiguous.” (2000, p.199)

Bourguignon himself advances a fairly persuasive account of the connection between crime, violence and inequitable development. Be all that as it may, the interest of this paper, however, lies elsewhere, namely, in the possibility that the South African economy, by common agreement, one in which income and wealth are grossly

---

<sup>2</sup> Clearly, the view that someone is deserving of relief, is an ethical or normative stance.

unequally distributed, and possibly becoming more so, cannot grow fast enough to eradicate poverty within some acceptable period. It follows from this, that if the concern over poverty so frequently expressed by the country's leaders is real, that more energetic consideration is going to have to be given to the direct redistribution of income through social grants. Like it or not, direct redistribution requires that income be taken away from one group and given to other. Carried out successfully, this will have the effect of reducing inequality. If this analysis is correct, then a change of heart on the part of government is required. Genuine though its concern with the maldistribution of income undoubtedly is, the likelihood of changing it at an acceptable rate down at the poorer end of the distribution through the redistribution of assets favoured by the state is so slight as to be of little consequence to the poor. This is not to suggest that efforts to achieve such redistribution must be curtailed—on the contrary, they should be redoubled where they are shown to be effective. If this entails an increase in tax levels, so be it.

Such a policy stance is precisely the opposite of what GEAR's drafters seem to have had in mind. Several years of GEAR's rigour have, however, seen many of the more nightmarish worries of its drafters (referred to in the epigraph), come to pass. Nothing hindered, the debate has now moved on to the latest fad in development circles, pro-poor growth. Of course, it were a good thing if growth were pro-poor. Little attention, however, seems to have been devoted to the task of determining just how much pro-poor growth is required before an 'acceptable' level of poverty is achieved. The existing level of destitution, let alone poverty, is most emphatically not acceptable. Eliminating destitution in South Africa is probably the most important policy priority. Even when destitution is no more, however, inequality will probably still be too high to allow poverty reduction to be secured (in some reasonable period) by economic alone, unless by some miracle, someone really does discover the key to pro-poor growth.

A remarkable feature of the current South African intellectual landscape, given the extremes of inequality almost everyone experiences in one form or another in their daily lives, is the relative absence of debate about transfers (taking more from the rich than is presently taken, and giving it to the genuinely poor) as a means of addressing the problem of the gross maldistribution income. Can it be that the long co-existence of destitution with fabulous, ostentatious wealth (or even with mere comfort) has caused extreme inequality to take on a semblance of immutability that renders vain all attempts (including the emergence of democracy) to change it? A perception of gross inequality as part of the natural order would certainly help to sustain the self-serving contempt with which arguments in favour of redistribution of income are dismissed. Things were not ever thus—in the run-up to democracy, there was a flurry of intellectual activity, reflecting popular concerns, with the question of redistribution. Two books published at the time (Moll, 1990; Moll, Nattrass and Loots, 1991) dealt explicitly with the scope and limits of redistribution. The former of these two, Peter Moll's 1990 work, contains a comparison of the conditions of the poor under various assumptions about growth and redistribution for a period of 20 years. He called his four scenarios Unrealistic Growth, Realistic Growth, Unrealistic Redistribution and Realistic Distribution. The details do not concern us here—the point is that there was a vigorous debate.

Now is the time for that debate to be revived—it is a simple matter to demonstrate that under economic conditions such as those that have marked what is approaching a decade of democracy in South Africa, modest redistribution could do more for the very poorest than a concentration on ‘economic empowerment’. So unlikely is it that many of the unemployed will, in the foreseeable future, be absorbed gainfully into the labour market, that the considerable resources devoted by the state to measures intended to reduce and to alleviate poverty barely scratch the surface of the problem.

Analyses of income inequality based on (or linked to) the 1996 Population Census and the 1995 Income and Expenditure Survey (IES) have, it would seem, reached the end of the road? further developments await the publication of the IES results for the year 2000.<sup>3</sup> Taking the analyses as far as they will go, however, most commentators seem to agree that between-(race)-group inequalities have fallen, while within-group inequalities have risen. For example, an examination of South Africa’s changing income distribution in the period 1991-96 by Whiteford and van Seventer (2000) concludes that:

“... the rise in inequality within population groups and within society as a whole is driven, on the one hand, by rising employment of well-paid, highly-skilled persons and, on the other hand, declining employment of lower-paid, less-skilled persons who are forced into poorly remunerated informal sector employment or into unemployment.” (p.28)

Posing the question of whether the trends they have detected “... which occurred in all population groups” (p.25) are likely to continue into the future, the answer, they insist, has to be in the affirmative. Their analysis of labour market processes, and projections that one of the authors made in another study, lead them to predict that:

“... the employment of highly skilled persons will continue to rise while the employment of less skilled persons will decline, resulting in rising unemployment. Unless there is a fundamental shift in the path along which the economy is moving, there is little hope for a reduction in inequality and income poverty.” (Whiteford and van Seventer, 2000, p.28)

Rising unemployment in the period since the last definitive work was done suggests that these tendencies have continued unabated. Not only has the required fundamental shift not taken place—the numbers of unemployed have climbed to record levels. The increase that this has occasioned in the number of workerless households (noted above) has probably exacerbated the poverty problem. Substantial numbers of the unemployed, it is argued, are unlikely to find employment now and in the foreseeable future in the economic conditions obtaining in South Africa. Couple this with the fact that *ceteris paribus*, the rates of growth required to achieve a given level of poverty reduction vary inversely with the degree of income inequality, and the stage is set for a re-evaluation of the possible role of social grants, both for the direct relief of the poverty associated with unemployment and poorly-paid work, and for the reduction of inequality as a good, in and of itself.

---

<sup>3</sup> If Census 2001 goes well, using the resulting population distributions to weight the 2000 IES results should yield authoritative results on this question.

In the face of the unfortunate trends identified above, before which government's attempts to alleviate poverty (which lean heavily in the direction of gainful insertion of the unemployed into the labour market) have but scant hope of success, the question of whether, under present economic conditions, there is a more direct way of addressing poverty, must be posed. The exploration in this paper attempts to address this matter by comparing the relative merits of poverty-reducing strategies based on rapid, distribution neutral (trickle-down) growth, and those based on policies of modest redistribution through income transfers to the poor (accompanied by slower growth).<sup>4</sup> The model on which the results reported below are based is but a youth—being in the early stages of its development. Nonetheless, it churns out what appears to be a robust conclusion—under conditions of extreme inequality, modest redistribution coupled with moderate economic growth does considerably more for the poor than does fast trickle-down growth.

We approach the model and its results by a somewhat roundabout route—via a brief look at the international literature on inequality and poverty reduction. The simulation model and its results then follow.

## ***2. The international debate: Revisiting the growth/inequality nexus***

A recent piece by Aghion *et al* (1999) begins with the observation that:

“The question of how inequality is generated and how it reproduces over time has been a major concern of social scientists for over a century. Yet the relationship between inequality and the process of economic development is far from being well understood.” (p.1615)

Drawing on new growth theories (all the while acknowledging the need for more research), they offer a series of insights into this complex relationship. The two major questions they pose:

- is inequality always good for growth, and
- does growth increase earnings inequality?

are of obvious relevance in South Africa. Clearly, one cannot simply transplant the conclusions of research conducted elsewhere into the local setting. Several of their findings, however, resonate so strongly with local conditions as to suggest that the policy implications they draw are likely to be appropriate in this country as well. As regards the first of the questions with which they are concerned, one conclusion they reach is that:

“... when agents are heterogeneous and capital markets are imperfect, greater inequality may have a negative impact on growth. Moreover, the traditional argument that redistribution is detrimental to incentives and growth is strongly challenged.” (1999, p.1630)

---

<sup>4</sup> The question of whether fast growth is possible in South Africa under any conditions is not considered—the economy's track record to date does not encourage the belief that it is.

In other words, as they point out further on, “there is not necessarily a trade-off between equity and efficiency.” (p.1655) As regards the second of the questions they address, their research points to (possibly) contradictory outcomes in which:

“... technological change appears both as the major source of economic growth *and* as the main vector through which the growth process is likely to affect the distribution of earnings. It is therefore at the core of the relationship from growth to inequality. However, the extent to which the growth process actually induces rising inequality depends on the institutional characteristics of each country. In particular, labor market institutions are crucial.” (p.1654, emphasis in original)

Enough is known about the latter in South Africa, to make it clear that technical change has a strong tendency to enhance the wages of skilled workers relative to unskilled. Enough is also known about differential access to the credit necessary for sustained investment in human capital, to make it clear that without massive subsidies to the poor, ‘catch-up’ with highly educated and highly skilled workers (a daunting challenge under most circumstances) is simply not possible. From the first part of their study, Aghion *et al* conclude that:

“When capital markets are imperfect, there is scope for redistributive policies which are also growth enhancing. How to redistribute hence becomes a crucial issue. Given that capital markets are at the root of the relationship between inequality and growth, transfers or subsidies to borrowers are an important policy tool. This is particularly relevant in the case of investments in human capital.” (p.1656)

The complexities of labour market interactions, with some forces tending to increase, and others to decrease inequality, make it impossible to say, *a priori*, what the outcome will be of increased investment in human capital. As the authors have shown, though, the nature of technical change may mean that rising education levels exacerbate inequality. There is thus a case to be made, depending on the institutional setting, for “sustained redistribution.”. Their concluding remarks are that:

“... a one-time reduction in after-tax inequality that would foster investment incentives and growth in the short run would result in a (maybe temporary) upsurge in inequality as a consequence of the accelerated technical progress it induces. In other words, the absence of a durable virtuous circle a la Kuznets calls for permanent redistribution in order both to control the level of inequality and to foster social mobility and growth. The details of how such policies should be designed and implemented constitute a whole research area still to be explored.” (Aghion *et al*, 1999, pp.1656-1657)

There is a cautionary tale here for those who subscribe to the view that empowering the previously excluded (and still highly disadvantaged) will somehow have positive implications for equity. But let us descend from the stratosphere of an aspiration in which all South Africans can meet and compete on an equal footing in the labour market (the level playing field so beloved of politicians and the popular press), to a world which aspires, more modestly, to ensure that all in South Africa have shelter and enough to eat—let us talk about chronic poverty.

A reluctant world, led ideologically by international institutions such as the World Bank and the IMF, may finally be ready to do more than merely flirt with the notion that the rates of poverty reduction that can be achieved under conditions of extreme income inequality may be too low. Although this unfortunate truth may not be aired too often in public, officials of the World Bank became aware of it long time ago. As Arrighi (2002) has observed:

“Already in 1970, the President of the World Bank, Robert McNamara, had acknowledged that the attainment of high rates of GNP growth in low-income countries left infant mortality ‘high’, life expectancy ‘low’, illiteracy ‘widespread, unemployment ‘endemic and growing’ and the distribution of income and wealth ‘severely skewed’.” (2002, p20)<sup>5</sup>

The debate has resurfaced in an interesting way. By virtue of the arm’s-length relationship that the Bank and the Fund can maintain with intellectual output of the experts they employ, they can float ideas from which they can readily distance themselves if too much controversy arises. This is done by allowing experts (consultants and/or staff) to publish papers, sometimes with suitable disclaimers, in the institution’s respective journals and paper series. Ravi Kanbur’s seminal (1987) paper, published in the IMF Staff Papers, is a case in point. The World Bank has also let William Easterly loose on the question of the effect of lending on the poor, with not very complimentary results for that institution. He finds that:

“... the poor benefit less from expansions during a structural adjustment program than in expansions without an adjustment program, while they are at the same time less hurt by contractions. [in other words, the elasticity of poverty falls]....

[I]t is disappointing that the poor do not share fully in growth in those cases where there are recoveries that accompany adjustment lending. Since the Bank and the Fund ultimately wish to restore growth in the economies to which they make adjustment loans, it is worrisome that positive growth has less of a poverty-reducing impact with high Bank-Fund involvement.” (2000, pp.8-9)

Part of the explanation of why poverty does not fall with recovery, for at least some of the countries that Easterly examined, almost certainly lies in the fact that, as Ravallion has pointed out:

“Inequality ... matters to the pace of poverty reduction that is achieved at any given rate of growth.” (2000, p.17)

This relationship, of course, is precisely that used by McGrath and Whiteford to estimate the ‘crossover times’ at which we will glance below.<sup>6</sup> Stated in simple terms, the higher the level of inequality, the higher the growth rate, *ceteris paribus*,

---

<sup>5</sup> The origin of this comment, cited in a footnote, is an article by McNamara, “The True Dimensions of the Task”, *International Development Review*, vol. 1, 1970, pp.5-6.

<sup>6</sup> These authors note that the approach in Kanbur’s (1987) article (and a synthesis of it by van Seventer)? comparing the efficacy of poverty alleviation through growth, or poverty alleviation through redistribution, are “used to such an extent that they are quoted without specific acknowledgement.” (1994, p.26)

required to address the task of poverty alleviation.<sup>7</sup> There are several ways in which use may be made of this proposition (the relationships among inequality, growth and poverty reduction) to test the efficacy of anti-poverty policy. They are most interesting when they make use of actual performance data, but even a set of hypothetical figures, if they approximate the conditions found in real economies, can be revealing. We look at three such exercises below. The first of them takes a simple model developed by Ravallion in the paper referred to above, and plugs into it, some guesstimates of what the relevant South African figures might have been. By varying the level of inequality, the rate of poverty reduction may be seen to change. The second merely reports on the findings of a simulation exercise (based on actual performance data for a large number of countries) by Dagdeviran *et al* (2000). South Africa is included among them. The third builds on the latter approach to perform a series of simulations of some plausible ‘might-have-beens’ for post-apartheid South Africa.

### *The growth elasticity of poverty*

In simple technical terms, the finding of the Easterly (2000) piece referred to above, is that the growth elasticity of poverty in those countries he examined fell in countries with high Bank and Fund involvement. His analysis takes into account the levels of inequality in the countries concerned. If an optimist is one who can find consolation no matter what the circumstance, then Easterly must surely qualify. Discussing the relationship among poverty, inequality and growth, he observes that:

“Ten percentage points higher Gini will lower the growth elasticity of poverty by 0.6 percentage points. A not-often-noticed implication of this result is that the poor will be hurt less by output contraction in a highly unequal economy than in a relatively equal one, simply because the poor have a low share of output to begin with.” (2000, p.8)

It seems not to have occurred to him that the capacity of the very poor (some of them hidden away in the statistics) to absorb even a tiny negative shock may be so limited that any contraction of income would have catastrophic consequences. Ravallion’s (2000) work is more palatable. He observes that:

“... an important determinant of the rate of poverty reduction is the distribution-corrected rate of growth in average income, given by a measure of initial inequality (100 minus the measure of inequality) times the rate of growth. Indeed, the distribution-corrected growth rate knocks out the simple rate of growth when both are used in a regression for the rate of poverty reduction between surveys across countries and time ... It is not the rate of growth that matters, but the distribution-corrected rate of growth.” (2000, p.19)

He represents this in a “simple model, which gives the proportionate rate of change in measured poverty ( $r$ ) over time as:”

---

<sup>7</sup> It is not clear whether this proposition is self-evident or not. If the latter, it could be a theorem, needing to be ‘proved’ by a chain of reasoning (a simple matter). If the former, we need trouble our minds no further about its validity.

$$r = \beta(1 - I)g$$

In this model,  $I$  is the index of inequality at the beginning of a period of time, and  $g$ , the rate at which average income grows. His estimates of  $\beta$ , obtained from an analysis of the data of 124 periods of time from surveys in developing countries lie between  $-3.74$  and  $-2.94$  (p.19). If the value of this coefficient in South Africa is assumed to lie somewhere between these values (no claims are made for the validity of such a step? we are concerned here only with illustrative figures), then a table of possible outcomes like those in Table 1 below can be constructed.

**Table 1 Hypothetical rates of poverty reduction**

	1	2	3	4
$I$ = Index of inequality	0.68	0.50	0.68	0.60
$g$ = Growth rate of average (per capita) income	0.50	0.50	0.50	0.50
$\beta$ = Coefficient	-2.0	-2.0	-4.0	-4.0
$r$ = Rate of change in measured poverty	-0.32	-0.50	-0.64	-0.80

Income growth in recent years (GDP growth minus population growth) was probably in the region of about half of one per cent per annum. The Gini coefficient, that oft-cited index of maldistribution, was probably somewhere in the region of 0.68 (should we be using the after-tax Gini?). The lower the value of  $\beta$  in absolute terms, the slower the rate of poverty reduction (the annual percentage change in the proportion of the population living below \$US1 per day). Likewise, the higher the level of inequality, the lower the rate of poverty reduction.

