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Perceptions of Inequality in Post-Apartheid South Africa

by

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Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

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ABSTRACT

Post-apartheid South Africa is one of the most unequal societies in the world and is experiencing rising intra-racial inequality. While the government continues to attempt to enact policies that decrease income inequality as conventionally measured, this paper suggest that the nature of inequality as a socio-political problem is better understood through the analysis as a subjective perception relative to reference groups, and expectations. An empirical review revealing the impact of subjective inequality on individual well-being suggests that policymakers could attempt to influence *perceptions* of inequality in order to increase individual utility and thereby, in light of the apartheid legacy, foster support for the democratic regime much needed to aid per capita GDP growth.

Table of Contents

Introduction

The legacy of the apartheid regime has created persistent and self-evident patterns of inequality in South Africa. Income inequality, measured by the Gini coefficient, which was reported as 0.70 in 2008 (Leibbrandt et al, 2010:32), reveals the country as one of the most unequal in the world. The first section of this essay presents results from the NIDS dataset corresponding to this inequality measure as well as poverty measures, focusing mostly on racial differences.

The second section presents the general consensus from the literature for 'measured' inequality as a 'bad' for society, referring firstly to the ethical perspective of inequality as a 'bad' in and of itself, and secondly to its relationship with growth. It is then suggested that these quantitative measures may not be providing the necessary insight for unpacking the mechanisms that determine the negative effects of inequality. We therefore turn to theoretical and empirical evidence that investigates how subjective perception of others' wellbeing as well as future wellbeing enters the utility function.

This paper firstly refers to the work of Appelgryn and Bornman (1996) who introduce the concept of 'relative deprivation', which captures the intertemporal nature of relative utility. Secondly, Coetzee (2014) updates the convivial village hypothesis using 2006 data from the National Income Dynamics Study (NIDS) by re-evaluating the definition of reference groups, how they are weighted and in which direction they enter the utility function.

These results are then combined with Gibson's (2003) empirical work that attempts to ascertain what drives support for democratic institutions and processes in South Africa. It is found that, all else constant, groups reporting a higher level of subjective well-being are more likely to perceive the democratic regime as legitimate. Variables such as education level also effect democratic support differently for whites compared to non-whites. Thus, a general picture can be deduced of how perceived inequality with reference to other groups, as well as to another point in time, affects subjective well-being for a given individual.

Finally, a brief overview is given of direct policy interventions that have attempted to change the distribution of income in South Africa, after which it is suggested that there may be a delicate 'window' of opportunity for policy to exploit the finding that inequality is detrimental *because* it is subjective, and that perceptions of inequality could therefore be influenced in a legitimate manner in order to move closer towards democratic consolidation, and improve the efficiency of the overall democratic system. Thus, influencing perceptions of inequality could imply the achievement of higher GDP growth and also have a reinforcing positive effect on distributional prospects both through creating higher subjective well-being, and by increasing the 'size of the pie'.

Measured Inequality in South Africa

Evidence from NIDS

Leibbrandt et al (2010) present an analysis of inequality and poverty dynamics since the fall of apartheid by comparing the three waves of NIDS data from 1993[1], 2000 and 2008. They also distinguish between a money-metric and non-money-metric approach the latter incorporating more abstract, subjective variables such as access to basic services compared to the former, which uses income variables to derive Gini coefficients and poverty lines. This paper will argue that perceived inequality has a different impact on happiness compared to money-metric measures of inequality.

Three salient findings appear from NIDS. Firstly, average real income has been rising for all race groups since 1993. Secondly, average income gaps by race have persisted in general. Thirdly, while inter-racial inequality has decreased, intra-racial inequality has increased. Since wage income contributes to 85% of inequality, it is found that the labour market plays the most important role in driving inequality in South Africa. Van der Berg (2010:15) summarizes these findings in the table below.

[1] This survey was called the Project for Statistics on Living Standards and Development (PSLSD).

Table 1: Post-transition trends in poverty and income distribution

	Approximate time period	
	1994-2000	2000-2006
Aggregate inequality	Rising strongly	Little change
Inequality between groups	Declining	Declining
Inequality within groups	Rising strongly	Rising
Poverty headcount	Rising moderately	Declining strongly

Source: Van der Berg (2010:15)

South African inequality, by international standards, has remained high with the Gini coefficient for overall inequality increasing from 0.66 (in 1993) to 0.68 (in 2000) to 0.70 (in 2008). This picture is supported by very little shifting of the overall income distribution, except for a slightly higher concentration at the top-end, explained by a rising black middle class. Thus, we can deduce that even though we see this increase for a few reduce inter-racial inequality post-apartheid, the resulting increase of within-race inequality has been strong enough to keep aggregate inequality from falling (Leibbrandt et al, 2010:67).

Table 2: Income inequality

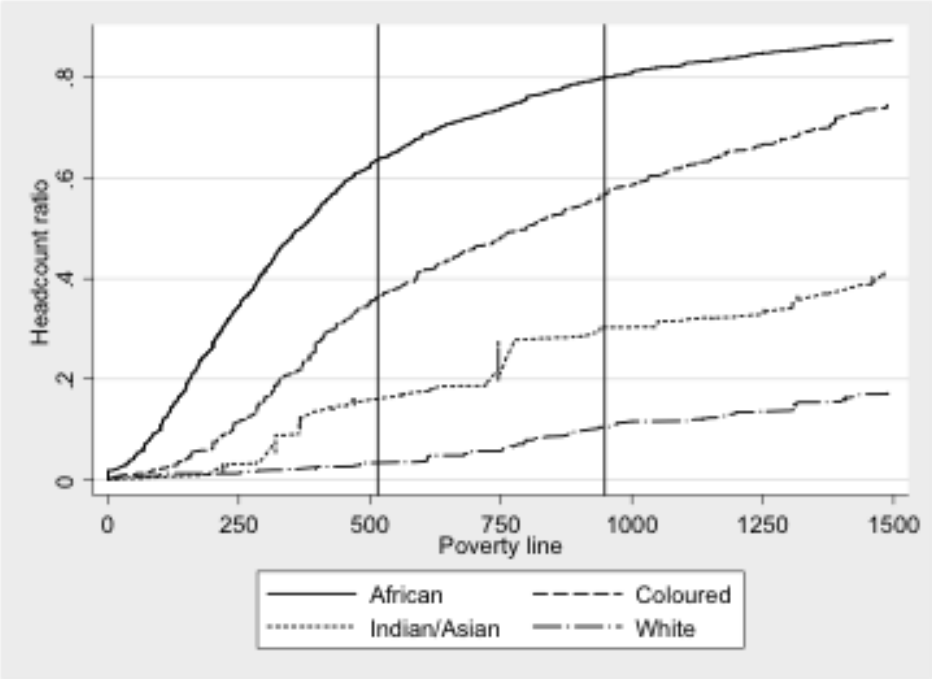
Gini coefficients for per capita income by race and geotype			
	1993	*2000*	*2008*
African	0.54	0.60	0.62
Coloured	0.44	0.53	0.54
Asian/Indian	0.47	0.51	0.61
White	0.43	0.47	0.50
Rural	0.58	0.62	0.56
Urban	0.61	0.64	0.67
Overall	**0.66**	**0.68**	**0.70**

Source: (Leibbrandt et al, 2010:32)

The story of poverty is somewhat less clear as results depend on where on draws the poverty line (thus, two lines are used). What is clear, however, is that stochastic poverty dominance existed (for the poverty headcount ratio) between 1993 and 2000 in which poverty fell slightly on average for all lines below R1500 per capita per month. This upper bound includes approximately 80% of the population. In 2008,

blacks strictly dominated as the poorest race group and whites were dominated by all other races. Also, rural dwellers were poorer than their urban counterparts.

Figure 1: CDFs across racial groups in 2008



Source: Leibbrandt et al (2010:41)

The income distribution has a clear racial character with roughly the top 20% dominated by the minority white population and the bottom 80% by the significantly poorer black majority. This is the bimodal distribution that lead former-president Mbeki to identify South Africa as 'two nations': one white and rich and the other black and poor (Seekings & Nattrass, 2002:2). Moller (2000:39-40) extends this even further, suggesting that the country may be a "microcosm" of "global problems": two worlds under one nation, white versus black, developed versus developing, free versus oppressed. While this analogy projects a vivid image of South African society, which is clearly bimodal in terms of the general income distribution, it is important not to take this too far. Leibbrandt et al's analysis suggests that the racial dimension of inequality in income may slowly be changing, and that policymakers should firstly notice the dynamics of *intra*-racial inequality and secondly, take care to focus on class divisions (such as income deciles) rather than simply race.

Inequality as a multidimensional problem leads us to the issue of measurement. How are we defining inequality and is this definition consistent with our understanding of how it affects outcomes such as growth and happiness? The non-money-metric approach to inequality found an increase to overall access to services since apartheid, however the quality of delivery of these services, especially education, is still seriously lacking (Leibbrandt et al, 2010:42). Thus, this paper takes steps toward measuring inequality in terms of its impact on subjective well-being or happiness.

The Problem of Measuring Inequality and its Effects

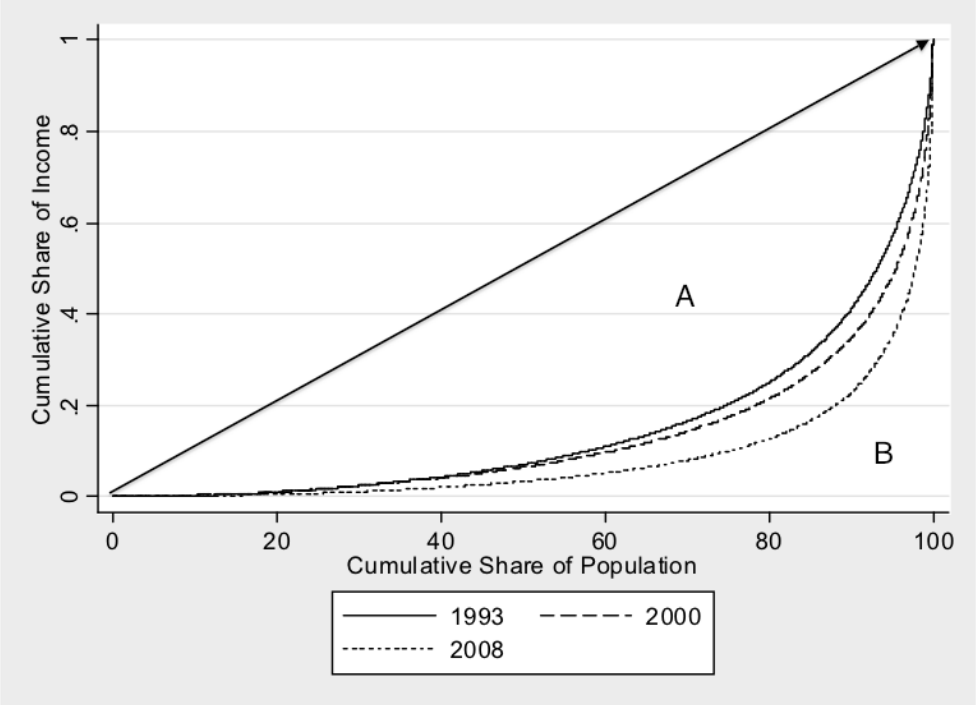
Fields (2007) believes that standard inequality measures such as Lorenz curves (and Gini coefficients) are of some importance when growth takes place, but that other aspects of inequality and poverty are more important. Inequality and poverty can move in opposite directions, thus one cannot assume, for example, that decreasing inequality will automatically decrease poverty. The Gini coefficient may not reflect the impact of a changing distribution on poverty. He shows quite clearly through a thought experiment discussed below that inequality is a vague concept, meaning different people have different perceptions of what inequality actually is. This leads him to the overarching question of how concerned policymakers should be about (traditional measures of) inequality.

Theory is ambiguous about the effect of 'Gini' inequality on growth and empirical evidence is mixed. The effect of growth on inequality depends its type, namely whether it is pro-poor or not. The Kuznets hypothesis predicts an inverted U-shape – inequality initially increases with growth and then falls, however there is no evidence of this in 80% of cases. What is clear is that poverty nearly always falls in the presence of growth (Fields, 2007:4-11). This is supported by Ravallion (2004:16), adding that growth is a "blunt instrument" against poverty unless it is accompanied by falling inequality. High inequality and slow economic growth may limit poverty reduction.

The above discussion is limited to the conception of income inequality as a Gini coefficient, which is most simply defined as the difference between the actual income distribution in a country and a the completely equal distribution in the hypothetical

case, as a proportion of the completely equal distribution (Dorfman, 1979:147). If we take South Africa's cumulative distribution function below (or Lorenz Curve), the Gini is equal to A/(A+B).

Figure 2: Lorenz Curve and Gini Coefficient calculation



Source: Adapted from Leibbrandt et al (2010: 82)

An alternative suggestion is to consider the ratio of high incomes to low incomes instead of changes in actual income. Even closer to understanding the effects of *perceived* inequality is to focus on inequality between salient groups, something Coetzee (2014) and Appelgryn & Bornman (1996) present below.

Fields (2007:12) suggests that it is inequality of opportunity that impacts economic progress most clearly. If people feel that they are being unfairly treated, they may take matters into their own hands, thereby completely disregarding the rules of the game and undermining the entire system. This is consistent with Graham & Felton's (2005) research in Latin America, which suggests that inequality (and specifically how it is conceived) works as a signal for expected future well-being. Here, we can also begin to discuss how different South Africans' perceptions of their relative income influence their support for the democratic regime.

The Importance of Inequality

Hypothesis

Evidence from Carter & May (2001) and Van der Berg et al (2011) strongly suggest that the apartheid system has left a legacy of deeply entrenched inequality in South Africa. The pertinent question here is *why* policymakers need to address this. Firstly inequality is something 'bad' in its own right. Most would agree that having the majority of the nation living in poverty whilst the rest are rich represents an unjust society (although this is an oversimplification of the South African case). Secondly, inequality is instrumentally 'bad' for the socio-economic system as a whole for various reasons discussed below. Here, one should also distinguish between the effects of 'measured' inequality and 'perceived' or 'subjective' inequality.