For our purposes here, the device played with above, although interesting, is little more than a curiosity? Ravallion's forthright statement that it is only the distribution-corrected rate of growth that matters, is very important, but to get closer to policy, it is necessary to dig deeper. The strong likelihood is that the period since 1994 has seen increases, rather than declines (caused by rising mass unemployment) in the proportion of the population in poverty. In other words, rising poverty can coexist with growing real incomes. To deal with that problem, it is necessary to go beyond simple models. The paper by Dagdeviran *et al* (2000) starts pointing in the appropriate direction. They have developed an:

“... analytical framework to assess which ... strategy would be the most effective, given specific poverty targets ...” (2000, p.2).

Using this framework, they examine the consequences for the poor of the distributional impacts of three different growth paths. Simulation exercises carried out on data for fifty countries measured the head count poverty reductions of three distributional targets (strategies). The targets were:

- a one per cent distribution neutral increase in per capita GDP (referred to as DNG)
- a one per cent increase in per capita GDP, distributed equally across income percentiles (referred to as EDG), and

- a one per cent redistribution of income from the richest twenty per cent to the poorest twenty per cent (referred to as 1% redistribution).

Table 4 in their paper estimates gives the estimates of the effect of redistributing one per cent of national income from the top, to the bottom quintile? in South Africa in 1993, 23.2 per cent of the population in their dataset is below the one US dollar line. Redistribution lowers this by 5.4 percentage points to 17.8, a 23.1 per cent reduction. The cost is an additional tax of 1.5 per cent on the incomes of the top quintile. The other two strategies have a much less dramatic impact? their Table 2 shows that a one per cent distribution neutral growth episode lifts 0.30 per cent of the population out of poverty, while a one per cent growth in per capita GDP, equally distributed across income percentiles, does the same for 1.48 per cent out of them. They conclude that:

“... the simulation exercises demonstrate that for the overwhelming majority of middle-income countries, poverty reduction is most effectively achieved by a redistribution of current income. For these same countries, redistribution with growth would be the second-best option, and distribution neutral or *status quo* growth, a poor third. Low income counties require a growth strategy, and for most redistribution with growth would be more effective than *status quo* growth.”  
(Dagdeviran *et al*, 2000, p.21)

It is not the intention here to enter into detailed discussion of their analysis and policy recommendations. Challenging as they do, the dominant ideology, their results are sure to generate energetic debate. The authors seem well prepared for such an engagement? this is no mindless call to arms on behalf of the poor. Rather, it is an (apparently) careful weighing up of the circumstances in which it is feasible and appropriate to adopt one or another policy, as well as an examination of the tools with which to attempt to do so. Now let us make our way home, there to play with a model inspired by the Dagdeviran *et al* piece.

### ***3. Crossover periods and trickle-down growth***

Before doing so, it will be useful to have in the background, a set of benchmarks against which to view the results of the simulations. To provide this, we look at a set of estimates of ‘crossover periods’ made by McGrath and Whiteford in 1994. To clear the air around the term ‘trickle-down’ growth (sometimes referred to as distribution neutral growth), we then spend a short while exploring the meaning of the concept, especially under conditions of extreme structural unemployment.

#### ***Poverty reduction: Estimating ‘crossover periods’***

In 1994, the Stellenbosch Economic Project, located in the quaintly-named Centre for Contextual Hermeneutics, published a paper by McGrath and Whiteford that deserved more attention among policymakers than it apparently enjoyed. The work reported that the poverty gap in South Africa in 1991 was equal to 5.7 per cent of total household income (1994, p.24). Since the richest ten per cent of households in 1991 received 51.2 per cent of total (gross) income (1994, p.8), a repeated annual transfer

of about 11 per cent of these gross incomes (about R2 332 to each poor household in 1991) would have served, *ceteris paribus*, to have eliminated poverty altogether.<sup>8</sup>

Of course, transfers on such a scale are politically infeasible? this notwithstanding the apartheid origins of the assets that permit high incomes to accrue to one group while another starves, or hovers on the border of destitution. This limit to redistribution serves as an icon for a widespread unwillingness among those who have, to consider measures for tackling the poverty of the have-nots directly, even (or especially) in the most unequal societies on earth.

The facet of the McGrath and Whiteford piece of most concern here is the set of estimates it provides of what are referred to in the literature as ‘crossover periods’? the time it takes for any particular growth strategy to lift the average income of the poor above a poverty datum (however defined). Their approach subjects the “... commonly held view ... that the most effective policy to alleviate poverty is merely to maximise growth ...” (p.26) to critical scrutiny. The ‘view’ does not do very well. The ‘trickle down effect’ that operates, understood to mean the income growth resulting from a commitment to a growth path that does not alter “the relative income distributions among households” takes a long time to eliminate poverty under any realistic assumptions about sustainable growth. For the income distribution and poverty level obtaining in 1991, their estimates of the crossover time varied from 117 years at a one per cent economic growth rate, to 47 years at a 2.5 per cent rate, and to 24 years with a five per cent per annum rate (McGrath and Whiteford, 1994, pp.26-27).

Casting about for an alternative to ‘trickle down’ as a poverty alleviation strategy, they examine two redistribution strategies. The first of these, which they refer to as an ‘additive’ approach, addresses poverty via an increase in social security expenditure. We referred above to such a strategy as ‘direct’ poverty alleviation. The other approach considered by McGrath and Whiteford, labelled ‘multiplicative’, tackles the problem by reducing the (indirect) tax on consumption, the VAT. Of the two, the latter, a tax expenditure, is far more costly to the treasury (roughly four times the cost to achieve the same reduction in poverty levels). This is because the instrument is blunt? amounting, in effect, to a subsidy to every household, with non-poor households experiencing greater gains (in absolute terms) than poor. Their recommendation, not surprisingly, leans strongly towards the direct approach.<sup>9</sup>

### *A digression on ‘trickle down’ growth*

In the debate over growth and redistribution, two distinct groups may be identified—those who favour deliberate attempts by the state to redistribute through the fiscus and those who do not. The form of economic growth preferred by the latter is sometimes referred to as distribution neutral growth, or, more commonly, as ‘trickle

---

<sup>8</sup> The poverty gap of a poor household is equal to the difference between household income and the poverty income expressed as a percentage of the poverty income. The gap for all poor households is the average of the individual results.

<sup>9</sup> The greater effectiveness of an additive, as opposed to multiplicative approach, is confirmed by Borat (2001, p.168)

down'. As a strategy, distribution neutral growth (DNG) requires some unpacking. The conventional wisdom is that developing countries can have no (or very little) open unemployment. Under-employment or disguised unemployment, synonyms for very low productivity economic activity, can and do exist. In the simplest, most stylised version of a distribution neutral strategy, the growth path calls for the under-employed either to improve productivity in existing occupations (e.g. in agriculture), and/or to move into higher productivity jobs in the burgeoning urban areas. Reductions in labour requirements in agriculture resulting from productivity improvements will add to the supply of underemployed, available to migrate (hopefully) to higher productivity activities in the towns. Presumably the 'distribution neutral' part of the story refers to a growth strategy that consciously avoids any attempt at redistributing income via the fiscus (on the grounds that Pareto optimality would be violated?). If there is no unemployment and all incomes grow at the same rate, then inequality levels will remain constant. This is one, possible distribution neutral growth outcome. Another possible outcome, much less desirable from an egalitarian point of a view, would be a worsening of inequality levels because of differential income growth. One assumes that most proponents of DNG would not be so averse to reductions in inequality as to oppose them if they arose from differential productivity growth that caused incomes at the bottom end of the distribution to increase more rapidly than those at the top (an unlikely, but conceivable outcome).

South Africa, it need hardly be said, is not like the hypothetical developing countries in which DNG could occur as outlined above. From the work carried out in WTD (see Tables 13, 20 and 21 in WTD), we know that in households where monthly expenditure in 1999 was less than R800 per month, home to more than 13 million people, there were some 3.1 million unemployed? 2.6 million in workerless households, and a further 570 000 in households containing informal, but no formal sector workers. A mean household size of somewhere in excess of four persons implies that their individual expenditure levels are so low that it is from their ranks that the bulk of the people in deciles 1, 2 and 3 of the size distribution of income must be drawn. In other words, most of the people of working age in these deciles are not under-employed in a rural setting? they are either unemployed or not economically active. Under such circumstances, levels of inequality are determined both by relative rates of income growth, and by changes in the numbers of newly employed and unemployed—given sufficient employment creation in South Africa, levels of inequality could fall. If, in this setting, the state made no attempt to redistribute through the fiscus, growth would be said to be 'distribution neutral'.

#### ***4. Simulating the destitute out of their destitution***

Simulation models are used, as we have seen above, to investigate the impact on the poor of distribution neutral growth, as opposed to growth accompanied by deliberate attempts by the state to redistribute through the fiscus. Several different types of model can be devised. One of the features of the model developed below is in its explicit linking of the distribution of income to the labour market. This is done in order to allow potential social grant beneficiaries to be identified, and to allow tax burdens to be estimated. The resulting distribution, a peculiar hybrid that has some of the features of a pure size distribution model, and some of the features of a household distribution model, also allows for the estimation of the numbers of jobs required to

produce different distributional effects.<sup>10</sup> The time that it will take for the poor to escape their poverty (and the costs of helping them to do so) under differing growth conditions is also a matter of some interest—attempts to estimate this, as we have seen above, are by no means new in South Africa. The simulation exercise conducted here, however, pays no heed to rates of poverty reduction (although it could possibly be made to do so), being based more on an intuitive view of what is politically feasible (in terms of tax rates), than on estimates of the magnitudes of transfers required to get the poor above some poverty datum.

The model presented here contains two basic growth scenarios (distribution neutral and redistributive) from which a number of variants may be constructed simply by varying a few key parameters. In its present form the model runs for two periods, each period being of five years duration (using the population growth variable), although the periods could be of any length. The model is set to estimate the effects, by the year 2000, of changes introduced some time after 1995 (i.e., in the first period, it predicts retrospectively). In the second period (from 2000 to 2005), it projects forward into an unknown future. One set of scenarios allows for sustained high growth of the trickle-down (distribution neutral) variety during the two periods. In the other set of scenarios it is possible to choose between three approaches to redistribution by different combinations of grants and taxes. The first approach allows for the impact of Child Support Grants (CSGs) of varying reach (seven different target groups are identified) to be assessed. The second offers a ‘Deserving Poor’<sup>11</sup> Grant (DPG) to either of two target groups. The third makes a Basic Income Grant (BIG) of modest proportion to all citizens and permanent residents. Financing of the first two (the CSG and the DPG) is by means of increased personal income taxes levied on formal sector income earners in the top four deciles.<sup>12</sup> The third may be financed by any desired combination of VAT and personal income taxes.<sup>13</sup> The model thus allows for comparison of the relative merits of different forms of social grants, as well as the comparison between two very different approaches to growth policy—the first, a ‘trickle-down’ or distribution neutral strategy in which any redistribution that occurs does so as a result of the workings of labour markets; the second, an approach in which government deliberately intervenes in the economy to redistribute through the fiscus.

Given the way in which the model is constructed, the range of possible outcomes is huge. Outcomes are affected in two ways. In the first place, they may be altered by changing the assumptions that have been pressed into service for missing data. In the second, they vary in response to changes in the behavioural responses of the economic actors involved. Control over the magnitude of a few of these responses is possible in the model. The analysis below is based on what are regarded as plausible

---

<sup>10</sup> Gender aspects of poverty are ignored in the model. Although it is known that poverty affects women more seriously than it does men, data in the form required to incorporate this feature of poverty into it are not readily available. The assumptions required to build the model are already so numerous, that piling more assumptions on top of them would probably do more harm than good.

<sup>11</sup> The irony is intentional—any attempt to administer the necessary means tests would require a colossal (and presumably, corruptible) bureaucracy.

<sup>12</sup> If introduced, such a tax and grant system would permit ‘sustained redistribution’ of the type referred to by Aghion *et al.*

<sup>13</sup> The proposal that the basic income grant be financed by an increase in VAT was developed by Prof. Pieter le Roux of the University of the Western Cape. As he has so often stressed, and as is demonstrated below, a VAT financed BIG is well targeted.

assumptions about the latter, key parameters. An attempt to pin down the limits within which these key parameters (described below as ‘settings’) might lie, which depends on the identification of the socio-economic processes that could drive the system to these limits, has been made. The results of the analysis based on that exercise (discussed below) are given in the several versions of worksheets R1-R4 in the Excel workbook that accompanies this paper (file *GrowDistribute(1995-2005)-R.xls*). Readers may ‘drive’ the model themselves to test the sensitivity of various growth paths to changes in key assumptions (including the assumptions made about missing data).

Two commentaries about the model are necessary. One requirement is that its theoretical and methodological underpinnings be explained. The other is that its mechanics be described. A neat separation between the two is not made below—at the end of this sub-section, immediately before plunging into the description and results of the comparison within and between the two approaches to growth, distribution neutral and redistributive, a brief discussion is presented of the theoretical understanding of the model’s requirements. The description and results sections, however, also have embedded in them, statements about the way in which the economy is assumed to operate.

### *Modelling in a complex, far from equilibric world*

Forecasting the economic and social impact of policy changes is, as everybody knows who dabbles in such matters, an haphazard business. Even under ‘normal’ circumstances, success in the much simpler task of forecasting likely movements in major economic variables has proved elusive.<sup>14</sup> When there is little by way of previous experience to point to the likely consequences of making a major change, such as the introduction of a basic income grant, the gentle art of forecasting, as conventionally practised, is probably not much more helpful than astrology. Compounding these difficulties is the fact that the economy has, in any event, undergone significant transformation since the early 1990s—liberalisation has probably introduced several discontinuities. Yet if rational choices between competing policy options are to be made, attempts to quantify the likely effects of such policies are an absolute necessity. Conventional economic models, founded in linear relationships of one sort or another, have difficulty in coping with the fact that “... much, and probably most, of the world doesn’t work in this way.” (Byrne, 1998, p.19) Superimposing a further non-linearity (such as the BIG) upon an already non-linear system, would rob a model without a valid claim to ‘isomorphism with the real world it seeks to represent’ (in Byrne’s terms), of predictive power.

New developments in the application of the complexity/chaos approach to the social sciences (Byrne, 1998; 1999), point, however, to a class of models, which although they lack the (spurious) precision of conventional models, do seem capable not only of demarcating a region within which possible outcomes should lie, but which also assist in identifying key parameters, small changes which may give rise to major

---

<sup>14</sup> ‘Success’ means different things to different users. For those attempting to make money out of the results spewed out by forecasting models, the range within which lie the predictions made by various predictors, is often too wide.

changes in the system as a whole. It is not the intention here to provide anything other than the baldest of introductions to the concepts used—the point is not to repeat a lesson offered much more comprehensively (and entertainingly) by David Byrne (1998), but rather to show that the model used in this study obeys some of the methodological rules proposed by Byrne.

We approach the matter by glancing at some of the weaknesses of conventional economics. If the discipline were to indulge in a spot of reflection, it could do worse than to ask itself the following questions, proper answers to which, Byrne suggests, in another context, might ‘put sociology right’. The questions read thus:

1. “How adequate is [the discipline] in relating the micro level of individual action to the macro level of society as a whole?”
2. How adequate is it in conceptualising the relationship between the conscious agency of individual and/or collective social actors and the social conceived of in terms of social structure?
3. How adequate is it in terms of providing an explanation for discontinuous and fundamental changes in the character of the social system as whole?” (Byrne, 1998, p.46)

On any honest assessment, the answer to each (for the economics discipline must be)—not very.<sup>15</sup> Poor performance of much of conventional economics and of the models it uses results not only from the fact that the data with which they have to work are not accurate enough for the demands placed on them. Exactly the same problem confronts those who use a chaos theoretic approach. Discussing the fairly well-known story of how Lorenz (not he of the inequality measures, but rather he of the discovery of the importance for weather prediction models of dropping a decimal point or two), Byrne points out that:

“It has to be stressed that the existence of chaotic outcomes ... does not involve an abandonment of causality *in principle*. If we could measure to the degree of accuracy we need we could model the system, albeit in non-linear terms, and then we could predict what the outcome of changes would be. *In practice*, we can’t.” (Byrne, 1998, p.19, emphasis in original)

Systems, including social systems, may be thought of as operating along a continuum, at one end of which is a simple linear predictive world. At the other, is chaos, best understood not as anti-order but rather as a state “containing and/or preceding order” (Byrne, 1998, p.16). A chaotic transformation sees a small change in some significant system parameter or variable transform a whole system in a non-linear way, with only

---

<sup>15</sup> Byrne cheerfully dismisses economics and most of quantitative political science with its “... abstract formalising of models that are not isomorphic with the real world ...” (1998, p.12). Addressing the matter in greater detail, he argues that:

“The problem that rational choice (and any ‘market’-founded social theory) faces is that the best it can up with as an account of the foundation of social action is the aggregation of individuals in an additive/linear way. The technical foundations of modern economics lie exactly in the development of linear and integrable mathematical models which are asserted (not demonstrated, asserted) to be isomorphic with significant social reality. This provides no basis whatsoever for collective social actors whose character is not reducible to the sum of the entities constituting them. In statistics this is the general problem not just of hierarchically ordered data sets, but of a reality which is itself hierarchically ordered ...” (Byrne, 1998, p.48)

one outcome (state) possible—one example Byrne uses is ‘the straw that breaks the camel’s back’. ‘Complexity’ is a domain between “deterministic order and randomness”, a sense of which is conveyed by the “popularly oxymoronic but scientifically accurate expression of ‘deterministic chaos’ ” (also referred to as ‘robust chaos’, p.16). It is the domain with chaos as one pole, and the region of complexity that adjoins it, in which we are interested here. Defining the domain of complexity, Byrne says that it:

“... can be considered as the beginning part of a bifurcation cascade in which large changes in parameter values are required for a bifurcation, and the range of possible states, whilst greater than one, is still limited.” (Byrne, 1998, p.170)

Translated for use in the matter at hand, this suggests that a major change, such as the introduction of a truly comprehensive social security system (a basic income grant would meet the criteria), is capable of shifting the economy onto an entirely different growth path. Precisely what that path will be cannot be known in advance, causation in the social world is complex. As Byrne observes:

“Outcomes are determined not by single causes but by multiple causes, and these causes may, and usually do, interact in a non-additive fashion. In other words, the combined effect is not necessarily the sum of the separate effects. It may be greater or less because factors can reinforce or cancel out each other in non-linear ways.” (Byrne, 1998, p.20)

That there is the fiscal capacity to make a modest basic income grant to all South African citizens (and those with rights of residence in the country?), is beyond doubt. What is uncertain is the response of those who are going to have to foot the bill. In the debate to come over the BIG in South Africa, the critical variable (key parameter) is thus going to be this set of responses. A climate of negativity may be sufficient to send the economy spiralling downwards into long-term crisis. A positive response, by contrast, could create the pre-conditions for a phase of growth of the kind that is so desperately required if the problems of poverty and inequality are to be addressed. There is an important sense in which policymakers (and the polity at large) stand at a turning point, or bifurcation—a wrong turning now could have incalculably large consequences.