In his *A History of Inequality in South Africa* (2002), the concluding sentence of Sampie Terreblanche reads as follows:

> "What South Africans cannot afford is the coexistence of the conspicuous consumption of the few and the destitution of the many" (Terreblanche, 2002:470).

This appears to refer to the first reason for reducing inequality because it represents an unjust society of 'destitutes' versus 'elites'. Clearly, this view leans toward a certain Rawlsian perspective of social justice as equality of basic rights and liberties, allowing an unequal distribution of income conditional on it being in favour of the worse-off. A contrasting view is Utilitarianism, which accepts some inequality in exchange for "the greatest happiness for the greatest number" (Ott, 2005:398-399). How one interprets the reduction of inequality as the most important proponent of social justice depends on which school of thought one follows. The second interpretation of Terreblanche's conclusion, however, has a different emphasis.

The use of the word "afford" prompts one to wonder about this second reason for reducing inequality: it is *instrumental* in being damaging to something - to "South Africans". It is argued that 'our' future is interdependent, meaning 'we' cannot live side-by-side, remaining disengaged with the 'skewness' of a system we experience in everyday life. In other words, the South African identity, represented by the state and

the economy, will not survive if the current state of inequality persists. He suggests that it will fall apart (Terreblanche, 2002:441-442).

The literature presents a number of mechanisms that make inequality a 'bad' for society. This paper begins with 'measured' inequality (Gini coefficient results) or income inequality below, and then turns to 'subjective' inequality or happiness inequality in the next section.

'Measured' Income Inequality

Some of the potential effects of a high Gini coefficient have already been discussed[2]. The literature tends to focus on the negative relationship between inequality and growth to show why reducing the Gini should be a policy goal. It should be noted here that we should take care to avoid the " 'growthmanship' fetish". While growth is a means to increase the size of the pie, it is not necessarily the case that this will increase welfare. Easterlin (1974:90) famously presented the phenomenon of the "paradox of happiness", which empirically showed that an increase in long run growth did not increase average long run happiness. Increasing welfare in the South African context would primarily involve alleviating poverty (as this has clear ethical motivations) and also to create a more equitable society (although this depends, to some extent, on one's interpretation of social justice as discussed above). The bottom line is that growth is not an end in itself (Terreblanche, 2002:452).

Heeding the above concern, we see one positive and three negative channels identified by Goudie & Ladd (1999:182-187) through which inequality impacts growth. Firstly, while not as broadly supported, one could argue that an initially unequal society where most income is concentrated in the hands of a few elites could be good for growth because they have the means to channel profits back into production. However, while this increases the size of the pie, it leaves the majority 'destitute' and so this argument fits with neither the Utilitarian nor Rawlsian conception of social justice because neither the 'greatest happiness for the most people' or 'increased inequality in favour of the worse-off' is achieved.

[2] See "The Problem of Measuring Income Inequality and its Effects" on page 7

The remaining channels argue that inequality negatively affects growth. Firstly, an initially high level of inequality means that there exist people on the lower end who are credit-constrained and cannot take up productive investment options. The economy has a stifled capital base. This is the other side of the coin of the 'elitist' argument discussed above. Problematic with this view is that it assumes that a large enough proportion of the lower income deciles are, in fact, poor enough not to have access to credit. Therefore, perhaps it is more appropriate to link poverty to poor growth here. In the South African case, however, it is observed that the lower deciles have very limited access to capital, allowing limited investment into productive activity, especially due to the fact that the poor, on average, under-save (Carter & May, 2001:1991).

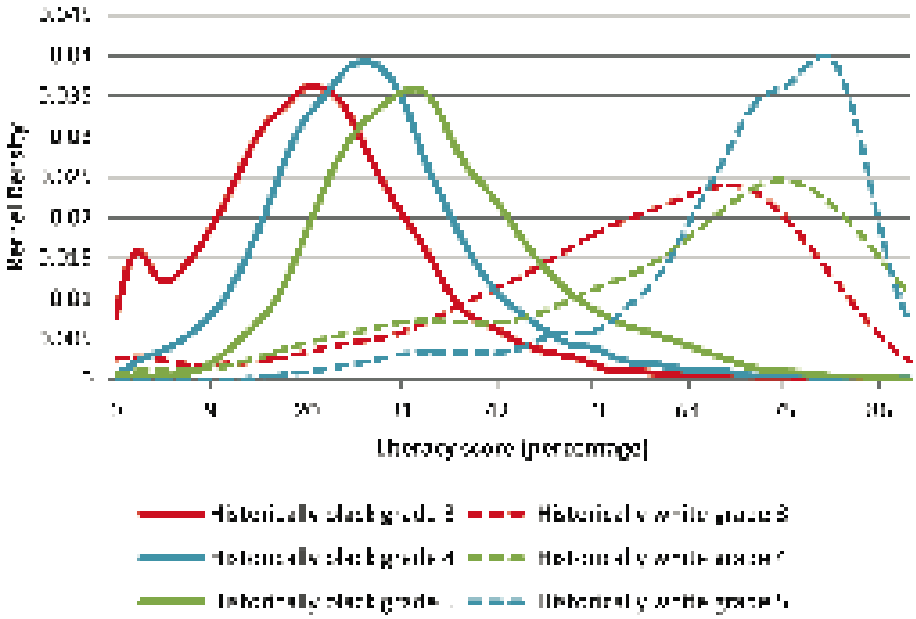
The second channel concerns distortionary market interventions. An unequal distribution of income will prompt government to intervene and redistribute wealth either directly through income transfers (social grants in South Africa), or indirectly. This intervention could distort incentives and other mechanisms, leading to inefficiency. A globally reported high Gini coefficient could also discourage foreign investment, which has negative implications for GDP growth. From a distance, foreign investors base their perception of South African inequality on measured results such as the Gini coefficient. A high Gini could signal the potential for future civil unrest, which would discourage capital investment and therefore growth (see Alesina & Perotti, 1995:1). The converse could also apply where high inequality could be perceived by foreign investors as an opportunity to expand production.

The final channel relates quite closely to the second. Government intervention in the market place is justified, in short, by needing to ensure macroeconomic stability. More specifically, high inequality is dangerous to democratic stability. If government ignores the 'losers', they may revolt or disregard the rules of the system if they believe that they are being unjustly treated. For example, they may turn to crime as a means of survival or violence as a means of protest. During the political turmoil of the 1980s, the ANC called on South Africans to "make the country ungovernable" in order to affect political change. Thus, a legacy of civil disobedience as a form of political protest has and should continue to prompt policymakers to transparently address the concerns of a previously oppressed majority.

On the other hand, if government focuses too much on the 'losers', the 'winners' may become disenchanted with the system and "vote with their feet" by detaching themselves from it. For example, the top end of the income distribution could immigrate (Terreblanche, 2002:430). Van der Berg (2007:850), in a paper entitled "Apartheid's Enduring Legacy: Inequalities in Education", makes the case that the South African school system does not enhance upward mobility of poor children through the labour market because black schools continue to perform weakly.

Consequently, the country experiences a massive skills shortage at the top-end with the majority below it being trapped in a poverty cycle. Thus, the limited top-end of achievers who are able to acquire the necessary education level to enter into high-skilled jobs which contribute to productivity in the economy are a small proportion of the population contributing to a large proportion of taxes. To lose this segment of the population would surely be an impediment to growth. Haque & Kim (1995:577-578) explain the negative effect of "brain drain" or capital flight on economic growth in an open economy – something that can be addressed only through improving the quality of education at lower levels. A similar view is presented by (Spaull 2013: 14) who emphasizes the importance of high-quality pre-school education.

Figure 3: Kernel density curves of Literacy 2007, 2008 and 2009 by ex-department



Source: Van der Berg et al (2011:7)

Fields (2007:7-13) sees no convincing *economic* case for inequality reduction, but a clear ethical case for reducing poverty. Therefore it is acceptable for inequality to rise as long as poverty falls. Firstly, whether one agrees or not will depend, once again, on one's belief in what determines an 'ethical' or 'just' system.

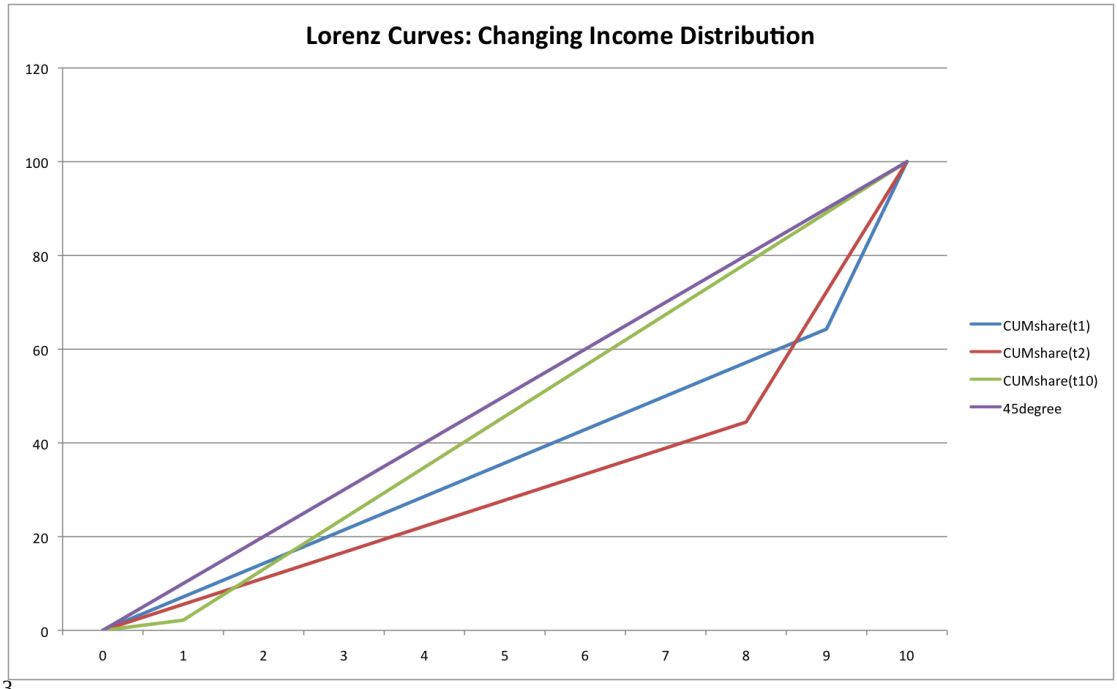
Secondly he makes use of a thought experiment to illustrate the subjective nature of inequality. Consider the following growth process:

> "Suppose there is a society consisting of n people. There is one rich person and n-1 identical poor people. One by one, some of those who were poor acquire the same income as the rich person, so that eventually there are n-1 (identical) rich people and just one poor person. What happens to inequality in this process?"

Different inequality measures behave differently here. For the income share of the poorest person, inequality increases – a situation clearly in conflict with Rawlesian ethics as changes to the income distribution should be in favour of the very worst-off. From the perspective of the income share of richest person, however, inequality decreases. For the Gini coefficient, inequality first increases (from t1 to t2) and then

decreases (from t2 to t10) (see below), and for the ratio of high to low income in the population, inequality remains constant.

Figure 4: Fields' (2003) thought experiment



[3]Source: Hypothetically constructed dataset (see Appendix 2)

Actual responses to the above test about what happened to inequality during this process were "widely scattered", revealing no clear winner. Thus, different people have different ideas about what inequality is. This provides convincing evidence that policymakers should not worry too much about standard inequality measures because the subjective nature of inequality as a concept is what makes it so difficult to manage, and consequently so dangerous to the system. He suggests they worry more about inequality of *opportunity*, and most about poverty. Opportunities provide signals for future mobility, which influence how individuals perceive their future income relative to others. The following section argues for the *perception* of inequality as being most detrimental to welfare.

[3] The gap between the 45-degree line and a given line below it indicates the Gini measure. A smaller gap indicates a lower Gini and therefore lower inequality.

‘Subjective’ Inequality (Happiness)

The Case for (Subjective) Inequality of Happiness

It has been said that pro-growth could be a means to increasing overall welfare (or happiness). Therefore, welfare is the end in itself, and not growth. Drakopoulos (2008:303-307) refers to Easterlin’s (1974) “paradox of happiness” to explain how an increase in per capita income does not necessarily always increase individual happiness in a country on average. This suggests that there is something more that is driving happiness than just per capita income. Also, in a heterogeneous society such as South Africa, a measure of the *average* level of happiness provides an extremely limited description of what drives individual happiness. Therefore, firstly, since per capita income is not a perfect proxy for individual happiness, one cannot *only* consider measured income inequality when evaluating its effect on social welfare. Secondly, due to heterogeneity, neither an individual’s actual position on the income ladder nor his subjective perception of his position can be assumed to enter his utility function in the same way as another, different South African.

Fields’ (2007:8-10) thought experiment has already revealed inequality to be a vague and fluid idea for a given individual, and that one should therefore focus on inequality ‘as perceived’ instead of ‘as measured’ in order to ascertain its broader effects. As an example to illustrate the differing effects on happiness of perceived inequality, Graham & Felton (2005:120) find that, in countries with inefficient labour markets, limited mobility and a large gap between rich and poor, the poor perceive inequality as a signal of persistent disadvantage while the rich perceive it as a signal of persistent advantage. For South Africa, this paper attempts to understand how different race groups perceive their subjective well-being, relative to other reference groups, relative to their expectations, and how this enters their utility function.

Theoretical Arguments

South Africa’s broad social diversity classifies people as different from each other in terms of race, language, culture, and so on, with many different options within each classification. Therefore, while it is important for policymakers to get an idea of the national sentiment (overall happiness), it is crucial to understand how the utility functions of each group differ. If we accept (theoretically) that own income enters the

utility function positively for all South Africans, and that the predominant pattern of the income distribution is that whites are, on average, richer than blacks (see fig. 1), then it is appropriate to compare the impact of inequality on subjective well-being across race groups.