### *Building a forum in which (competing) growth models can be tested*

At this point it is appropriate to undertake a small digression to look at the relationship between the ways in which a model (any model) is constructed and the ways in which the insights it can furnish (if any) are absorbed into the policymaking process. The problem policymakers face is one of deciding how to respond to the welfare crisis in South Africa. In the introductory chapter of WTD a brief exploration of the difficulties faced by policymakers in wading through the quagmire of conflicting advice on how to do so was attempted. It may seem that adding yet another advisory device to the pile can only exacerbate these difficulties. This, it will be argued, need not necessarily be the case. Naturally, during the Committee of Inquiry’s proceedings, the question of the costs and benefits of the various forms of social grant were canvassed at length. Although several different costing exercises

were carried out, the nature of the Committee's proceedings precluded the kind of interaction that seems to be required to hammer out a consensus on the matter of monetary costs and benefits. It is not intended to enter into a detailed discussion here of what the problems were—suffice it to say that high on the list was the sheer difficulty of specifying, in the relatively short time available, exactly what it was that had to be modeled (a problem heightened by an absence of cohesion within the Committee). In broad outline the requirements were easy enough to discern—at least one of the simulation models available, that being developed at the time by the National Institute for Economic Policy Research (NIEP) held out the promise of being able to chew through the data to produce tax burden and benefit incidence figures. That model's link back to the macro-economy was giving some trouble, so testing of the 'do-nothing' option (distribution neutral growth) in relation to redistributive models using social grants was not possible. In retrospect, it would seem that there was too great a concentration on the red-herring of the numbers that would (could) be lifted out of 'poverty', a somewhat sterile debate that can easily run aground on the shoal of disagreements about poverty thresholds. This drew attention away from the central question, namely to what extent can existing and alternative combinations of macroeconomic policies, on the one hand, and active labour market policies, as opposed to social security policies, on the other, make significant contributions to poverty reduction and alleviation. With a little tweaking, the NIEP model, upon which the Committee probably did not draw sufficiently in arriving at its recommendations,<sup>16</sup> could probably be made to deliver the goods.

Upon reflection, it is clear that while Byrne is correct in suggesting that in a complex, non-linear world:

“... simulations may be a useful way of seeing whether we can move beyond retrospective histories to predictive accounts ...” (Byre, 1998, p.81)

the manner in which these simulations are conducted is of almost as much importance as the content of the models themselves. Roger Lewin's survey of developments in complexity theory (1993 [2001]) shows time and again that isolated academics (or even agglomerations of academics such as those to be found in the Santa Fe Institute) experience extreme difficulty in gaining acceptance of the discoveries made possible by the simulation techniques they use. In that experience lies a valuable lesson for us. The reasons why much of the scholarship that Lewin discusses either falls on barren ground, or if it does not, lies fallow for many years, are many and varied, and, what is more, analogous to those likely to thwart acceptance of the insight offered by the simple model developed below, namely, that under conditions of extreme income inequality, the poor do better under a redistributive regime than under a fast-growth distribution neutral regime. Chief among the barriers is the conservatism, either of vested interest, or of fear that social grants on the massive scale required might be unsustainable (a much less blameworthy objection). In the former instance, the objectors fail to apply their minds to the matter, allowing prejudice to function as a thought substitute. In the latter, the objectors could be persuaded to accept the model's results as a robust and realistic assessment of the efficacy of the proposed

---

<sup>16</sup> The work done by Mike Samson of EPRI was required to investigate the developmental impact of the various grants. In the end, the model he built it was pressed into use for costing and for showing the distributional impact of various tax and grant dispensations. The model built by Pieter le Roux of UWC does a similar job.

grants (or, indeed, might succeed in persuading its promoters of the opposite). The trick is to create a social setting within which the necessary exchange of views can take place. Some simulation models may settle or converge on particular end-states, if only conditionally, others, by their very nature, are capable of generating a huge number of scenarios. Presenting information of this latter sort, in all its myriad variety, is enough to overwhelm most people. Yet to explore the possible implications of a policy change, it is necessary to decide which options can, and which cannot, be rejected. The direction in which this argument is leading us is one of designing a process that begins with technical experts, senior officials from the ministries that make up the Social Cluster in central government, and appropriate representatives from organs of civil society. At one or more preliminary workshops, a thorough investigation of the questions to be answered, and the different model's ability to address them, would be undertaken. All participants would be required to learn to 'drive' the models, and all should put the models through their paces. The models can be placed on websites so that anyone with a connection to the internet can participate, should they wish to do so. When agreement has been reached on the basic questions and capabilities, informed debate (rather than the posturing seen in some quarters thus far) can take place.

Ideally, the models would be based on longitudinal data. The data would be used, *inter alia*, to identify the clusters which signify entrapment in poverty.<sup>17</sup> Since the relevant information does not exist, we must make do with what does.<sup>18</sup> The simple simulation model presented below has a chance (which, because of time constraints, is not as precisely calibrated as it could potentially be) of discovering the range of possible outcomes consequent upon the introduction of social grants on a large scale. Its results need to be compared with those of other models looking at similar questions. The nature of this document dictates sub-optimal use of the model—if readers are not to become even more bogged in a mire of results, the number of scenarios that can realistically be explored must be limited. This static use of the device is unsatisfactory—it needs to be hammered away at, as suggested above, by a group of users until such time as agreement is reached, if only on areas of disagreement.

### *Value-driven non-linear transformations*

Let us conclude this part of the brief excursion into methodology with a consideration of one of the key determinants (parameters) of redistribution, individual and collective agency. We do so by analogy with Britain at the end of World War II. Operating in a complexity-theoretic framework, Byrne uses the "... the issue of the emergence of 'welfare states' and the particular example of the British welfare state as it was put together in the period 1945-50" to illustrate the argument that "... perturbations of far-from-equilibrium conditions can originate in the values and actions of humans themselves ...". This is how he puts it:

---

<sup>17</sup> In a complexity-theoretic context entrapment would be an attractor state. The trick is to identify the key parameters controlling 'residence' in that state.

<sup>18</sup> One of the reasons why the KIDS dataset (KwaZulu-Natal Income Data Set), limited though it may be, is so important is because it is currently the only longitudinal dataset of any consequence in South Africa that is capable of beginning to address some of the questions with which we are concerned. Unfortunately, for the exercise under consideration here, national data have to be used.

“If we look at the form of the social structures of welfare which were created in that period,” he writes, “we can see the considerable extent to which they reflected the character of pre-existing systems and the limits of the social and economic context. What had gone before mattered. The general economic and historical context mattered. However, there were crucial demarcating differences between the system created post-war and its precursors. *There was a non-linear transformation of kind. This was essentially value-driven and the product of collective actions.* Hennessey entitled his outstanding discussion of this period *Never Again* (1993). *Never Again* is a statement of historically contextualised values. In the period of reconstruction after a total war, the majority of the British electorate (Labour and Liberal voters both voted for this sort of programme) recognised that through an act, the way they cast their vote, they could determine the kind of post-war society that would be created. It was by no means inevitable that this would be the kind of welfare-oriented system which was actually established. Barnett’s *Audit of War* (1996) argues that the wrong choice was made and that the prioritising of economic development with a much more residual function would have led to a ‘stronger Britain’ in the post-war period. We may well regard this as elitist tripe but the Conservative programme was oriented in this direction.” (Byrne, 1998, p.50, emphasis added)

The parallels with South Africa are interesting—conservatives of the day prescribed ‘growth’ and a residual welfare state. The same recipe is offered for South Africa, some sixty years on, only this time, at least some of those making the prescription describe themselves as progressive. Another parallel is to be found in the social conditions, in particular, people’s health in a context of poverty and inequality. On this issue, Byrne observes that:

“It is perfectly clear that seeing your loved ones dying of TB in the inter-war years was a radicalising process. It made people truly hate inequality. It played a part in developing the grass roots of the socialist project, particularly for women. It led to communal level action around housing provision and was plainly one of the factors in leading to a Labour victory in 1945” (Byrne, 1998, p.111)

Poverty and inequality in South Africa need not necessarily channel energies in this positive way—apathy and alienation could further damage the already frayed social fabric. The basic income grant has the capacity to alleviate poverty and reduce inequality. It is shown below that over a broad range of plausible assumptions, the poorest of the poor do better from a BIG than from trickle-down growth. It is also shown that for them to do so, some sacrifice on the part of the better off is necessary. The way in which those required to make the necessary income sacrifices respond appears to be a critical determinant of the magnitude of that sacrifice. If the model’s results are roughly correct, then there is an onus on those who oppose the basic income grant (a policy that would redistribute to the poorest of the poor) to spell out the ethical basis for their doing so. In the face of the persistent failure of the economy to generate the jobs that are so urgently required, a dogged commitment to the hope that growth will rescue the poor (and thereby remove the need for the non-poor to make any sacrifices) needs more credible defence than the incantation of a World Bank mantra. Let us go to it.

### *Structure of a calculating engine for poverty relief*

The model is contained in a modest spreadsheet named ‘GrowDistribute(1995-2005)-R.xls). ‘Driving’ it would possibly be somewhat easier if a full description of its workings were furnished. It had been the intention to do so. On reflection, however, it began to feel that a full description would be so cumbersome that it could inhibit rather than facilitate use of the model. In short, it was concluded that provided a brief overview of the structure of the thing is given, along with some indication of what it is designed to do, it is sufficiently accessible to permit its use by anyone desirous of doing so. The basic data, their sources and the first manipulations performed upon them, are perfectly transparent. Somewhat more opaque are the many assumptions (most of them highlighted in blue in the workbook) deployed, but only because their origins are not obvious. Some of them are made because what should be data is not readily available (or possibly not available at all). Where possible, assumed values have been made in such a way as to allow the disaggregated variables they represent to sum to some known control total. In other instances, the values merely ‘feel’ plausible or politically tolerable. In many places, readers are at liberty to substitute the fruits of their own intuitions, if desired. At some point in the future, better data will permit the conversion of many assumptions into data. Even after this is done, however, several assumptions will still have to be made, in particular, those that speculate on the future performance of the economy. That said, however, it must be acknowledged that because of time constraints, the full potential of existing data sets has not been utilised.<sup>19</sup>

For the rest, the workings of this calculating engine<sup>20</sup> may easily (albeit laboriously) be understood by entering the worksheets in which the results are presented, and following the results and settings back to their original location in the file. The worksheets that go to make up the model, and a brief description of their functions, are listed below in Table 2. Results are placed near the front of the workbook, calculations in the middle. Worksheets containing the basic data, and the preliminary manipulations performed on them, are at the end of the workbook. Examination of the contents of the middle, and backend worksheets gives a rough indication of the structure of the model.

To begin with, a few details of the base on which the model is constructed are in order. Its foundations are twofold—for data on the income distribution, use is made of the World Bank’s CGE model for South Africa (for the year 1995).<sup>21</sup> This model gives the distribution of income among household deciles. For the model to work, a

---

<sup>19</sup> This manuscript has been worked on since about August 2001. It has been the subject of almost continuous revision, having occupied most of my spare time between then and now (September 2002). As each advance has been made, an almost invariable need for further delving has been disclosed.

<sup>20</sup> One of the worksheets, containing the bulk of the calculations, used to be called ‘Engine’. This was before the model became too big and unwieldy to permit all of the variants to be fitted with any ease into a single worksheet. Now the term ‘calculating engine’ applies to the whole device.

<sup>21</sup> Income distribution data from the World Bank model were given to me by James Thurlow of the Division of Economics in the University of Natal, with whom I have had interesting and useful discussions. He and Dirk Ernst van Seventer of TIPS have constructed a CGE model for estimating the impact of the BIG on the economy. It is altogether a much more sophisticated device than the model that I have built, relying as it does, much more closely on actual data. That is both to its advantage and its disadvantage.

size distribution is required. The first step was thus to convert the household distribution into a size distribution. The rough and ready manner in which this was done (in essence, shifting people up the distribution, and lowering decile mean incomes in the process) may be seen in the topmost rows of Worksheet 'Distrib'.

**Table 2 Structure of the simulation model**

Worksheet name	Function
R-1	Table 36: Displays the settings selected to produce scenarios
R-2	Table 37: Income outcomes
R-3	Table 38: Labour market outcomes
R-4	Table 39: Redistributive scenarios – burdens and benefits
R-5	Table 40: Cost of BIG after CSG offsets
Set	Selects the settings required to produce scenarios of different types
T1-T7	Templates to allow switching between Runs 1-7 using a single keystroke
Ass	Allows for those variables for which data are not readily available to assume differing values
Engine	Presents numbers of economically active and non-active in 1995, 2000 and 2005, and their respective pre-tax incomes
TargetA	Estimates numbers of potential grant recipients and the respective incomes (expenditure levels) in 2000
TargetB	Does the same as the above for the year 2005
DNG	Estimates post-tax distributions after 5 and 10 years of distribution neutral economic growth
CSGA	Estimates post-tax and benefit distributions in 2000 for child support grants of varying degrees of cover
CSGB	Does the same as the above for the year 2005
DPGA	Estimates post-tax and benefit distributions in 2000 for deserving person grants of varying degrees of cover
DPGB	Does the same as the above for the year 2005
BIGA	Estimates post-tax and benefit distributions in 2000 for basic income grants of varying degrees of cover
BIGB	Does the same as the above for the year 2005
Out	Collects selected major results for transmission to R-2 and R-3
Extra	Permits the chosen labour market outcomes to be overridden by increasing the number of informal sector jobs created
Distrib	Converts distribution of income by household into size distribution. Estimates tax burdens in base and subsequent years
LM-Data	Contains raw labour market data from OHSs and LFSs
LM-95	Sorts labour market data for 1995 by decile
LM-00-(99)	Sorts labour market data for 2000 by decile. A variety of possible outcomes are presented
LM-05-(99)	Sorts labour market data for 2005 by decile. A variety of possible outcomes are presented

Locating non-waged persons, informal-sector and formal-sector workers, each, obviously with quite different incomes, in each decile (as is done in the model), gives

the distribution a hybrid character. Because it is sorting the total population into deciles containing equal numbers of individuals, it has one of the characteristics of a size distribution, which distributes individuals into percentiles according to their income (or consumption) level. To fall into a particular percentile, an individual's income must, however, lie within a given range. A household distribution, by contrast, sorts households into percentiles according to household mean incomes—the numbers of individuals in any decile being a function of mean household size. Such distributions allow for individuals of significantly differing income earning and consumption capacities to be grouped together.<sup>22</sup>

The distribution used here combines features of both. It may be thought of as a distribution of the population into percentiles each containing equal numbers of individuals from households sorted by mean household expenditure or income.<sup>23</sup> Thus all income earners (informal and formal, low and relatively high) in particular households are associated with the non-waged (enjoying low consumption possibilities) in the same households. This gives rise to a problem, perhaps best illustrated by an example. Mean per capita pre-tax incomes (consumption) in decile 2 in 1995 were R1320 in 1995 constant rands (see cell C9 in worksheet 'Engine'). To maintain this level of consumption, a worker supporting him- or herself and two others would have to earn R3960 per annum. One supporting four others would obviously have to earn R6600 per annum. Such examples are obviously realistic and will occur many times in the distribution. To make the model tractable, however, such features of reality have been assumed away—earned incomes have been constrained to rise monotonically from decile 1 at the bottom of the distribution to decile 10 at the top. The probable effect of this 'smoothing' of incomes is to reduce Gini coefficients below what they would otherwise have been.<sup>24</sup> As long as this is without bias (something that is difficult to ascertain) it does not seem as though it is cause for anxiety, after all, it is changes in the Gini in which we are interested, not its absolute level.<sup>25</sup>

---

<sup>22</sup> Discovering what individual consumption and income levels are in such cases is the object of much scholarly activity, there being an important gender and generational dimension to inequities within households.