In addition to this, Posner (2004:859) confirms the common finding in African growth literature that ethnic fractionalization significantly negatively impacts long-run growth in Africa (see table 3). And since lower growth almost always implies less income (a smaller pie to be shared), it should decreases happiness, ceteris paribus. While it may be going too far to presume that an increase in ethnic fractionalization itself causes low growth in Africa, this essay has already suggested how inequality could be bad for growth. It will be confirmed by Coetzee (2014) that income disparity along ethnic lines may cause disutility, and this could have negative socio-political consequences.

Table 3

Ethnic Diversity and Long-Run Growth (Dependent Variable is Growth Per Capita Real GDP)				
OLS Regression				
	All Cases	*Africa Only*		
	(2)	(3)	**(4)**	(5)
ELF	-.022*** (.004)	-.013 (.004)		
PREG			**-.027***** **(.010)**	
PREGDEC				-.022* (.010)
Decade Dummies	yes	yes	yes	yes
No. of observations	309	109	111	105
Adjusted R^2	.21	.12	.12	.13

Source: Posner (2004:859)

Appelgryn & Bornman (1996:381-397) introduce the concept of 'relative deprivation' as a proxy for the negative effect of perceived inequality on subjective well-being. It is defined as, "the subjective feeling of discontent based on the belief that one is getting less than one is entitled to". In other words, relative deprivation is the amount of unhappiness caused by the difference between what one expects to 'get' and what one actually receives. In terms of 'getting', this does not directly refer to the amount of expected income. Rather, an individual's 'aspiration' and 'realisation' are measured by subjective self-assessment in terms of a ranking scale (see pages 383-385).

One can conceptualise relative deprivation as the following:

$$\textit{Relative Deprivation} = \textit{Aspiration} - \textit{Attainment}$$

If we accept 'aspiration' as a subjective expectation of future welfare and 'attainment' as an actual achievement of welfare (of which per capita income dependent on growth plays a large role), we can begin to understand the interplay between measured outcomes such as growth and perceived outcomes. Interpreting this equation, if aspiration is larger than attainment, relative deprivation is positive (and one feels less happy). If attainment is larger than aspiration, relative deprivation is negative (therefore one feels less relatively deprived and therefore happier). Further theories discussed focus on perceived outcomes, specifically how the relation to other reference groups alters perceived outcomes, but the above equation has a clear policy implication. In order to manage relative deprivation as the gap between aspiration and reality, policymakers have both political and economic options. Politically, they can influence perception in order to keep aspiration relatively low. Alternatively, they must achieve the economic goal of higher growth in order to 'close the gap'.

The first argument made by (Ravallion 2004) is that the rich care more about relative deprivation compared to the poor, who care about absolute income. This appears to be consistent with Drakoupolos' (2008:304) explanation for the "paradox of happiness" - that there is a decreasing marginal effect of increasing income on increasing happiness because as individuals have more income, they care less about another unit

of income than do their poor counterparts. This is confirmed by South African income data, showing that individuals at initially low income levels are more positively affected by an increase in income than those at the top end, where the top where relative income is more important (Kingdon & Knight, 2007:69). While this may be true, it does not mean that the poor do not care about their relative income at all or, more subjectively, their perception of where they place on the income ladder. This view is explored below with reference to the work of Coetzee (2014).

Accepting that a given individual evaluates his well-being in comparison to some defined reference group, one could further expect such a reference group in the South African context to be delineated along racial, and geographical lines. This is the result of Kingdon and Knight's (2007:86) 'convivial village hypothesis' in which individuals become happier if their close peers are doing well and less happy (envious) when strangers are doing well. 'Doing well' here refers not only to the income dimension, but to unemployment and education as well. Coetzee's (2014) study of subjective well-being and reference groups attempts to answer three questions. Firstly, how are reference groups (in terms of separating neighbours from strangers) defined in South Africa? Secondly, how does an increase in income for a reference group affect an individual's utility function? Thirdly, how important is a different group's income in affecting one's happiness, in other words, how much weight is placed on other groups?

The findings that emerge from this study provide a necessary update to the existing literature. Firstly, although reference groups have widened slightly since 1994, race might still play some role. In terms of how individuals weight their own group's relative standing compared to other groups, it was found that the largest weight is still placed on one's own group when evaluating subjective well-being compared to other individuals.

Table 4

Non-linear estimation of preference parameters		
Dependent variable: SWB	*Specification*	
	(13)	***(14)***
Weight on own race	1.022*** (0.019)	**0.757***** **(.185)**
Weight on income	0.193*** (.053)	0.214*** (0.063)
Weight on others in cluster	1.574* (0.860)	1.788** (0.896)
Weight on others in district	0.953 (0.787)	-0.523 (0.684)
Weight on others in country	-1.917*** (0.633)	-0.806* (0.433)
African	-1.000*** (0.113)	-0.558*** (0.195)
Coloured	0.225 (0.178)	0.420** (0.165)
Asian/Indian	0.132 (0.255)	0.210 (0.249)
Number of observations	12506	12506
Number of clusters	400	400
Number of districts	53	53
R squared	0.095	**0.119**
Additional individual controls	Y	Y
Household controls	N	Y

Source: Coetzee (2014:39)

Finally, the convivial village hypothesis appears to be confirmed. The relative well-being of neighbours positively influences individual utility while that of groups living further away has a negative effect. This paints a plausible picture of someone living in a township reacting negatively to the increased wealth of someone living in a rich suburb, but positively to seeing his next-door neighbour receiving a raise. While the convivial village hypothesis proposes that neighbours are altruistic, these results could

also indicate that individuals experience relative inequality as a signal of future outcomes (Coetzee, 2014:26-27).

One may go as far as to say that inequality is a 'bad' entirely *because* it is a signal concept. Graham & Felton (2005:120) have shown that inequality is a signal of persistent disadvantage for the poor in Latin America. Similarly, in South Africa, a weak education system constrains upward mobility in the labour force, causing the large gaps in income observed today (see Van der Berg et al, 2011:8). Coetzee's findings could suggest that the poor black majority "envy" the rich who are, for the most part, socio-economically separate.

Agnew et al (2002:44) suggest "general strain theory" to explain why individuals may exhibit deviant behaviour in a society when there exists a disjuncture between their socially-conditioned goals and the socially-constructed means to achieving them, thus leading them to experience a state of "normlessness". If large gaps in income are observed by the poor in close geographical proximity to the rich, they may, indeed, experience themselves as socially 'strained' and therefore normless. Work by Gibson (2003) expands this idea by evaluating the negative impact that this sentiment may have on the perceived legitimacy of and support for democracy as a system.

Graham & Felton (2005:120) have already suggested that the signaling mechanism at the top end works such that inequality enters the utility function positively. In a related study, Alesina et al (2002:21) claim that rich Americans are more concerned with inequality because they perceive the system as accommodating to mobility, thus believing that individual action can make a difference to overall inequality. Therefore, inequality could be a signal that triggers altruistic behaviour consistent with the convivial village hypothesis. Perhaps this means that in a highly mobile society such as North America, the reference group is much broader – the 'village' is bigger.