<sup>23</sup> The concepts are used loosely or interchangeably here—this is because of the presence of earners and non-waged within households. This loose usage is continued, on the understanding that the non-waged receive an 'income' from inter- or intra-household or state transfers that allows them to consume.

<sup>24</sup> Talking of which, another bit of sleight of hand is involved here—Gini coefficients are calculated on the basis of the assumption that everyone in a particular decile receives the same income. This should also work to reduce the estimates of income inequality.

<sup>25</sup> The distribution used in the model generates a pre-tax Gini coefficient of about 0.63. This is a trifle on the low side, probably for several reasons. The first of them turns on the fact that the coefficient is not correctly estimated (see Barr, 1998, pp.151-152). Instead, a fairly crude approximation technique is used. The way in which this technique works may be seen in a number of places in the main workbook (see, for example, rows 56:60 in worksheet 'Engine' of file 'GrowDistribute(1995-2005)-R.xls'). A problem of which to be aware is that caused by the implicit assumption that the incomes of workers are distributed evenly across the income decile in which they happen to be located. This alone, would cause within-decile income distributions to show greater inequality than the simple linear distributions that have been assumed. Not only that, even within those households fortunate enough to contain a worker, there is no guarantee that the fruits of paid employment would be equally distributed among household members—we can, in fact, be reasonably sure that this will not be the case. A second possible reason for the difference may have to do with the way in which the distribution has been concocted. Assuming that within-decile distributions are linear (with decile means equal to arithmetic means) yields a lower estimate of inequality than the assumption, say, that decile mean

Labour market information comes from the October Household Surveys for 1995,<sup>26</sup> 1996 and 1999, and the Labour Force Survey for September 2000. To make the labour market part of the model ‘work’, data on a variety of key variables by income decile are required. In essence, labour market characteristics (participation rates, unemployment rates) in the top decile are obtained from the OHS results for whites, while corresponding characteristics down at the bottom end of the distribution are obtained from the results for non-urban Africans. Linear extrapolation is used to fill in the gaps in the other eight deciles. More juggling is required down at the bottom end of the distribution to get the assumed labour market conditions to generate something close to actual outcomes. Other variables such as the ratios of formal to informal employment and the proportions of formal to informal sector jobs created, have had to be guesstimated. The model has been calibrated to ensure that it returns (approximately) the correct base year figures (where these are readily ascertainable).

For the fiscal aspects of the model to work correctly, the usual (arbitrary) division of the workforce into skilled, semi-skilled and unskilled is of no use. What is required is a separation of formal sector workers (some of whom pay income taxes, and all of whom pay VAT), from informal sector workers (who pay VAT only). Once the population has been divided into formal sector workers, informal sector workers and the non-waged, more juggling, this time with incomes, is required to ensure that incomes for the employed in the different deciles, as well as the ‘incomes’ of the non-waged display the aforementioned monotonic characteristic.

Estimation of income tax and VAT burdens for 1995, by decile, is performed in worksheet ‘Distrib’. From this base, and from the income growth assumptions, taxes for 2000 and 2005 are estimated. Since total amounts of income tax and VAT gathered in the base year 1995 and in the year 2000, are known, the determinants of tax burdens in the different decile (propensities to consume, proportions of expenditure attracting VAT, average income tax rates) need to be manipulated until the results match the control totals. First step is to guesstimate average income tax rates in the various deciles.<sup>27</sup> Once the size of the top-slice required to pay income tax has been established, guesses are made of propensities to consume and proportions of income attracting VAT in the various deciles.<sup>28</sup> Given these, VAT

---

income is geometric. As noted above, in a slightly different context, this is probably not of any great consequence because it is changes in the coefficient in which we are interested, not so much its absolute level.

While on the topic of the level of the coefficient, it is probably worth drawing attention to an argument that can be made to the effect that after-tax Gini coefficients in South Africa overstate inequality. This turns on the fact that those in the upper deciles of the distribution are paying substantial sums for what are normally regarded as public goods, i.e., public security, education and health. It would be possible (but difficult) to correct the Gini coefficients for this. The claim made above that it is changes, rather than absolute levels in which we are interested, means that it is not necessary to undertake the substantial task of correcting the coefficients.

<sup>26</sup> Labour market data for 1995 have been scaled (crudely) to bring them into line with the revised mid-year population estimates based on the 1996 Population Census. See worksheet ‘LM-Data’.

<sup>27</sup> Because they are assumed to tax income from all sources (i.e., all factor incomes) average rates need not resemble too closely, the ‘pure’ income tax rates available from SARS—top marginal rates of income tax are quite a bit higher than effective tax rates on other forms income.

<sup>28</sup> Discussion with my colleague James Thurlow, who has used the 1995 Income and Expenditure Survey (IES) results as source for the values these variables take. I have been guided by him in this matter.

burdens can be estimated. As may be seen, the amount of guesswork involved at all stages is considerable. In principle, it may be possible to obtain much of the required data from existing sources. Doing so, is, however, going to be quite difficult. Until that job is tackled—a task for the future—the (moderately) heroic assumptions described have been made to fill the gaps.<sup>29</sup>

The two worksheets with the name ‘Target’ (TargetA and TargetB) manage, with remarkably few assumptions (none the less critical for being so), to distribute dependents and those without the support of a worker over the different deciles. Numbers of non-economically active have to agree with the labour market estimates and the numbers of children must agree with the population age distribution figures. A little juggling in worksheet TargetA with numbers of children, unemployed and non-economically active supported by formal and informal workers, and hey presto! out pops a distribution of those who do not enjoy the direct support of any worker. These are the people living in workerless households (see Table 13 in WTD). The total number in the year 2000 is forced into rough agreement with the 1999 total (about 13 million people). The figure for the year 2005 is influenced by the selection of scenario and, of course, by assumed population growth rates. Under the worst-case assumptions, the number of people in this desperate plight rises as high as 18 million—a grim warning of what could happen if urgent steps are not taken to address poverty.

Once the basic data have been entered and the assumptions required to fill in the gaps have been made (the work done mainly in worksheets ‘Distrib’, ‘Ass’, TargetA and TargetB), driving the model is done by changing the settings in worksheet ‘Set’. The settings to which reference is made are of two types. One allows a selection between possible rates of income growth, and between possible labour market outcomes. The other controls the form of grant made and the target group of beneficiaries. Changing the settings has been simplified by the provision of seven templates, T1-T7. By entering the number of the template (the Run number) in cell C12 of worksheet ‘Set’, one or other of the templates is selected. The templates may be edited as desired.

It is in its handling of income growth and labour market outcomes that the approach adopted here differs from models relying on past performance of the economy as a source of guidance as to how it would (might) react to a shock such as that caused by the introduction of a major social grant system. In line with the thinking of complexity theorists like Byrne (1998; 1999) and Lewin (1993 [2001]), the position adopted in this work is that the impact on the economy of such shocks depends critically upon the response of investors and consumers at large. This, it is asserted, cannot be extrapolated from past experience. It follows that the only way to address this problem is to allow for the model to explore all plausible responses. The settings for income growth and labour market outcomes thus vary considerably in magnitude, depending on one’s intuition about the likely effects of the introduction of what, objectively, are quite radical changes.

---

<sup>29</sup> It is a simple matter to conduct sensitivity tests on the assumptions used to generate the VAT figures. An earlier version of the model, using quite different average propensities to consume in the different deciles, yielded different, but not vastly different results.

In the labour market, the settings allow a choice between actual (or actual conditions extrapolated into the future), optimistic and pessimistic outcomes. Income growth in the distribution neutral context may be either optimistic or highly optimistic. For the redistributive scenarios, where resistance to transfers may be expected to lower economic growth rates, the range of choice is the same as that for the labour market. What constitutes ‘optimistic’ must remain a matter for debate—under what seem to be special circumstances (sometimes referred to, in retrospect, as ‘golden ages’), some developing economies appear to be capable of growing at sustained rates of ten per cent per annum or more for quite lengthy periods. South Africa’s recent history and the current international climate do not encourage one to believe that such a growth miracle could be achieved here. Accordingly, ‘highly optimistic’ income (GDP) growth is assumed to take a value of about five per cent per annum.<sup>30</sup>

Labour market outcomes are, at least partially, a captive of population growth rates. The population growth rate used in Period 1 (1995-2000) is taken from Statistics South Africa’s mid-year population estimates for the period.<sup>31</sup> For Period 2 (2000-2005), the highly contentious question of the impact of HIV/AIDS must be taken into account. As it stands at present, the model has the population growing by eight per cent over five years (for the previous period, it was 10.7 per cent).<sup>32</sup> The slower population growth rate chops about half of a percentage point per annum off the economic growth rate. The assumptions made about population distributions in 2005 pay no heed to the predictions of the various AIDS models available—the proportional structure observed in 1999 is simply carried forward to 2005. Although age-specific prevalence and mortality rates could make nonsense of the numbers guessed at here, if there is a tendency for larger proportions of the sexually-active (and, hence, potentially economically active population) to die of AIDS, this would not affect the case for the BIG adversely. Larger numbers of AIDS orphans and dependants would place the state under obligation to set aside larger sums to pay social assistance. The more money paid out as grants, the larger the offset against the cost of the basic income grant.

The worksheet called ‘Extra’ allows for the creation of more informal sector employment than occurs with the options available in the ‘Set’ menu. This feature makes it possible to explore the possibility that the labour market outcomes offered as part of the model under-estimate employment growth in the sector. Extra informal sector workers may come either from the existing unemployed, or from those currently classed as not economically active, or from some combination of the two. The model allows all or nothing choices, not the combination. Choosing one source as opposed to the other affects the unemployment rate in different ways.

---

<sup>30</sup> Peter Moll’s 1990 work on redistribution argued that “A hard-headed examination of the data suggests a future growth rate of between 2% and 6%, depending on the international environment, political events within the country, and government policy. If the country avoids the growth-reducing convulsions that followed the Rubicon speech of 1985, we might be so fortunate as to have a long-term growth rate of 4%.” (p.76). He dismissed as “ridiculously high” the growth figures of 8-10% and 12% respectively, punted at the time by the likes of Clem Sunter and Don Caldwell (sometime associate editor of the *Financial Mail*).

<sup>31</sup> According to these figures, the mid-year population in 1995 was 39 477 000. By 2000, it had risen to 43 686 000, an increase of about 10.7 per cent. These figures accord reasonably well with those in the OHS. The 1999 OHS population figure was 43 325 000—the mid-year estimate was 43 054 000.

<sup>32</sup> Developing the model further would entail tying it into a demographic model that takes AIDS in account.

Income growth (in real terms) is assumed to arise from productivity growth, which, in turn, is related to investment and aggregate demand levels. Growth in disposable income thus arises from population growth and from real productivity increases. As presently set up, the income growth assumptions for the distribution neutral scenario award equal percentage increases in each decile to each of the three groups identified,<sup>33</sup> viz., the non-waged, the informal sector workers and the formal sector workers (although they may easily be made to do so, if desired, pensions do not increase in real terms). ‘Income’ increases for the non-waged may be assumed to originate from increased intra- and inter-family transfers. The use of this assumption puts the most generous gloss conceivable on distribution neutral growth. Current trends in many countries are for income growth to be much less favourable down at the bottom end of the distribution (the least favourable outcome being jobless growth), i.e., rapid growth at the very top, static in the upper mid-range and stagnant or falling at the bottom. For the redistributive scenarios, the incomes of the non-waged in the bottom four deciles are assumed not to grow at all, except when a social grant of one sort or another is given them. This assumption also places the distribution neutral scenarios in the best possible light.

There are, it must be acknowledged, problems with the income growth assumptions. These arise because despite their huge range, the income growth figures are assumed to be some sort of response to the shock of the introduction of one or other form of grant. Clearly, an extension to the Child Support Grant system that costs a couple of billion rands more is not going to have the same effect on people’s perceptions (and work incentives) as would the introduction of a Basic Income Grant. As it is set up at present, the model cannot allow for the differential impact of large, as opposed to small shocks. The implications of this are explored at somewhat greater length below in the discussion on the development of measures for assessing the relative merits of different growth strategies. Given the uncertainty of the world in which it operates, this drawback is not fatal—it remains the case that responses to the introduction of different grants are unpredictable. That being so, the assumed income growth patterns bracket what are probably best- and worst cases for all benefit types. Where the likely shock is small, the assumptions will overstate the worst- and understate the best-case outcomes. For the benefit that will have the largest impact, the BIG, the assumptions are probably not unreasonable.

Rather obviously, income growth and labour market outcomes are linked, one to the other, albeit in very complex ways. Even if one could rely on the available data, it would be difficult to discover the nature of these relationships, and, even more difficult, as argued above, to predict the effect of policy changes of varying

---

<sup>33</sup> This assumption is almost certainly more generous to the real world than it deserves. If the burden of financing the grant system is felt by high-income earners to be so onerous as to cause them to reduce the supply of skilled labour, this would cause their relative wages to rise, and inequality to increase. If formal sector job loss is biased towards lower- and middle-income groups, this would accentuate the tendency towards increasing inequality. A phenomenon akin to the hollowing out of the middle class is probably taking place in South Africa (but with a twist imparted to it by the peculiarities of our history). In South Africa’s case, retrenchment and job loss is hollowing out a working class that formerly enjoyed the good fortune of formal employment. The state of national statistics, commented on at length in the early chapters of WTD, prevents us from taking the full measure of this process. The issue deserves attention of the sort accorded it in Aigbokhan’s work on the relationship between poverty and the “disappearing middle class” in Nigeria (2000).

magnitudes on them. Not only, however, is the number of usable observations in the data set small (to say nothing of the incompleteness of the data), the policy changes contemplated here are so radical that the ability of a neatly specified equation or two to digest them is more than doubtful. Under conditions of such uncertainty, further advance is not possible unless resort be had to common sense. Given that there is but little on which to proceed, common sense dictates that we extract from the available data, whatever we can. From the brief description above of the way in which the model works, it would seem to be possible at least to draw some ‘rules’ of procedure. In the first place, in order to avoid being seduced by one’s ideological predispositions (of whatever hue) one must take care not to favour scenarios of the type one prefers, at the expense of the type one does not. Adhering to this rule should establish (if one has been sensible about defining ‘optimistic’ and ‘pessimistic’) defensible boundaries of a region in which actual outcomes will lie.

In the second, in constructing scenarios, one would want to be sensible as well, about the combinations of labour market and income growth outcomes that one uses. One would, for example, have difficulty in justifying the combination of a ‘highly optimistic’ income choice in a distribution neutral setting, with the ‘pessimistic’ labour market outcome—a choice that sees unemployment rates go skyrocketing.<sup>34</sup> By the same token, it would seem to be unreasonable to combine an ‘optimistic’ labour market outcome in a redistributive context with a ‘pessimistic’ income growth outcome.

These ‘rules’ suggest setting up the model so that it allows us to examine the results of two sets of conditions. The first of them presents the distribution neutral scenario in its most favourable form, and the redistributive scenarios in their least favourable forms. The second set has the distribution neutral growth approach behaving a little more modestly, and the redistributive approach a little less pessimistically.

In the redistributive scenarios below, the impact of making the following grants may be examined:

1. A Child Support Grant valued at R120 per month in 2001 prices (Cells B183 and C183 in worksheet ‘Ass’) financed by increased income taxes. Seven different groups of children may be targeted for receipt of the grant. In two cases, the means test is scrapped.
2. Grants equal in value to the BIG are paid to the ‘deserving poor’ (Cells B205 and C205 in worksheet ‘Ass’), who may be either all non-waged persons without access to the support of an income-generating individual, or all persons whose per capita consumption levels fall below some threshold level. The grants would be financed by increased income taxes.
3. Universal basic income grant valued at R100 per month in 2001 prices (Cells B216 and C216 in worksheet ‘Ass’), financed by varying combinations of increased income taxes on (formal sector) workers in the top four deciles of the distribution and value added tax (VAT). The model allows for the CSG to be

---

<sup>34</sup> If one is going to try to examine the consequences of jobless growth in a distribution neutral setting (which the model is capable of doing), then, more realistic income growth assumptions are going to have to be created. Jobless growth, one would have imagined, is likely to give rise to income growth in the top deciles, possibly static income in the upper middle part of the distribution, and falling incomes at the bottom.

retained if desired, if a BIG is introduced. Two forms of retention are possible—the BIG can be topped up by the difference between it and the CSG, or, more expensively, it can be granted in addition to CSG.

For several of the options in the list above, proper targeting would require reliable means tests. In the case of some of them, conducting these tests in a satisfactory manner is probably beyond the capacity of the Department of Social Development. It could be asked why, if this is the case, it is considered appropriate to present them as alternatives? There are two answers to this—in the first place, it is one thing to claim that such and such an activity is *probably* beyond the capacity of an institution, it is altogether something else to assert with finality (by foreclosing on options without further ado) that this is definitely the case. In the second place, it is important to understand what lies between, say, a basic income grant, and a means-tested child support grant paid to all children under the age of say, eighteen years. Only a full menu of options allows us to see what the different grant packages would cost, if they could be introduced. The question of the capacity of the Department of Social Development to deliver the benefits can be addressed by virtue of the model's ability to vary the administrative costs associated with any benefit package.

Even though immense difficulties may be encountered in the attempt to operationalise some of the options, their presence in the menu is not mere window dressing. The game (running the simulation) is worth the candle, because it shows just how much (or how little) redistribution can do for the poor. This is done by comparing the hypothetical outcomes of providing benefit packages of varying degrees of generosity.<sup>35</sup> Take, for example, the grants to the 'deserving poor'—we have seen above that the prevailing ideology favours a residual welfare state, one in which grants go only to them. Variant 2 is an example of this approach to social security. As such, it constitutes a benchmark against which to judge the efficiency and equity of the BIG proposals. The other use to which the model it may be put is as test bed for the child support grant. For it to fulfill this function, the assumptions about numbers of dependent children, referred to above in the discussion on worksheets 'TargetA' and 'TargetB', are critical. Given these, and the income distribution, the proportions of the child population eligible for the grants are simple to estimate.

Finding the proper way to treat the child support grants (CSG) in the BIG scenarios requires careful consideration.<sup>36</sup> The grants, in their present form, did not exist in 1995. By 1999, the OHS was only detecting a trivial number of beneficiaries. Take-up rates have improved substantially since then. Existing data, however, provide but little guidance as to future possibilities. Apart from the public statements and the transformation documents reviewed in Chapter 6 of WTD, the state has not made known its position on the relative merits of the CSG (possibly extended to all eligible children under the age 18 years), and the BIG. There are grounds to suspect that if political pressure pushes social grants into a more prominent role in the social security system, government would prefer to see the CSG extended, rather than the BIG introduced. If this is the case, then the CSG, may be viewed as being in competition, in fiscal terms, with the basic income grant. Making a rational choice between the

---

<sup>35</sup> The use of this term is also ironic. See Standing (1999, p.260).

<sup>36</sup> Such transfers are presumably ruled out of court altogether in the distribution neutral scenarios, so for them, they can safely be ignored.

numerous options that exist, requires that the relative distributional impacts and tax implications be known. To estimate these for the BIG scenarios, the model has to be capable of dealing with CSGs of any magnitude (including zero). CSGs obviously serve as an offset against the cost of providing the BIG. If, say, it had been the state's intention to provide child support grants to all eligible children under the age of 18 years, then the net cost of the BIG is the additional expenditure required to give a grant to all those not in receipt of the CSG. Pressure groups lobbying for the introduction of the BIG have settled on a figure of R100 per month—anything less feels like an insult to the poor, anything more, a mortal blow to the rich. The CSG, by contrast, is quite a bit higher. Amongst the demands emerging from these groups is one that calls for the CSG to be maintained for the under-18s. There is also a demand in some quarters, for the BIG to be made available to everyone, and for the CSG to be paid to eligible children. The model is capable of dealing with both.

The number of children of eligible age can be estimated with some certainty. What is not known is what the eligibility criteria for the grant would be. In the Committee's discussions on the matter, it was argued that the costs of administering means tests to establish eligibility would be prohibitively high, to say nothing of the drain on departmental resources that the need to conduct such tests would impose. On these grounds, there was strong support for a proposal to make the CSG universal, i.e., to do away with means tests. The model allows threshold incomes for receipt of the CSG to be set at any desired level (the grant to the deserving poor, amongst whom would obviously be many children) can also be limited in this way. It is also possible to set benefit delivery costs (mainly the costs of administering means tests) at any desired level. In the model, the CSG and deserving poor grant (DPG) are financed by increases in income tax. The BIG can be financed by any desired combination of income taxes and VAT. In the BIG scenarios, the CSG (whatever its level), is assumed to have been financed out of existing tax revenues. This is tantamount to assuming that the great tax give-backs of 2000 and 2001, both of which reduced fiscal space, had not occurred. The same effect (zero income increase to finance the CSG) may be achieved in the CSG scenarios (worksheets CSGA and CSGB) by setting the proportional distribution of the income tax burden (assumed to land on income earners in the top four deciles only) to zero in worksheet 'Ass', cells C191:C193 (or D191:D193 for the year 2005). If zero is typed into these three cells, the value in the fourth cell automatically goes to zero as well.

The number of children eligible under existing rules is known. So too, is actual take-up. It would obviously be possible to concoct a distribution of actual numbers of recipients and to estimate from this, the impact of the grant in the year 2000 on income distribution. This has not been done. Instead, the contribution of these transfers to welfare at the bottom end of the distribution has been treated, counterfactually, as though there were full take-up. The model thus overstates mean incomes at the bottom end of the distribution and understates it at the upper end, from whence would have come the tax revenues to finance the grants.

Presenting the results of the simulation exercise in paper form poses a serious challenge. As argued above, the way to deal with a simulation exercise of this sort is to allow all interested to drive the model in any direction they please. For a manuscript, the luxury of allowing competition between scenarios is limited—even when we restrict ourselves to the two forms suggested by the rules of procedure

spelled out above,<sup>37</sup> the number of possible variants is still huge. The compromise adopted here sees the rules of procedure being followed, with the proviso that even after that has been done, several avenues remain to be explored. To prevent information overload, only the most important of the findings are reviewed below. The sheer drudgery of working through a detailed analysis of the results could see off a reader or two, so commentary will be kept to a minimum.<sup>38</sup>

The implications for the economy's performance of growth under two very different sets of conditions are presented below. The first of them pits a best-case distribution neutral growth regime with one each, in turn, of the three redistributive scenarios described above. For the first set of comparisons, the introduction of the grant is assumed to have a strongly negative effect on growth. In the second set of comparisons, growth under the distribution neutral regime is slowed somewhat to bring it more into line with the apparent growth potential of the economy. The redistributive scenarios, by contrast, are assumed to have a slightly less devastating impact on economic growth.

To present the results of each comparison in a reasonably informative manner, four tables, extracted from worksheets R1, R2, R3 and R4 in file *GrowDistribute(1995-2005)-R.xls*, are required. Seven versions of each may be created by typing the Run number, as instructed above, into the appropriate cell in worksheet 'Set'. Printing each and comparing them will give a feel of the way in which the model can be made to work. To identify the different versions of the resulting tables, each is allocated a run number. Table 3 below gives the basic settings applied in each of the seven runs.

**Table 3 Primary settings for comparing DNG with redistributive scenarios**

<i>Run No.</i>	<i>Compares DNG with:</i>	<i>Income growth setting</i>		<i>Labour market outcomes</i>	
		<i>DNG</i>	<i>Redis-tributive scenario</i>	<i>DNG</i>	<i>Redis-tributive scenario</i>
1	CSG	Highly optimistic	Pessimistic	Optimistic	Pessimistic
2	DPG	Highly optimistic	Pessimistic	Optimistic	Pessimistic
3	BIG	Highly optimistic	Pessimistic	Optimistic	Pessimistic
4	CSG	Highly optimistic	Actual	Optimistic	Actual
5	DPG	Highly optimistic	Actual	Optimistic	Actual
6	BIG	Highly optimistic	Actual	Optimistic	Actual
7	BIG	Highly optimistic	Optimistic	Optimistic	Optimistic

Worksheet R-1 gives the settings for each run, worksheet R-2 the income outcomes, worksheet R-3 the labour market outcomes and worksheet R-4, the tax and benefit

<sup>37</sup> The first of these, it may be recalled, puts forward the distribution neutral scenario in its most favourable form, and the redistributive scenarios in their least favourable forms. The other has the distribution neutral growth approach growing somewhat less exuberantly, and the redistributive approach a little more enthusiastically.

<sup>38</sup> Having extracted the most important results for presentation in the body of the text, we leave behind a few other interesting aspects of the performance of the economy in worksheets DNG, CSGA, CSGB, DPGA, DPGB, BIGA and BIGB. Those desirous of delving more deeply into matters can amuse themselves by playing with the numbers.

incidence for the redistributive scenarios. A paper version of the document would thus have in it 28 tables containing values extracted using particular settings. In the electronic version anyone can create any scenario they wish, then simply print the results. One more table is required to complete the picture. Worksheet R5 presents, in summary form, the cost of the basic income grant under different assumptions about the form of child support grant. Because the BIG and the CSG are assumed not to change, only one version of worksheet R-5 is required.

In the model as it is set for publication of this work, there is a difference between what ‘Optimistic’ is assumed to mean in the distribution neutral growth, and what it is taken to mean in the redistributive scenarios. In the former, the incomes of the non-waged, the informal sector and the formal sector, are all assumed to grow by 16 per cent over both five-year periods 1995-2000, and 2000-2005. With population growth of just over ten per cent in the first period, this yields total growth of about 4.2 per cent per annum. Population growth is assumed to slow down in the second period because of HIV/AIDS, with the consequence that the growth rate falls to roughly 3.8 per cent per annum. Corresponding growth rates in the redistributive scenarios, by contrast, are 3.8 and 3.3 per cent. This is because ‘Optimistic’ in this context is set at 14 per cent over both five-year periods 1995-2000, and 2000-2005. This reflects a nod in the direction of those who insist, not always on very firm empirical grounds, that ‘excessive’ tax exerts a disincentive effect on the supply of labour, especially highly-skilled labour.

### *Tools for evaluating competing growth strategies*

Assessing the relative merits of different growth strategies requires the explicit adoption of a set of rules by which to do so. Mention of growth invokes an almost reflex reach for the rate of growth league tables. As we noted above, however, eminent practitioners in the field are moving away from such facile preoccupations. Martin Ravallion’s conclusion, cited above, captures the essence of the matter:

“It is not the rate of growth that matters,” he wrote, “but the distribution-corrected rate of growth.” (2000, p.19)

How to ‘correct’ for distributional inequalities is not a settled matter. The approach adopted here is Rawlsian in spirit. To assess the effects of any redistribution, it is necessary to be specific—one must identify the groups of individuals to whom the redistributed income is to be directed (whose welfare is to be maximised). For purposes of the exercise carried out here, greatest weight is attached to the welfare of those in the bottom three deciles of the distribution (about 13 million people in the year 2000).<sup>39</sup> If the figures in the hybrid distribution at the heart of the model are correct, then decile mean incomes in the bottom four deciles in 1995 were R1112, R1320, R1634 and R2311 per capita per annum.<sup>40</sup> Selecting a cut-off point is, of

<sup>39</sup> Note that these groups are not the same as the target groups identified in the model. There, although the welfare of the individuals concerned can be used as an eligibility criterion, it need not be so used—the target group for the BIG, for example, is the whole population, and for some variants of the Child Support Grant (CSG), all children under certain age, regardless of socio-economic condition.

<sup>40</sup> See *GrowDistribute(1995-2005)-R.xls*, worksheet ‘Distrib’.

necessity, an arbitrary business—the selection made here is based on a rough attempt to identify the chronically poor. A per capita mean income of R1634 per annum is less than half of the R295 per month<sup>41</sup> that Borat and Leibbrandt (2001) used to identify those in poverty in 1995. If that is accepted as defining chronic poverty, then counting all those in deciles 1-3 among the ranks of the chronically poor would seem defensible. A growth strategy will be judged superior if it benefits the bottom 30 per cent of the population more than would a competing strategy, even if those in the fourth decile would be better-off under the latter strategy. This may seem harsh, because even though they are more than twice as well-off as someone in the bottom decile, those in decile 4 are still very poor. Bearing in mind that the modest aim of the policy proposal promoted here is to address destitution, the welfare gain of the truly destitute is regarded as being of greater weight than the welfare loss of those still in poverty who are not destitute.<sup>42</sup>

While on this topic, it is important to observe that the assessment of growth strategies should not simply be based on a comparison of incomes at a point in time. Of obvious importance is the fact that once the few years that it takes to create the delivery systems for social grants have elapsed, the beneficiaries receive the full value of whatever grant is proposed. Increments to income from economic growth are generally much smaller at the bottom end of the distribution than are the proposed social grants. To compare properly, the welfare effects of economic growth and social grants, the relative value of income received over a period of time under the competing regimes has, therefore, to be taken into account.<sup>43</sup> The model allows this to be done. As may be expected, over a decade (the life of the model), the time required to set up the administrative systems has an important influence on the attractiveness of one or the other strategy.

The next task is that of finding a mechanism that will allow the magnitude of the equity/efficiency trade-off to be exposed. A good starting point, if it were possible to estimate its magnitude, would be with the Atkinson Index (the equally distributed equivalent measure  $e$ ). As Cullis and Jones note, this index:

“... is fruitful in facilitating the comparison of the marginal social utility gain to, say, a poor person (P) from a rich person (R). The point effectively being made is that, if making a poor person better off by £1 via a redistributive transfer reduces the income of the rich person by more than £1 (because of, say, the necessary administrative costs of the transfer and/or the disincentive effects to earn in the marketplace), how much more than the £1 gain to the poor is an acceptable price?” (1992, p.264)

---

<sup>41</sup> The figure is for adult equivalents. Correction for the children in the bottom deciles would affect the number (arbitrarily) defined as chronically poor.

<sup>42</sup> Although the outcome here is not among them, the maximin criterion (maximising the utility of the person with the minimum utility), an object of considerable attention because of Rawl's assertion of its “special claim to ethical validity” has, as Rosen (1995, pp.160-161) points out, some peculiar implications.

<sup>43</sup> As is always the case where aggregate measures are used, the value of benefits to particular groups becomes diluted, or submerged in averages. This is most noticeable when target groups are relatively small, e.g., a child support grant to children aged less than seven years of age. The benefit to households containing eligible children is but poorly captured in a measure of decile mean income.

The authors reproduce a table suggesting that for a rich person whose income is four times that of a poor person, when  $e = 0.25$ , the net income loss that would be tolerated is 41p. The acceptable loss rises as  $e$  increases—when  $e = 1.0$ , it reaches £3. At  $e = 2.0$ , it is £15, and when it reaches 4 (implying a society with a very high degree of aversion to income inequality), the acceptable loss is a whopping £255! (Cullis and Jones, 1992, p264). While it would, no doubt, be vastly entertaining to attempt to estimate the levels of income in South Africa, which, if equally distributed, would produce the same levels of social welfare as the existing maldistributed income, it seems more practical, given the data available, to perform a variant of the approach that Arthur Okun described as the ‘leaky bucket’ calculation. Cullis and Jones cite a 1975 paper by Okun that has a hypothetical redistribution from the top five per cent of US families (average income \$45 000) to the bottom 20 per cent (average income \$28 000). A \$4000 annual tax on the rich would raise incomes of the poorer families by \$1000. Posing the question of how much one would be prepared to lose beyond that \$1000, Okun identifies the polar positions in the redistribution debate, locating a social democrat(?) somewhere between. At one pole is Milton Friedman, who, as an efficiency maximiser, would accept no loss at all. At the other is an extreme Rawlsian, someone who, as an equality maximiser, has their mind is so fixed on maximising the utility of the person with the minimum utility that they would tolerate a loss of 99.9 per cent. In this context, Okun is reported as being prepared to accept a 60 per cent loss. In other words, the cost of delivering \$1000 worth of transfers would be \$1600. Cullis and Jones report him as suggesting that:

“... the chosen acceptable ‘leakage’ ... should be the outcome of a collective ‘democratic’ choice ...” (1992, pp.264-265, scare commas in original)

If, in the South African case, we assume that the deviations from the high-growth income and labour market outcomes of the distribution neutral scenarios are the result of the disincentive effects of redistribution to the poor, then we can perform a calculation that measures something like the ‘leaky bucket’ effect described above.<sup>44</sup>

Performing the calculations, however, exposes a weakness of the model, one that has been hinted at above, namely the absence of a specified relationship between the benefit ‘shock’ and the resulting decrease in the rate of growth of income below what it would have been had the benefit not been introduced. Although it is true that the magnitude of this shock cannot be known in advance, it is plainly unsatisfactory to assume that the extension, say, of the Child Support Grant to all eligible children under the age of 15 years, a benefit that would have cost about R12 billion (in current prices), would have the same impact on growth as the introduction of the BIG, with a perceived gross cost in the region of about R50 billion. It would be possible to get around this by relating the benefit shock to the income growth rate. One’s intuition in this matter suggests that playing games of this sort is not going to add significantly to our knowledge of the way the economy works. For this reason, the use of the leaky bucket calculation is restricted to the Basic Income Grant estimates. Our assumptions of an optimistic, a pessimistic and a ‘business-as-usual’ response, generate plausible

---

<sup>44</sup> The leakage is assumed to be equal to the net value of the benefit provided, divided by the sum of the difference between the income level attained under the distribution neutral regime and that reached under the distributive regime, and the additional administrative costs incurred by the introduction of the benefit.

results—let us not strain credulity by attempting to extend the use of this index to the other benefit types.