Conversely, if the richest of society believe that inequality works as a signal for the poor in the type of immobile and inefficient system that describes South Africa, then both perceived inequality and measured inequality could act as a signal for socio-political instability. It is shown by Alesina & Perotti (1995:18) that political instability decreases investment. In South Africa, a case can already be made for this

as we see white 'elites' immigrating in fear of a potentially deviant, 'envious' or 'socially-strained' majority. If inequality is, indeed, a signal to the top end, both Terreblanche (2002:470) and Appelgryn & Bornman (1996:398) agree that "the estrangement of whites" is something South Africa cannot afford. Standard measures of inequality carry this signal to the international community, whose investment decisions may depend strongly on whether South Africa appears to be a politically stable society, and thus a 'safe' investment.

Before assessing the empirical evidence, it is useful to review what claims have been made in this section. Firstly, relative deprivation as the 'gap' between aspiration and expectation links the subjective and quantitative elements of income distribution. Secondly, reference groups may be strongly delineated by race with more importance being placed on one's own race group. The increased welfare of other, further-removed groups enters the utility function negatively while it enters positively for neighbours. Finally, this may be so because inequality acts as a signal that perpetuates the current distribution.

Empirical Evidence

While theoretical claims about subjective inequality stem from a broad intuition of its underlying mechanisms, three empirical studies using South African data present evidence relating to the claims above.

Appelgryn & Bornman on Relative Deprivation

Appelgryn & Bornman (1996) use a questionnaire survey that was conducted in Pretoria by the Human Sciences Research Council just before the 1994 election to conduct a study that uses the concept of relative deprivation to assess intra- and inter-group attitudes for white Afrikaans-speaking, white English-speaking and black groups. Current (1994) and future predictions of relative deprivation may help to explain current attitudes. Specifically, on the eve of the new political dispensation due to "post-election euphoria", an over-optimistic black group and over-pessimistic white group was expected to be observed.

Both white groups expressed little or no feelings of deprivation in 1994, but anticipated a future increase in relative deprivation in comparison to the black group,

due the expectation that output would decrease. Recall that *Relative Deprivation* = *Aspiration* - *Attainment*. Relative deprivation should increase due to a drop in attainment. Expectations have strangely counteracted this initial finding. While output did not drop in the years following the election, decreased white aspiration maintained the predicted level of relative deprivation. The white groups, do not feel as relatively deprived post-1994 as they expected to feel.

The black group reported current relative deprivation on both a personal and group level, in the political dimension. Future (or "progressive") relative deprivation, however, provides a sharp contrast. The 1994 election created heightened positive expectations for future conditions of disadvantaged groups and also induced them to compare themselves more closely to the disadvantaged group. Strikes and protests in the post-election period substantiates the claim that future relative deprivation actually increased because expectations could not realistically be met. In other words, aspiration increased but attainment did not, thereby increasing relative deprivation.

Table 5

Mean Scores for Measurements of Relative Deprivation in Various Situations						
	Afrikaans Whites		Blacks		English Whites	
Comparison group	Personal	Group	Personal	Group	Personal	Group
The work situation						
Afrikaans Whites						
M	9.9	-	**5.3**	**6.2**	9.6	10.0
SD	1.8	-	3.6	3.7	2.1	0.9
Blacks						
M	**11.7**	**11.9**	9.1	-	**12.8**	**13.1**
SD	2.9	2.6	2.7	-	2.4	1.9
English Whites						
M	9.6	9.8	**4.7**	**5.6**	9.6	-
SD	1.9	0.8	3.2	3.2	2.1	-

Source: Appelgryn & Bornman (1996:387-388)

Inter-group attitudes revealed that Afrikaans-speaking whites expressed more negativity towards the black group than other whites, particularly regarding work-

related variables. This group also identified most strongly with itself, the mean score for ethnic identity being the highest (37.9) compared to English-speaking whites (35.0). This appears consistent with Tajfel's (1981) social identity theory that a positive ethnic affiliation is associated with negative attitudes towards other race groups. English-speaking whites expressed negativity towards the black group more weakly, but only with regard to retrenchment and affirmative action policies.

Finally, black attitudes were negatively associated with whites in general and particularly in terms of political deprivation. Interestingly, the expectation of increased socio-political outcomes for English-speaking whites was associated positively with black attitudes, however this relationship did not hold for attitudes towards Afrikaans speakers. In general, it was deduced that factors affecting political, social and financial positions of groups will have an important impact on inter-group attitudes (Appelgryn & Bornman, 1996:394-396).

Coetzee on Subjective Well-Being and Reference Groups ('Aspiration')

Coetzee's (2014) results have already been broadly stated above. The study above began to show that the feeling of different race groups toward other groups and toward their own group was influenced by their expectation of the future in relation to what actually transpires (relative deprivation). Coetzee's results, based on the National Income Dynamic Survey (NIDS) data from 2007, attempt to deduce whether the separation of groups along racial lines is, in fact, an accurate reflection of how individuals formulate reference groups. She then looks further into which direction and with what magnitude race groups and spatial groups success affect each others' subjective well-being.

Firstly, an ordered probit model was used with geographical variables in order to capture the reference group (in terms of the spatial characteristic). It was found that the relative well-being of those living in the same residential cluster entered the utility function positively, while that of those living far away, particularly in other provinces of the country, entered the utility function negatively. It was then tested whether these reference groups are, in fact, defined mostly by race. While it was found that residential clusters were often racially concentrated, for example, 82% of black

individuals lived in clusters where there are no other race groups, it was not certain whether reference groups were racially delineated (Coetzee, 2014:18).

Finally, in light of the above findings, she attempts to test for whether any racial integration has taken place since 1994 by creating a non-linear model that estimates the weight placed on own race compared to other races, while controlling for weight placed on geographic distance from others. It is found that while some integration may have taken place, the coefficient on own-race is by far the largest. Thus, individuals tend to stick to their own race group as a reference point when evaluating subjective well-being (Coetzee, 2014:26-27).

Table 6

Non-linear estimation of preference parameters using mean of log income			
Dependent variable: SWB	*Specification*		
	(25)	(26)	(27)
Weight on own race	0.946***	**0.862*** **	**0.790*** **
	(0.095)	(0.116)	(0.158)
Weight on income	0.222***	0.239***	0.242***
	(0.062)	(0.059)	(0.058)
Weight on others in cluster	1.146*	1.023*	0.742
	(0.677)	(0.596)	(0.494)
Weight on others in district	0.526	-0.738	**-0.634**
	(0.896)	(0.767)	(0.646)
Weight on others in country	-2.888***	**-2.206*** **	3.077***
	(0.900)	(0.431)	(1.095)
Number of observations	12505	12505	12505
Number of clusters	400	400	400
Number of districts	53	53	53
R squared	0.117	**0.137**	**0.139**
Individual controls	Y	Y	Y
Household controls	Y	Y	Y
Fixed-effects	N	Y(provincial)	Y (provincial and urban-rural)

Source: Coetzee (2014:44)

Gibson on the Racial Legitimacy of Democracy

The previous two studies have attempted to unpack the attitudes of different race groups toward each other and their own group. Gibson's (2003) study now turns to differing attitudes about democracy. Previous literature found that race largely determines the level of legitimacy afforded to the democratic institution, and thus South Africa's apartheid past continues to shape its democratic development.