There is another problem with the income growth assumptions, also clearly revealed by the leaky bucket calculations. This time, however, the model is capable of addressing it, at least in part. Keeping the estimate of income growth and labour market performance the same in both periods is tantamount to assuming that, over time, people do not change their views, be they ill- or well disposed to whatever grant is proposed. If, say the model is set with the income growth option at ‘actual’ in the first period, and ‘actual extrapolated’ in the second, then as long as growth is positive, the leakage must rise. This is because it is assumed that the value of the grants does not increase in real terms. If people become less resentful over time of the tax required to fund the benefits, income growth could shift to ‘optimistic’. By the same token, it could also switch to ‘pessimistic’. Using one or the other makes a small difference to the leakage estimate. The point remains, however, that with benefits roughly constant, and the income differential between the DNG strategy and the chosen redistribution strategy growing, leakage must increase. This feature reduces somewhat, the usefulness of the measure.

The model churns out a set of crude estimates of the Gini coefficient (pre- and post-tax and benefit). The manner in which these are calculated will not stand up to serious scrutiny. In effect, everyone in a particular decile is treated as having the same mean income. This simplifies the calculation, but adds to the dangers of using the coefficient as a measure of inequality. As Atkinson showed many years ago, the various summary measures of inequality weight transfers at different income levels differently. The different measures thus produce conflicting rankings of distributions in terms of degree of inequality. This means that even ‘correctly’ estimated Gini coefficients are problematic (Atkinson, 1973 [1970], pp.53ff). Although we will not concern ourselves unduly with such esoterica, we will be mindful, in looking at the Ginis, that they are frail.

The other measures of performance, are not, strictly speaking, measures of performance at all, but are rather the fruit of the assumptions made about income growth and labour market performance. They are reproduced for information. Only the barest information about the settings is offered. For details it is necessary to refer to the relevant copy of worksheet R-2.

## ***5. DNG vs Redistribution: Heavy odds against the underdog***

Weighing the odds most heavily against the underdog (tax-financed social grants), i.e., favouring the received wisdom in the poverty reduction business (rapid distribution neutral growth) is done (as we see in worksheet R-1) by making the set of assumptions about income growth and labour market outcomes listed below.

Distribution neutral scenarios:

- Highly optimistic income growth outcomes in Periods 1 and 2 (1995-2000, and 2000-2005)
- Optimistic labour market outcomes in both periods

Redistributive scenarios:

- Pessimistic labour market outcomes in both periods
- Pessimistic income growth outcomes in both periods

Under such circumstances, one would hardly expect redistribution to offer any competition at all to trickle-down growth. Let us see what the results are like.

### *Run 1: Distribution neutral growth vs. the child support grant*

Looking first at the broad indicators of economic performance (worksheets R-3 and R-4) we observe that under the distribution neutral (DNG) regime, the economy grows at roughly five per cent per annum in the first period and about 4.6 per cent in the second. Corresponding figures for the redistributive regime are 2.2 and 1.8 per cent. After a small rise in the unemployment rate in the first period, the economy under DNG finally sees that rate start to fall. Under the redistributive regime, the rate increases sharply, adding almost five million to the count of the unemployed.<sup>45</sup> Somewhat improbably, matters become so desperate that the informal sector begins shedding jobs.<sup>46</sup> Ten year's sustained economic growth of the distribution neutral variety, would increase the mean incomes of those in the bottom decile from R1320 to R2208 per annum.<sup>47</sup> Propelled by faster income increases at the bottom end of the distribution, the after-tax Gini coefficient would fall from 0.608 to 0.580. The slowly falling unemployment rate, driven by fairly substantial increases in the numbers of informal sector workers, especially in the first period, also contributes to falling inequality.<sup>48</sup>

Setting the means test hurdle (cells B175 and C175 in worksheet 'Ass') at somewhere near the existing level—roughly R200 per capita (i.e., about R800 per 'mean household' down at the bottom end of the distribution), and giving the CSG to all eligible children under the age of 17 years, would result in their being about six million benefit recipients in the first period (1995-2000), and about eight-and-a-half million in the second (2000). Redistribution through the fiscus, even though it targets more than six million children in the first period, has a trivial impact on

<sup>45</sup> With a September 2001 unemployment rate of 41.5 per cent, and an extra 1.1 million reportedly added to the number of unemployed between September 2000 and September 2001, the country seems to be well on the way to achieving, or even surpassing the nightmarish figures in the simulation.

<sup>46</sup> It was to address improbabilities such as this, that the worksheet 'Extra' was built into the model. It allows us to intervene to insert more plausible employment figures into the calculations.

<sup>47</sup> These figures are in current prices—the corresponding values in constant 1995 prices appear in worksheet 'Out' in file GrowDistribute(1995-2005)-R.xls.

<sup>48</sup> The achievement may sound impressive, but the glacial pace, in absolute terms, at which incomes at the bottom end of the distribution grow, makes the McGrath and Whiteford crossover period estimates seem entirely plausible. The question that this raises is whether the political patience to wait a quarter of a century for a growth strategy delivering sustained growth of over four per cent per annum to lift the average income of the poor above the poverty datum, would be forthcoming. It is worth recalling at this point, their finding that a mere 5.7 per cent of total household income or 11 per cent of the income of top decile was required to close the poverty gap in 1991 (1994, p.24).

At present there appear to be about 400-500 000 new entrants into a job market already saturated by the unemployed. In the light of the actual performance of the economy, creating jobs for this many new entrants each year, may be regarded as something of a tall order. Yet this is not only desirable if inequality is not to worsen? it is essential if the number of unemployed is not to rise still further.

inequality—the Gini coefficient of 0.578 in 2005 being barely distinguishable from that attained under a DNG regime. If the hurdle were lowered by allowing a per capita income of about R300 per month as cut-off point, the number of beneficiaries in the first period would rise to about 9.5 million, and to about ten million in the second.<sup>49</sup> This would still have only a marginal impact on inequality, reducing the Gini coefficient to 0.574.

As noted above, assessment of the merits of the proposed redistributive scheme relative to fast, job-creating distribution-neutral economic growth, on the basis of a comparison on decile mean incomes alone is inappropriate—of equal importance during the early years is the sum of the increments received. The two measures, let us call them the income level, and incremental measures, respectively, may be found at the foot of worksheet R-2. Income level status is estimated (obviously) by comparing decile mean incomes in the relevant periods—this calculation is performed in the worksheet and a simple better off/worse off results is returned. Below this, the total welfare gain or loss is reported. This is obtained by subtracting from the sum of the increments received under the redistributive strategy, the sum of the value of increments received under the DNG strategy during the period in question.<sup>50</sup>

By both measures, the CSG performs poorly. In per capita income level terms, only those in the very bottom decile pull ahead, and then only in the first period. Assuming (unrealistically?) that it would take just two years to extend the benefits to the target group during the first period, i.e. two years to get to full take-up (worksheet ‘Ass’, cell B197), under the dismal economic conditions set out above, the sum of the increments received under a DNG strategy would exceed, in every decile, the additional income received in the form of social grants. In the second period, additional income received in this form by those in the bottom decile would exceed the sum of the increments accruing under a DNG regime, despite the fact that mean incomes were now lower. The same would be true, but to a lesser degree, of those in the second decile. For everybody else, conditions would be worse. On the face of it, a CSG conferring net benefits<sup>51</sup> of about R7.5 billion (in current prices) on its target

---

<sup>49</sup> Because the true distribution of incomes cannot be known, it is probably as difficult in real life as it is in the model (albeit for different reasons) to estimate the true number of eligible beneficiaries. In the model, and probably in real life as well, the number is sensitive to the hurdle level (in the model, extremely so). To reduce this sensitivity, a ‘fuzzy’ factor is introduced around the hurdle level. This enables the model not to miss potential beneficiaries who might otherwise have been excluded because incomes in each decile are not always simple monotonic functions. The fuzzy factor cannot, however, solve the problem caused by assuming equal incomes for the various groups within each decile (a condition not encountered in real life). The model is poised to admit large numbers of beneficiaries at the point where hurdle levels equal the decile mean income of the group in question. To illustrate, lowering the hurdle in the model (raising allowable household income) from R200 per capita to R300 per capita brings in 3.2 million children supported by informal sector workers in the first period, but only 2.1 million in the second. See worksheets ‘TargetA’ and ‘TargetB’, Row 243. The explanation for the big difference between numbers admitted in the two periods is the assumed growth in incomes, particularly those of informal sector workers.

<sup>50</sup> The two measures can be consolidated into a single measure by expressing the total welfare gain (or loss) over the ten-year period as a percentage of decile mean income in 2005, preferably that reached under the DNG. A desirable outcome, in distributional terms, requires that this indicator be positive, and, the larger the better. In terms of this compound measure, in this first comparison, the CSG would leave the bottom decile 41 per cent better off than would a Distribution Neutral Growth strategy.

<sup>51</sup> Net benefits were estimated by calculating after-tax decile mean incomes in the redistributive scenarios before any social grants were made available, and then subtracting the resulting income

group, does little for poverty, compared with what sustained economic growth could do.

As was argued above, however, not only is this not the best way to assess the impact of such benefits on their recipients, it is also the case that an additional tax burden amounting to about 1.4 per cent of total income is unlikely to send the economy into the tailspin implied by the poor performance figures used in this simulation. To the extent that this is true, the pair of results compared here are not competitors—if the key to high-speed job-creating growth could be found, the likelihood is that the economy could take the implied sacrifice in its stride. There are probably significant threshold levels through which grant costs have to rise before negative responses become significant. These are likely to be triggered by a combination of complex psychological factors, and more straightforward economic calculations. As far as the former are concerned, few would object to feeding a starving child, but many would resist grants to parents whom they see as engaging in careless reproduction. As the proposed catchment area for social grants is extended, so resistance may be expected to rise. Our next pair, DNG and grants to the deserving poor, may, therefore, approach the point in some people's minds, where they are seen as competing growth options.

### *Run 2: Distribution neutral growth vs. a grant to the deserving poor*

Grants to the deserving poor, the social security provision of choice (along with public work programmes), of conservatives, would, at least nominally, do much more for the poor, than would child support grants. With a hurdle level for benefits equal to that set for receipt of the child support grant above (about R200 per capita per month in a household containing four people—see cell B175 in worksheet 'Ass'), the number of beneficiaries more than doubles to 12.8 million. With a total tax bill amounting to an extra 2.4 per cent of total income (raised by increasing personal income taxes), the R16 billion (per annum) price tag is probably starting to move it into the region of energetic debate about the merits of social grants.<sup>52</sup> Stating the cost in this way is, however, misleading. The true cost would be lower, because of the need to offset against the bill, the cost of providing child support grants. The problem for the simulation process lies in anticipating the level at which the state would be prepared to provide such benefits.

In the basic income grant simulations, provision is made for setting the CSG at any of the seven levels that the model will accommodate. For the BIG simulations, it is also possible to pay CSG and BIG of different values. These facilities have not been built into the deserving poor grant simulations. To answer the question of the size of the offset, the necessary allowance can be made by back-of-envelope calculation. The result gives an order of magnitude estimate of the additional cost to the state of

---

estimates from the post-benefit, post-tax figure for the scenario in question. See the 'leaky bucket' calculation in worksheet 'CSGA', Row 227 onwards, in file *GrowDistribute(1995-2005)-R.xls*.

<sup>52</sup> Bhorat's estimate of the cost to the state of eliminating household poverty in 1995 (by means of targeted grants), amounted to some R12.9 billion, about 8.3 per cent of the state's total expenditure of R155 billion (2001, p.159). Expenditure of this amount would have done much more for the poor than the measure suggested here—R100 per month per capita can do little more than address destitution.

attempting to address the needs of all of those adults in dire poverty. Assuming that the state were willing to provide the CSG to all eligible children under the age of 18 years, then a further R8 billion or so would provide a benefit of R100 per month to the 6.7 million adults eligible for the DPG.

The impact of a DPG of R100 per month on poverty is shown in the Run 2 version of worksheet R-2. At the end of the ten-year period, the Gini coefficient would have fallen to 0.562. By both the income level, and the incremental income measures, those in the bottom decile would be unambiguously better off at the end of the ten years. Income levels in the second decile pull ahead in the first period, and income increments are larger in both periods, but by the end of the second period, the DNG income level in the second decile is higher.

Those in the top deciles are likely to see redistribution as a major disincentive to supply labour (their views bolstered by a conservative press that uncritically trumpets the virtues of growth). A glance at the incomes in the top decile under the two scenarios (DNG and the slow growth with redistribution) makes it obvious why such views may be held. Under DNG, the after-tax mean income in the top decile in 2005 of R69 579 per annum, makes the R53 235 of the other strategy(?) look decidedly unappetising. Selling a policy to redistribute income that has possible outcomes of this sort would require considerable skill. In the top decile, commitment to the belief that the economy could grow at the required rate if only government would withdraw as much as possible from it, is probably very strong. Couple this with the belief in government circles that social grants are a last resort, and the chances of seeing a policy introduced that would begin to address destitution, if it had this sort of impact, look fairly slender.

If the level of economic activity is determined primarily by investment and consumption, then it seems unlikely that the relatively modest additional taxes required to fund the redistribution would lead to the evaporation of confidence, the unwillingness to invest, and possibly the tax revolt required to produce an economic crisis of this magnitude. Suppose, however, that the outcome reported above did eventuate. What weights should be given to welfare gains and losses to associated with it? After ten years of redistribution, those in the bottom two deciles would be better off, fairly considerably so, while everyone else would be worse off than what they would have been after ten years of sustained distribution neutral growth. For the 9.4 million people in the bottom two deciles, 7.8 million of whom are non-waged (about four-and-a-half million of them, children), the question would probably not be difficult to answer. Similar considerations would apply if those in the bottom decile were asked for their views on the most desirable growth path for the five years after 2005—they look as though they would continue to do better under the grants approach than with a distribution neutral growth.

Militating more strongly against the redistribution is the fact that in administrative terms, providing a grant of this sort would be a colossal undertaking. If the system is not to be defrauded on a substantial scale, all of the adult beneficiaries would have to submit to a means test on a regular basis. Coping with about 13 million people by the

end of the first period would pose a serious challenge.<sup>53</sup> When rising unemployment and population growth push up the number of benefit recipients to 18.3 million in the second period, case loads would increase by almost 50 per cent. If adverse reaction on the part of the well-off does not strangle a proposal to provide a grant to the deserving poor, then the sheer difficulties of administering it would probably act as a significant dampener of enthusiasm. Let us leave the argument at that point, and proceed to the Basic Income Grant.

### *Run 3: Distribution neutral vs. a basic income grant*

So much for Child Support Grants and Grants to the Deserving Poor—what of a much more ambitious redistribution—universal basic income grants? Even under the dismal conditions contemplated here, a basic income grant of only R100 per month in 2001 prices (about R69.50 in 1995 prices) would lower the Gini coefficient to 0.546 in 2000. Falling mean incomes at the bottom end of the distribution (the result of rising unemployment and falling formal and informal employment) coupled with rising incomes and, at worst, static employment at the top end, would see this creep back up to 0.551 by 2005. Using the measures proposed to evaluate the relative performance of the economy under the two strategies, income levels and income increments, worksheet R-2 gives a mixed picture. The composite indicator created out of the income level and income increment measures shows a strong performance in the bottom two deciles, with those in the first decile likely to stay ahead for quite a while. Those in deciles 2 and 3 benefit substantially more from the BIG than they would do from DNG, despite the fact that the income level in decile 3 moves ahead by 2005. If the demand for the BIG to be given to adults only, while the CSG be continued for the children were met, the advantage to the bottom three deciles would increase still further.

The choice of numbers used in the debate over the BIG is of considerable importance. Given an outcome like that spelled out above, numerous questions have to be posed, some of which have already been raised in connection with the other, more limited grants. One of the most difficult to answer on the basis of the bald figures is that of who would favour a dispensation such as that yielded by the introduction of a BIG under conditions of slow growth?. With a net value to all those for whom the value of the grant is greater than the additional taxes that they would have to pay (all those in deciles 1 to 8),<sup>54</sup> of about R18.4 billion in the first period, and R20.7 billion in the second, BIG could garner significant political support if people are not persuaded that growth at the rates mooted in the DNG approach is attainable. If, by contrast, the focus falls more determinedly on the gross cost of the BIG, a suitably negative climate can readily be created, especially among those who will be footing the bill. Everybody is capable of performing the simple calculation to show that providing a basic income grant of R100 per month to a population of about 44 million would cost about R53 billion. Remove the state old age pensioners from the equation, and the

---

<sup>53</sup> A transaction cost of 15 per cent of the total additional revenue raised is assumed (worksheet 'Ass', cells B207 and C207). The level is high because of the difficulty of conducting the means tests required to identify *bona fide* beneficiaries.

<sup>54</sup> See the 'Leaky bucket' calculation in worksheet 'BIGA' and 'BIGB' in file *GrowDistribute(1995-2005)-R.xls*, Rows 157 in each case.

cost falls to about R50 billion, a tidy sum. Handled incorrectly, a price tag of this sort is capable of sinking any proposal to introduce a BIG even before debate is joined.

Estimating the gross cost of the BIG is easy—the difficulty is to work out net costs. The main obstacle has already been referred to above, namely, the problem of knowing how much it is appropriate to allow as offsets against the provision of child support grants. The assumption is made here that the state would have done the proper thing—that is, to have provided the CSG to all eligible children up to the age of 18 years. To have done so, the tax give-aways of the past years would not have taken place—the CSG could have been financed without increase in the tax bill. The BIG used in Run 3 replaces the CSG (i.e., benefits to children fall in value). To keep the CSG at R120 per month and to pay all adults a grant of R100 per month would cost an extra R1.0 billion per annum in the first period, and about R1.4 billion in the second.<sup>55</sup>

Assuming that the tax revenues that would have been used to finance the CSG are available without raising tax rates, the delicate question of the form the additional taxes should take must be addressed. Run 3 uses a combination of increased income tax and VAT. Using the assumptions in the version of the model dated 16<sup>th</sup> September 2002, after an increase in the income tax take of R14.4 billion, an extra R26.6 billion in VAT has to be found (worksheet R-4). The offset of R8.8 against the CSG brings the total to the approximately R50 billion gross cost of the grant. Taking extra income tax from the top four deciles would require the average rate of income tax in the top decile to rise by about 3.7 percentage points, while the rate in the 7<sup>th</sup> decile would go up by 0.9 percentage points. The increase in the VAT rate required to bring in remaining revenue would be 6.3 per cent in the first period, and 5.8 per cent in the second. Details of what these tax increases would entail at each decile are given in worksheet R-4. Estimating the additional VAT payable in each decile is complicated by the need to make an assumption about how much VAT would have been paid in the absence of the BIG. Because the addition of the BIG to incomes in the lower deciles has such a large impact on those incomes (in current prices, the total income received in the first decile would go from R7 billion to R12.2 billion), the resulting calculation has a disproportionate effect on estimates of the incidence of the VAT. While it remains true that only that portion of the BIG that attracts VAT would be liable to pay the additional six or so per cent VAT, the amount of additional VAT paid (at R18 per month in the first decile) looks very high. Given that mean incomes in the top decile are more than 20 times higher than those in the bottom decile, the additional burden of R183 per month makes the burden of the bottom decile look even higher. The last two panels of worksheet R-4 contain all of the information required to make the necessary incidence comparisons. In the last panel we see additional burden steadily falling as a proportion of income, as we would expect, given the declining contribution of the BIG to total income. The last panel also shows the additional income tax spreading the burden to the upper deciles to give a final burden distribution that is quite progressive. Burdens admittedly fall as we move from the bottom decile towards the middle—the decline being a fairly substantial four percentage points. Unless income tax could be garnered lower down the distribution,

---

<sup>55</sup> See worksheet R-4, Rows 82-83. If income increments were evenly spread in the DNG scenario, the mean income level in the 3<sup>rd</sup> decile would only climb above that in the redistributive scenario in the final year (2005).

this feature of the benefit and contribution regime is probably impossible to remove. This conclusion is, of course, sensitive to the assumptions made about expenditure patterns (estimates of the proportion of income attracting VAT) in the various deciles. The burden on the lower deciles would be much lower if their purchases out of the additional income were restricted to zero-rated items, such as the food of which many of them are in such desperate need.

Among the more radical suggestions for financing a BIG is one that called for a ‘solidarity’ tax (an increase in income tax), augmented by increased taxes on business. A better way of alienating any hint of support from the more fortunate in the economy is difficult to imagine. ‘Solidarity’, defined in the dictionary as “unity or agreement of feeling or action, especially among individuals with a common interest”, arises but rarely in class-riven societies, and probably even less frequently in societies split along racial and class lines. It is a tender plant, easily destroyed. It is certainly not to be created by punitive taxation, a sport that governments play at their peril. Unless everyone who is able to, is seen to be contributing to the funding of a BIG, the solidarity so necessary to its continued existence will never be generated. The model is capable of estimating the increase in personal income taxes required to pay for a BIG if that were the sole means of doing so.<sup>56</sup> In worksheet R-4 we see that the average increase in monthly tax payments in the top decile would be almost R1580 per month (R1480 after BIG has been offset against taxes payable). In this decile, the average tax rate on formal sector incomes would rise by more than ten percentage points in the first period (i.e., by about 37 per cent of decile mean income). It need hardly be pointed out that a suggestion of this sort would arouse fierce resentment.

Switching away from punitive taxation of this sort to a mixture of income tax and VAT financing would result in a significant reduction in the burden on the top income earners. Because the tax burden is distributed much more widely, income earners in the top deciles are likely to be less antagonistic. The increase in the VAT rate required to implement the BIG will undoubtedly be argued to be intolerably large. Viewed in isolation, it certainly is a hefty jump. When, however, this is weighed against the impact the grants will have both on destitution and on inequality, the price (6.3 percentage points in the first period, and 5.8 in the second)<sup>57</sup> seems a small one to pay.

Reference was made (footnote 13) above to the suggestion by Prof Pieter le Roux of the University of the Western Cape, that a VAT-financed basic income grant could target its intended beneficiaries with greater facility than any other combination of taxes and benefits. As far as the socially necessary task of spreading the burden is concerned, this claim is certainly true. It is also true, however, that indirect taxes like the VAT are regressive.<sup>58</sup> Unless a substantial contribution to the cost of the BIG is obtained from income taxes (perforce on the incomes of those in the top four or five deciles), the additional taxes will, as shown above, become fiercely regressive. This is easily demonstrated by reducing the income tax contribution to total costs in cell

---

<sup>56</sup> In the templates that feed worksheet ‘Set’ in file GrowDistribute(1995-2005)-R.xls under the option ‘Finance BIG entirely from income taxes (except for the CSG offset)’, select 2 for Yes.

<sup>57</sup> In practice, only one change would be made to the VAT level. Fluctuations in the volume of revenue required to fund the grant would be met from the general revenues of the state.

<sup>58</sup> This finding is sensitive to the assumed proportions of income attracting VAT in the different deciles. It is not so sensitive, however, as to overturn the conclusion reached here.

B222 in worksheet 'Ass' in file GrowDistribute(1995-2005)-R.xls towards zero. Whatever tax system is designed, the tax remains regressive, and only increased expenditure on zero-rated items can prevent the very poorest from being unfairly burdened. The inequity is, however, significantly reduced when the income tax contribution set at some significant fraction of the total tax required. This is shown in the last panel of worksheet R-4.

The DNG approach can be made to yield equal mean incomes in the tenth year by creating additional informal sector jobs. To compete with the BIG, the DNG approach would have to generate an extra 250 000 jobs for those in the bottom decile, and an additional 10 000 in the second decile, during the second period.<sup>59</sup> Although DNG-type growth would then have the first and second deciles on roughly equal terms as measured by income level, by the incremental income measure, redistribution through grants would still be a long way ahead.<sup>60</sup> Whether the prospect of informal sector employment would be more attractive to those most immediately concerned cannot easily be answered. A lot depends on the rate at which the jobs are created (and hence, the length of time for which the additional income is enjoyed). If most of the jobs came in the last year, then the welfare loss in the nine years preceding the build-up to equal decile incomes, coupled with what must be the huge disutility of working in the survivalist sector, coupled also with the fact that the benefits of the 'new' jobs are unevenly spread, must convince *homo economicus* (so beloved of conventional economics) that the grants are much to be preferred. If this is what is meant by welfare dependence, so be it—nobody should be required to suffer acute economic hardship for nine years on the strength of a promise that economic growth will 'rescue' them in the tenth.

Responses to the evidence and argument above will be influenced by prior political stance. Diehard proponents of the Deepak Lal/Myint (World Bank) approach will presumably cling to trickle-down, no matter what. Liberals should be at least a little uneasy—the compliance of the outcome above with Rawlsian dictates on redistribution, must give all who advocate growth, growth and more growth, pause. For left Rawlsians, there can be no doubt that in a contest of this sort between growth and redistribution, the latter wins, hands down. Whether those on the left a little further up the income scale would endorse the BIG equally wholeheartedly, is, one would hope, a question that would be answered in the affirmative. To make it easier for them to do so, let us turn to a somewhat less miserable set of predictions about the impact of redistribution on economic growth.

## **6. DNG vs Redistribution: Moving in the underdog's favour**

A casual reading of the argument above could leave one with the impression that opting for growth meant foregoing redistribution, and *vice-versa*. This is clearly not the case—there is redistribution in the distribution neutral case, and growth in the redistributive scenarios. Other things being equal, growth is largely a function of the 'animal spirits of the investors'. The burden of the argument in this work is that

---

<sup>59</sup> These additional jobs would have scarcely any impact on the Gini coefficient—between 2000 and 2005 it would fall from 0.580 to 0.578. The entries are made in row 248 of worksheet 'Ass'.

<sup>60</sup> The composite 'Overall indicator' in the last panel of worksheet R-2 illustrates this point.

under the present conditions in South Africa (the macro-economic fundamentals, as the state keeps reminding us, are sound), the response of investors (and consumers, especially those in the top deciles) to a proposal to begin addressing the unemployment problem by means of social grants, would be a key determinant of the rate of growth. Assuming that the investing class can be persuaded of the virtues of such a policy, we can shift the odds in the model so that they weigh slightly less heavily against the underdog (redistribution). This is done by changing the set of assumptions about growth to the set listed in Table 3, namely:

For the distribution neutral scenarios

- Optimistic labour market outcomes in Periods 1 and 2 (1995-2000, and 2000-2005)
- Highly optimistic income growth outcomes in both periods

For the redistributive scenarios:

- Actual labour market outcomes in the first period and actual outcome extrapolated in the second
- Actual income growth outcomes in the first period and actual outcome extrapolated in the second

Outcomes for the distribution neutral scenario, obviously, remain the same as in the previous scenarios. For the redistributive scenarios, labour market outcomes are anything but sanguine—in the first period, informal employment grows by a miserly 750 000 or so, and formal employment by a mere 80 000 (worksheet R-3). Unemployment, while not quite as bad as it was under the dismal assumptions of the previous sub-section, is still a huge problem. Economic growth in the region of about three per cent per annum (as opposed to the DNG's five per cent) in the first period keeps per capita income growth positive (worksheet R-2). Growth in the second period is a little slower. Let us examine the effect of slightly improved growth on the various benefit packages.

#### *Run 4: Distribution neutral growth vs. the child support grant*

Keeping all settings the same as what they were in Run 1, we are driven to similar conclusions as in that run—to the extent that we can believe measurements down to three decimal places, inequality falls by slightly less. This is because the incomes of the non-waged are assumed not to rise, while the incomes of those receiving a wage grow a little more than they did in Run 1. The small increase in numbers employed in the bottom deciles is not enough to offset this. Using the income levels measure, the bottom decile leads by a short head in period 1, only to slip behind by 2005. Over the two periods as a whole, decile 1 is ahead on the income increments measure, but decile 2 falls rapidly behind. In short, the picture is very similar to what obtained before. The same conclusions hold—a little faster growth reduces the sacrifice made higher up, but does not do much down at the bottom end of the distribution. Obviously, the same comments about judging the merits of the child support grant made above hold here as well—its virtues are not to be gauged solely by its impact on grand aggregates such as decile mean incomes, or the Gini coefficient.

*Run 5: Distribution neutral growth vs. a grant to the deserving poor*

Conclusions reached about outcomes under this regime are similar to those above—inequality falls, but not as much as in Run 2, and for similar reasons. Conditions for those in the bottom deciles improve slightly, but not enough to place them far ahead of the DNG scenario. Slightly faster economic growth means once more that the sacrifices demanded of those higher up the scale are somewhat reduced (illustrating the old adage that the schisms in capitalist economic become most visible when growth dries up). Mean income for the whole population, which reaches R16 196 per annum in 2005 under DNG, would rise to R14 768, as opposed to the R13 651 it would have attained in Run 2. A strict Rawlsian might still want to conclude that since the conditions of the worst-off (those in the very bottom decile) place them well ahead of where they would have been under a DNG regime, redistribution is preferable. If growth of the magnitude indicated here could be attained, the case would be starting to look persuasive.

*Run 6: Distribution neutral vs. a basic income grant*

A basic income grant conferred under conditions in which growth of just three per cent per annum could be maintained would see deciles 1 and 2 convincingly better off than they would be under DNG. Decile 3 would be well ahead on the income increments measure, and only a whisker behind (one percentage point) on the income levels measure in 2005 (worksheet R-2). Income growth for the population as a whole improves—mean incomes go to R13 896 in 2005, as opposed to R12 903 with the slower growth. Although this is a long way behind the R16 196 reached under DNG, the top decile would have much less cause for discontent. The DNG approach takes them from a mean income of R54 251 in 1995 to R69 769 in 2005, while redistribution under the dismal conditions of Run 3 sees their mean incomes fall to R51 991 by 2000, creeping up to R53 251 by 2005. Another percentage point of economic growth, means that after the tiny initial fall (this time to R54 050 in 2000), mean incomes recover to R57 495 in 2005. As before, inequality falls, but not by as much as it does when economic growth is slower (shared misery?). Economic growth eases the financing constraint—with the income tax take held at the same level as it was in Run 3, the required VAT rate increase eases slightly from 6.3 to 6.1 in the first period, while remaining at 5.8 per cent in the second period (worksheet R-4). The relationships between growth and redistribution, and inequality and poverty are starting to become clear—as long as one does not kill the golden-egg laying goose by attempting to redistribute too much, respectable income growth can probably be vouchsafed the upper deciles (after an adjustment period), while immediate relief is granted the poor. Let us end this exploration by piling on just a little more growth to the redistribution scenario.

*Run 7: Distribution neutral vs. a basic income grant once more*

Keeping all assumptions except those relating to income growth and labour market outcomes the same, we now see how BIG fares against DNG. Let these two

assumptions switch from ‘Actual’ (or ‘Actual extrapolated’) to ‘Optimistic’. Economic growth would go to 3.8 and 3.3 per cent respectively, in the two periods. Instead of inequality rising with slightly increased growth, it now falls, giving a Gini coefficient of 0.538 in 2005. The explanation for this is that it results from the significantly better labour market performance. Unemployment, instead of rising to 42.6 per cent by 2005, falls to 28.1 per cent (worksheet R-3), thus demonstrating once more, if such demonstration were necessary, the benefits of fast employment growth. The bottom four deciles leave their DNG counterparts far behind (by both measures). Mean incomes of the top decile, instead of plummeting as they do when the BIG is first introduced, grow by about one per cent. After that, they grow to R59 325 by 2005, a long way from the R53 251 that 2.2 per cent per annum economic growth leaves them on.

In this scenario, BIG leaves everyone in the bottom seven deciles with a higher mean per capita income at the end of the first period. By the end of the second period, the faster growth in the DNG setting reduces this to everyone in the bottom five deciles, i.e., half of the population. To place those in the marginal deciles in roughly the same situation under the redistributive regime as they would be under DNG, usually requires the creation of a few hundred thousand more informal sector jobs among the folk in that decile. A welfare comparison that took into account the disutilities of work (survivalist activity must surely have a very high disutility?) must rank the redistributive strategy ahead of DNG. As before, if this is what conservative critics mean when they warn of the dangers of welfare dependence, all one can say is that judgements of sort are arrived at from the comfort of an armchair—they have little or no connection with real world experience of poverty.