Gibson attempts to separate race from other characteristics to test whether something other than race is driving democratic attitudes. His approach is based on political theory proposing that democracy is unlikely to be consolidated in a nation deeply divided along ethnic or other lines. Unless "broad normative and behavioural consensus" is achieved regarding the legitimacy of the overall system, the system itself will be too fragile to be successful, especially when intergroup conflict potential is high. It is suggested that as long as deep divisions persist, especially along so easily-observable a cleavage such as race, the democracy cannot be consolidated (Gibson, 2003:774-776).

The first finding is a weak but positive relationship between perceived quality of life and support for democratic processes and institutions. Those who reported a higher level of subjective well-being were more likely to buy into democracy. Secondly, it was expected that a positive perception of economic outcomes would be associated with increased institutional support. In other words, people view democracy instrumentally as a vehicle to achieve better economic outcomes. This is in line with Mattes' (2002:31) theory that the gap between the substantive (economic) and procedural (political) understanding of democracy is large. Interestingly, a negative relationship between economic outcomes and perceived legitimacy was found[4]. Thus democratic legitimacy appears not to be dependent on economic performance, but positively dependent on overall perceived quality of life (Gibson, 2003:790-791).

Thirdly, the study attempted to ascertain whether belonging to one of the four race groups (white, black, Coloured or Asian/Indian) could predict democratic attitudes. When defining this characteristic in terms of dummy variables, none of them achieved

[4] See Table 6 in Gibson (2003:790) for the full regression output

statistical significance, thus it would appear that race matters little for democratic support, ceteris paribus. However, when comparing whites with non-whites, it is found that whites extended considerably more legitimacy to democratic institutions.

Table 7

Determinants of Support for Democratic Institutions and Processes						
	Race/Ethnicity					
	African			White		
	b	*SE*	ß	*b*	*SE*	ß
Level of education	.36	.13	**.06****	1.19	.25	**.20*****
South African identity	.09	.31	.01	1.33	.57	.09*
Psychological benefits of identity	.03	.14	.01	-.06	.24	-.01
Group solidarity	-1.31	.19	**-.16*****	-1.92	.37	-.23***
Life under apartheid	.28	.11	.06**	-.23	.25	-.04
Individualism	-.13	.26	-.01	1.05	.44	.10*
Dogmatism	-2.10	.23	-.20***	-2.44	.39	-.27***
Intercept	5.08	1.26		4.52	2.54	
R			.28***			.57***
SD-dependent variable		6.59			7.15	
SE of estimate		6.34			5.39	
n	1913			470		

Source: Gibson (2003:792)

A final striking finding is that, when incorporating interactive effects, increasing the level of education increases white support for democracy, but has no effect for other race groups. Therefore, it has a variable impact on attitudes, failing to produce democratic values among the majority. This could have multiple explanations. It may support the idea that different levels of education affect how individuals relate to each other. Maslow's (1958) hierarchy of needs suggests that consciousness is dominated by the 'highest' need that can be attained by a given individual during his growth cycle[5]. Education is a means to achieving food and security at the bottom, but a psychological means to the end of achieving the self-esteem and self-actualization

[5] See appendix for diagram of Maslow's Hierarchy of Needs.

needs at the top. Since whites have a higher mean income, it is more likely that they have overcome the lowest four "deficiency" needs, and operate on a higher level than the average black South African. Therefore it follows that education affords "cognitive mobilization" to the top end, urging them to participate in politics as an end in itself, while it almost misses the bottom end, who cannot yet operate on that level (Maslow, 1958:394-396).

Also, if one assumes that the average black person operates between the 'security', and 'love' level, he values his "..all-powerful parents who protect and shield him from harm". This is consistent with Gibson's finding above that blacks exhibit strong group solidarity and this is negatively associated with support for democracy. They identify with their immediate reference group rather than the nation as a whole and consequently see their "all-powerful parents" as their community leaders rather than the government (Maslow, 1958:378).

In sum, Gibson's education result may point to the deep inadequacies of the current education system, revealing that, alongside delivering extremely disappointing results in terms of academic achievement, the system is nowhere near able to foster a more democratic political culture in South Africa (Gibson, 2003:795-798). Policymakers have yet to create sustainable mechanisms to foster the legitimacy crucial to the regime's survival.

Table 8

The Interactive Effects of Race on Support for Democratic Institutions and Processes			
	Race/Ethnicity		
	White	Coloured	Asian Origin
Race Dummy Variable	n/s	n/s	n/s
Interaction terms – race with…			
Level of education	**.004**	n/s	n/s
South African identity	.065	n/s	.079
Psychological benefits of identity	n/s	n/s	n/s
Group solidarity	n/s	n/s	n/s
Life under apartheid	.075	n/s	.006
Individualism	.025	n/s	n/s
Dogmatism	n/s	n/s	n/s

Source: Gibson (2003:795)

Conclusions

This section has attempted to unpack the idea that South Africa is a heterogeneous society in which each individual experiences a certain level of subjective well-being that may be determined by numerous combinations of a range of diverse factors. Appelgryn & Bornman focus on the intertemporal nature of subjective well-being and how this affects inter- and intra-group attitudes with regards to certain expectations. Coetzee examines in which direction and magnitude the relative well-being of different spatially-determined reference groups entered an individual's utility function. Finally, Gibson shows how perceived quality of life influences support for democratic institutions, if this is associated with race (indicating the persistence of the apartheid legacy) and how other variables such as education enter.

On the eve of the new political dispensation whites reported low expectations (anticipation) for the improvement of future well-being. Since then, actual economic outcomes (attainment) modestly improved with GDP growth remaining positive and the income distribution barely changing. Thus relative deprivation can be said not to have increased, in other words white people are happier today than they expected to be. They were also found to be generally more supportive of the democracy, which fits with the finding that a higher perceived quality of life increases democratic

support. With reference to own race, the realization that life has not, in fact, deteriorated for their 'neighbours' since 1994 sends a positive signal that perhaps this positive outcome will persist. Since more weight is placed on own race group in determining happiness, this explains the relatively high perception of quality of life. However, for those residing in less homogenous areas, the experience of high perceived inequality along racial lines may signal future relative deprivation as "times ahead" are expected to be difficult in the presence of interracial envy.

One can sketch out a contrasting narrative for a given black individual. Moller (2001:40) explains the relative deprivation dynamic by explaining that, "…during South Africa's brief election euphoria political freedom appears to have had a decisive positive impact on black feelings of well-being but it was not able to sustain happiness." Impossibly high anticipation of future well-being has not been met with actual outcomes. Moderate growth accompanied by little amendment to the distribution of income, for the majority of the black population, has created a low level of current subjective well-being - this failing to foster support for democratic processes and institutions.

"By mid-2000… 31 percent of blacks said their lives were worse now than under apartheid, up sharply from 13 percent in 1997" (Mattes, 2002:32). Invidious (envious attitudes towards 'further away' groups) and convivial (altruistic attitudes towards closer 'neighbours') village effects are strongly confirmed here. The weaker effect of the white group experiencing a better quality of life than perhaps anyone expected them to has decreased utility for the black group. The stronger effect of the lower-than-expected quality of life experienced by the majority of black individuals, and their surrounding neighbours may be a signal of persistent structures of disadvantage. The increased quality of life experienced by a small group of black individuals who gain mobility and are able to move into more affluent areas could have either a positive or negative impact on the less fortunate black individual's utility. If he still identifies strongly with this black group, he may receive a signal for future mobility. However, if he no longer weights this group strongly, he may experience a small, negative signal consistent with the invidious hypothesis.