To end this brief glimpse into the joys of growth and redistribution working in tandem (rather than as opponents), a small sortie into the relationship between VAT rate changes and the differing growth performances with which they are associated, is necessary. After seeing the required VAT rate increase fall from Run 3 to Run 6, it comes as something of a surprise to see it climb to 6.7 percentage points in Period 1, and 6.5 percentage points in Period 2 (worksheet R-2). Surely, one asks, faster growth will reduce the required VAT rate increase?<sup>61</sup> To understand why not, it is necessary to refer back to the discussion about the ‘correct’ amount to be offset against the provision of child support grants. In Run 3, BIG paid in a dismal growth scenario, the CSG is claimed by, or on behalf of 6 142 000 children. Faster economic growth in Run 7 reduces this to 3 986 000 (cell L13 in worksheet ‘BIGA’). The amount that can be offset thus drops from R8.8 billion to R5.7 billion.<sup>62</sup> In partial

---

<sup>61</sup> Demand *must* be elastic, so increased VAT *will* choke off some consumer expenditure. By how much it will be reduced, it is difficult to say, the estimation of demand elasticities being a highly imprecise business. Some attempt is made to accommodate the dampening effect of additional VAT in the model by allowing the distribution neutral approach a ‘highly optimistic’ income growth option, while restraining the redistributive approach to, at best, a merely ‘optimistic’ result. If reliable estimates of elasticities could be made, they could be incorporated into the model by allowing propensities to consume to vary.

<sup>62</sup> The drop in Period 2 is even more substantial—from R12.3 billion to R5.6 billion. The ‘problem’ can be made to disappear by playing with the ‘fuzzy’ factor (see worksheet ‘Ass’, cells B178 and C178) introduced to reduce the sensitivity of the child support grant hurdle income (the means test income). If the factor is increased from its present setting of five per cent, to somewhere near 30 per cent, the number of children eligible for the grant rises to somewhere close to its dismal growth total. What this implies, of course, is that the hurdle income is raised to R260 from R200.

compensation for the bigger than expected VAT rate increase, growth pushes the increase in personal income tax rates down. In the top decile, dismal growth called for an increase of 3.7 percentage points in the average rate of tax in Period 1—the faster growth in Run 7 reduces this to 3.5 percentage points.

Although this problem is something of a fiction (an artifact of the model design), something like it would be faced in real life if, after a BIG were introduced, it was felt necessary to obtain a true costing of the BIG. In practice, as remarked above, VAT rates would not be made to yo-yo in the way in which they do in the model—both VAT and income tax rates are likely to be fixed by other criteria—any slack could be taken up by deficits. Unlike child support grants, the gross cost of the BIG is not related to the rate of growth—budgetting for it is thus a relatively simple matter.

It seems as though rejecting the BIG option becomes less and less easy as one's estimation of its impact on the labour market and on income growth softens. If consideration is to be given to the introduction of a basic income grant, careful attention will need to be given to the way in which its potential effects, both on the economy and on individual incomes are presented. For those at the top of the pile, the prospect of the sacrifices entailed in financing a BIG would undoubtedly give rise to dismay, or worse. Indeed, the focus of articles in the conservative financial press has been such as to rally the troops around the banner of resistance to these sacrifices.<sup>63</sup> To place the sacrifices in perspective, estimated income changes in the top deciles can be compared with estimated mean incomes at the bottom end of the distribution. Doing so provides a sobering reminder of South African reality. Under a distribution neutral regime, the *increase* in after-tax earnings of formal sector workers in the top decile from 1995 to 2005 (R15 519) would be more than seven times as large as the average after-tax income in the bottom decile in 2005 (R2208 per annum). Under the redistributive conditions sketched immediately above, the increase would shrink to R5075, a shade under twice the mean incomes (R2784 per annum) of those at the bottom. In sum, the BIG would attack both poverty (or, more accurately, destitution), and inequality in a vigorous manner.

The implication of all this is clear—if those who have, can, in the words of King Lear, be persuaded to "... shake down the superfluity..." (before it is too late), there is a chance that destitution and gross inequality can begin to be addressed. To ask the poor to wait for growth (fickle at the best of times) to do the job is to court the very fate from which GEAR was supposed to deliver them. Empowering people to the point where they can engage (with dignity) in economic activity generates adequate (and secure) incomes is obviously of great importance. That, however, is not all that the state should be doing about the poor. South Africa's state old age pension is enviable, and uptake on child support grants is gathering momentum. Although existing anti-poverty measures are numerous and extensive, they are manifestly inadequate. Setting aside sufficient resources to begin to address this problem is not the major constraint on the development of adequate social security measures. Rather, it is the difficulty of persuading those who oppose grants of the sort mooted here, that it is idle to pin nearly all hope on growth-based policies. This conclusion marks an appropriate point at which to leave a world of numbers that is by turns,

---

<sup>63</sup> See, for example, the hare-brained article in *Finance Week* by Howard Preece (31 May 2002, pp.38-39), with its alarmist references to the 'furtive hijacking' of the Taylor Committee by 'leftists'.

either arid or heartening. These numbers suggest that after policymakers have done their best, a pessimistic climate will ensure that little more will have been achieved than the raising of those at the bottom of the income distribution from utter destitution. Then again, perhaps 'little more' would not be a fitting way to describe such an achievement? if it could be achieved. It is all too easy to under-estimate just how much repair work has to be done to heal the injury inflicted by apartheid (and the form of capitalist growth it fostered) on the body politic. Playing with the numbers suggests that redistributive policies can contribute to the healing process.

## ***References***

**Aghion, Philippe; Caroli, Eve and García-Penalosa, Cecilia.** "Inequality and Economic Growth: The Perspective of New Growth Theories," *Journal of Economic Literature*, December 1999, XXXVI(4), pp.1615-1660.

**Aigbokhan, Ben E.** "Poverty, Growth and Inequality in Nigeria: A Case Study", AERC Research Paper 102, African Economic Research Consortium, Nairobi, October 2000.

**Arrighi, Giovanni.** "The African Crisis: World Systemic and Regional Aspects", *New Left Review*, 15, May/June 2002, pp.5-36.

**Atkinson, A B (ed).** *Wealth, Income & Inequality*, Harmondsworth: Penguin Education, 1973.

**Atkinson, A B.** "On the Measurement of Inequality", in Atkinson, A B (ed), 1973, pp.46-68.

**Barr, Nicholas.** *The Economics of the Welfare State*, Third Edition, Oxford: Oxford University Press, 1998.

**Bhorat, H; Leibbrandt, Murray; Maziya, Musi; van der Berg, Servaas, and Woolard, Ingrid.** *Fighting Poverty: Labour Markets and Inequality in South Africa*, Cape Town: UCT Press, 2001.

**Bhorat, Haroon.** "Public Expenditure and Poverty Alleviation: Simulations for South Africa", in Bhorat *et al* (eds), 2001, pp.155-170.

**Bhorat, Haroon, and Leibbrandt, Murray.** "Correlates of Vulnerability in the South African Labour Market", in Bhorat *et al* (eds), 2001, pp.74-106.

**Bourguignon, François.** "Crime, Violence, and Inequitable Development", *Annual World Bank Conference on Development Economics 1999*, Washington, D.C.: The World Bank, pp.199-220.

**Byrne, David.** *Social exclusion*, Buckingham: Open University Press, 1999.

**Byrne, David.** *Complexity theory and the social sciences*, London and New York: Routledge, 1998.

**Cullis, John and Jones, Philip.** *Public Finance and Public Choice: Analytical Perspectives*, London: McGraw-Hill Book Company, 1992.

**Dagdeviran, Hulya; van der Hoeven, Rolph, and Weeks, John.** “Redistribution Matters: Growth for Poverty Reduction”, Working Paper Series No. 99, Department of Economics, School of Oriental and African Studies, University of London, October 2000.

**Department of Finance.** *Growth, Employment and Redistribution: A Macroeconomic Strategy*, Pretoria: 1997. Referred to as GEAR

**Dept of Social Development.** *Transforming the Present – Protecting the Future: Report of the Committee of Inquiry into a Comprehensive System of Social Security for South Africa*, (Consolidated Report), Pretoria, 2002 (Referred to as the Taylor Report)

**Easterly, William.** “The effect of International Monetary Fund and World Bank Programs on Poverty”, World Bank Paper, 2000.

**Kanbur, S M R.** “Measurement and Alleviation of Poverty, With an Application to the Effects of Macroeconomic Adjustment”, *IMF Staff Papers*, 34(1), March 1987, pp.60-85.

**Lal, Deepak and Myint, H.** *The Political Economy of Poverty, Equity and Growth: A Comparative Study*, Oxford: Clarendon Press, 1996.

**Lewin, Roger.** *Complexity: Life at the Edge of Chaos*, (Second edition), London: Phoenix, 2001 [1993].

**McGrath, Michael and Whiteford, Andrew.** “Inequality in the size distribution of income in South Africa”, Occasional Papers No 10, Stellenbosch Economic Project, 1994.

**Meth, Charles.** *What to do until the doctor comes: Relief for the unemployed and for poorly paid workers*, published electronically on website [www.nu.ac.za/csds](http://www.nu.ac.za/csds), October 2002. Referred to as WTD.

**Moll, Peter.** *The Great Economic Debate: The Radical’s Guide to the South African Economy*, Braamfontein: Skotaville Publishers, 1990.

**Moll, Peter; Natrass, Nicoli, and Loots, Lieb (eds).** *Redistribution: How can it work in South Africa?*, Cape Town: David Philip, 1991.

**Rosen, Harvey S.** *Public Finance*, Chicago: Irwin, (4<sup>th</sup> Edition), 1995.

**Ravallion, Martin.** “Growth, Inequality and Poverty: Looking Beyond Averages”, World Bank Paper, 2000.

**Standing, Guy.** *Global Labour Flexibility: Seeking Distributive Justice*, Houndmills, Basingstoke: MacMillan Press, 1999.

**Statistics South Africa.** *Labour Force Survey: September 2001*, Statistical release P0210, 26 March 2002, Pretoria.

**Whiteford, A and van Seventer, D E.** “South Africa’s Changing Income Distribution in the 1990s”, *Studies in Economics and Econometrics*, November 2000, 24(3), pp.7-30.

## Assumptions

Entries in cells highlighted in blue are the basic assumptions use to drive this simulation model. Alteration to these assumptions must only be made in these blue highlighted cells - not in the destination cells to which they refer in the worksheets containing the various workings, nor in cells highlighted in purple.

### Population

Growth (%)	Total
Total population in 1995 (Statistics 2001, p.1.1)	39477
Total population in 2000 (Statistics 2001, p.1.1)	43686
Growth (%)	10.7
1995-2000	10.7
2000-2005	8.0
Total population in 2005	47181

See worksheet target for breakdown of population by age cohort by decile

### Prices

Using 1995 as base year, the 2000 CPI was 136.5.

With 2000 as base year, the 2001 CPI was 105.4 (QB March 2002, page S-137)

	Period 1	Period 2	
2001 CPI in 1995 constant prices =	136.5	100.0	105.4
	143.9		
CPI(95)	100.0		
CPI(01)	143.9		
Conversion factor (1995 prices to 2001 prices)	1.439		

### Lbour market - Assumptions to generate base year values (1995)

	Income deciles									
	1	2	3	4	5	6	7	8	9	10
Formal sector proportion of employment (%)	5	10	20	45	75	90	90	90	90	90
Non-wage component of income (%)	81	75	72	50	30	20	15	10	10	10



Non-wage income growth (%) =	14	14	14	14	14	14	14	14	14	14
Informal wage income growth (%) =	14	14	14	14	14	14	14	14	14	14
Formal wage income growth (%) =	14	14	14	14	14	14	14	14	14	14

**Growth with redistribution (pessimistic)**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	8	8	8	8	8	8
Informal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8
Formal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8

**Selected income growth**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	8	8	8	8	8	8
Informal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8
Formal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8

**Income growth: 2000-2005**

**Distribution neutral growth (optimistic)**

	1	2	3	4	5	6	7	8	9	10
Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	16	16	16	16	16	16	16	16	16	16
Informal wage income growth (%) =	16	16	16	16	16	16	16	16	16	16
Formal wage income growth (%) =	16	16	16	16	16	16	16	16	16	16

**Distribution neutral growth (highly optimistic)**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	20	20	20	20	20	20	20	20	20	20
Informal wage income growth (%) =	20	20	20	20	20	20	20	20	20	20
Formal wage income growth (%) =	20	20	20	20	20	20	20	20	20	20

**Selected income growth**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	20	20	20	20	20	20	20	20	20	20
Informal wage income growth (%) =	20	20	20	20	20	20	20	20	20	20
Formal wage income growth (%) =	20	20	20	20	20	20	20	20	20	20

**Growth with redistribution (actual)**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	12	12	12	12	12	12
Informal wage income growth (%) =	12	12	12	12	12	12	12	12	12	12
Formal wage income growth (%) =	12	12	12	12	12	12	12	12	12	12

**Growth with redistribution (optimistic)**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	14	14	14	14	14	14

Informal wage income growth (%) =	14	14	14	14	14	14	14	14	14	14
Formal wage income growth (%) =	14	14	14	14	14	14	14	14	14	14

**Growth with redistribution (pessimistic)**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	8	8	8	8	8	8
Informal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8
Formal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8

**Selected income growth**

Pension growth (%) =	0	0	0	0	0	0	0	0	0	0
Non-wage income growth (%) =	0	0	0	0	8	8	8	8	8	8
Informal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8
Formal wage income growth (%) =	8	8	8	8	8	8	8	8	8	8

**VAT**

VAT rate in 1995	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
------------------	------	------	------	------	------	------	------	------	------	------

**Year 1995**

	1	2	3	4	5	6	7	8	9	10
Propensity to consume	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.93	0.93
Propensity to save	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.07	0.07
Proportion of consumption attracting VAT	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63

**Year 2000**

*Distribution neutral scenario*

Propensity to consume	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.96
Propensity to save	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04
Proportion of consumption attracting VAT	0.638	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64

*Redistributive scenarios*

Propensity to consume	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.96
Propensity to save	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04
Proportion of consumption attracting VAT	0.641	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64

**Year 2005**

*Distribution neutral scenario*

Propensity to consume	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.96
Propensity to save	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04
Proportion of consumption attracting VAT	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64

*Redistributive scenarios*

Propensity to consume	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.96
-----------------------	------	------	------	------	------	------	------	------	------	------

Propensity to save	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04
Proportion of consumption attracting VAT	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64

### Redistribute thru taxes and grants

#### Targeted grants: Eligibility criteria, size of grants and administration costs

<b>CPI</b>		Period 1	Period 2
	CPI(95)	100.0	
	CPI(01)	143.9	
	Conversion factor (1995 prices to 2001 prices)	1.439	1.43871

#### Set 'x', the level below which consumption should not fall (=means test level)

Value in 2001 prices	300	300
Value in 1995 prices	208.52	208.52

Fuzzy' factor to reduce sensitivity to dispersion around means (%)	5.0	5.0
--	-----	-----

#### Child support grant (CSG)

	Period 1	Period 2
Child support grant in current prices	120	120
Value of child support grant (R/month) in 1995 prices	83.41	83.41
Collection costs (% of value of grants)	15.0	15.0
Net cost of grants including collection costs (R million)	9939	9939

Proportional division of burden of total shortfall for grants financed by income taxes (%)

Use for targeted grants to individuals and for child support grant

	Period 1	Period 2
Top decile	70.0	70.0
2nd from top	22.0	22.0
3rd from top	6.0	6.0
4th from top	2.0	2.0
	100.0	100.0

Assumed period of time required to set up administrative systems for benefit delivery (years)	2
---	---

#### 'Deserving Poor' Grant (DPG)

**Grants to individuals (except pensioners) not supported by a worker, or with a per capita consumption level <Rx/month**

	Period 1	Period 2
Pensioners receiving targeted grants	0	0
Value of grants to those eligible (R/month) in current prices	100	100
Value of grants to those eligible (R/month)	69.5	69.5
Collection costs (% of value of grant)	15.0	15.0
Assumed period of time required to set up administrative systems for benefit delivery (years)	3	

**Basic income grant (BIG)**

If a basic income grant is made in the first period, even though it would be difficult to remove it completely in the second, the model allows the BIG both to be increased or reduced, if desired, to zero

*Value of basic income grant (R/month)*

BIG in current prices	100	100
Value of basic income grant (R/month) in 1995 prices	69.5	69.5

Pensioners receiving BIG	0	0
--------------------------	---	---

Portion of BIG financed by income taxes (R millions)

In current prices	14387	14387
In 1995 prices	10000	10000
Costs of collecting additional income tax for BIG (%)	5.0	5.0

Proportional division of burden of total shortfall for grants financed by income taxes (%)

	Period 1	Period 2
Top decile	70.0	70.0
2nd from top	22.0	22.0
3rd from top	6.0	6.0
4th from top	2.0	2.0
	100.0	100.0

Costs of collecting additional VAT for BIG (%)	5.0	5.0
--	-----	-----

Assumed period of time required to set up administrative systems for benefit delivery (years)	3	
---	---	--

**Allow for additional jobs to be created in the informal sector**