A brief consideration of the limitations of the above arguments should be given. Firstly, both the work of Appelgryn & Bornman and Gibson come from relatively unrepresentative samples. The creation of a new empirical model that attempts to amalgamate the findings of the three studies using, for example NIDS data, could be an extremely valuable extension to this paper. Theoretically, Gibson's suggestion that increasing the quality of education for the majority could increase support for the democracy hints at the issues of indoctrination. The critical social philosophy of Herbert Marcuse (1969:132) suggests that even a highly developed education system does not amount to cognitive, socio-political and therefore economic, freedom at all but rather inevitably enslaves the minds of the majority.

Finally, there is a fundamental problem with Appelgryn & Bornman's theory of relative deprivation. If the government is able to somehow improve the income of the worse-off, attainment increases, which decreases relative deprivation. However, this may have a feedback effect by increasing aspiration (the expectation that things will *continue* to improve), which, if not attained, will again increase relative deprivation which, as we have seen, has an impact on political perceptions an therefore on growth. Thus, this framework may suggest that the government experiences a self-defeating feedback loop that could disincentivize the improvement of social welfare on a large scale.

Inequality affects subjective well-being as an amorphous concept rather than as the concrete, measured result that policymakers currently focus on. Thus, when trying to address policy issues that may be caused by inequality, they should focus more on the role of relative deprivation (as an intertemporal concept), and reference groups in forming perceptions of inequality rather than just the Gini coefficient and its relation to growth.

Addressing Inequality at Three Levels

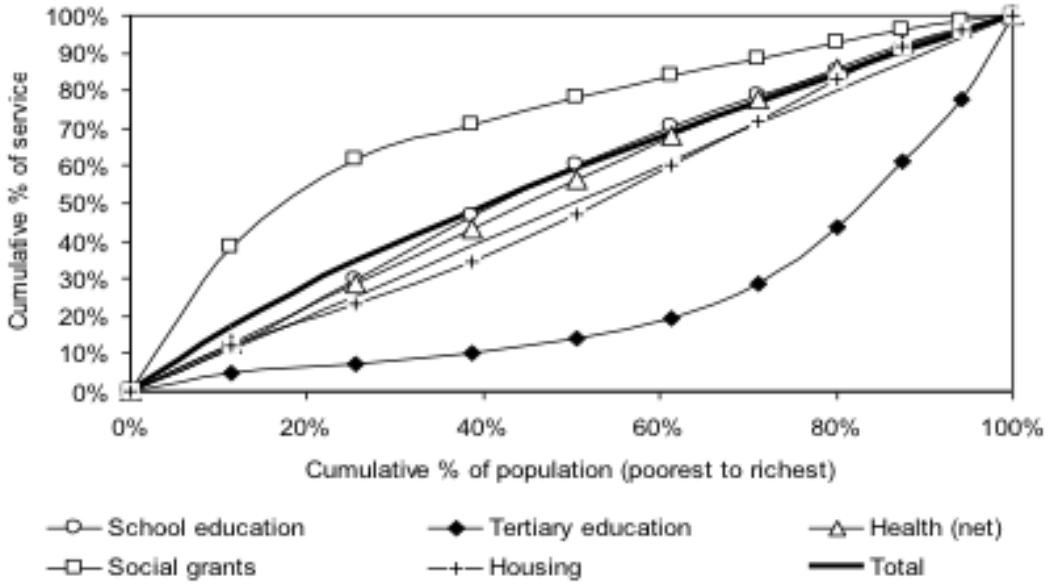
Thus far, the mechanisms that influence inequality and the negative effects that result from inequality for society in an ethical and instrumental sense, have been discussed at length. It therefore seems appropriate to discuss what decision makers have done and what they still could do to address inequality. Traditional direct and indirect

interventions target measured inequality. This essay proposes a third, more contentious category of intervention – the opportunity to influence perceptions of inequality.

Direct (Redistribution of Income)

Social assistance in South Africa is well developed in comparison to international standards, and has generally been well-targeted towards the poor. The figure below shows a series of concentration curves for social spending programmes. If the curve lies above the diagonal, it is strongly equity enhancing because the poor receive a higher actual share of spending than their proportional share. The three largest social grants are the old-age grant, child support grant and disability grant. These are characterized by a direct non-contributory cash transfer or in-kind grant. Van der Berg et al (2010:30) report that the incidence of poverty would have been one third higher in 2005 had it not been for these and other grants. It is shown in the figure below that social grants are the most welfare enhancing compared to other government expenditure programmes.

Figure 5: Concentration curves for social spending programmes (2000)



Source: Van der Berg et al (2010:14)

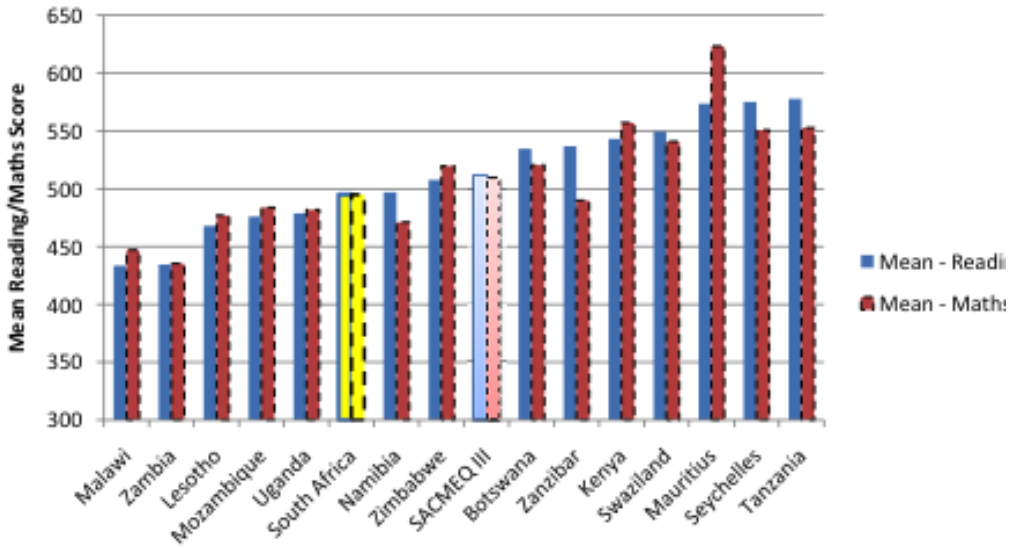
While scope remains for identifying the exact incentives that may arise from such a system, it suffices to say that social assistance in the form of grants could be reaching

its maximum possible level allowed by the budget. Van der Berg (2010:19) identifies two capacity constraints, fiscal and state, which limit the future effect of transfers on inequality. Fiscally, grant spending already constitutes a large portion of GDP. In terms of the public sector, it has failed to translate this spending into improved outcomes for the poor.

Indirect (Structural Change)

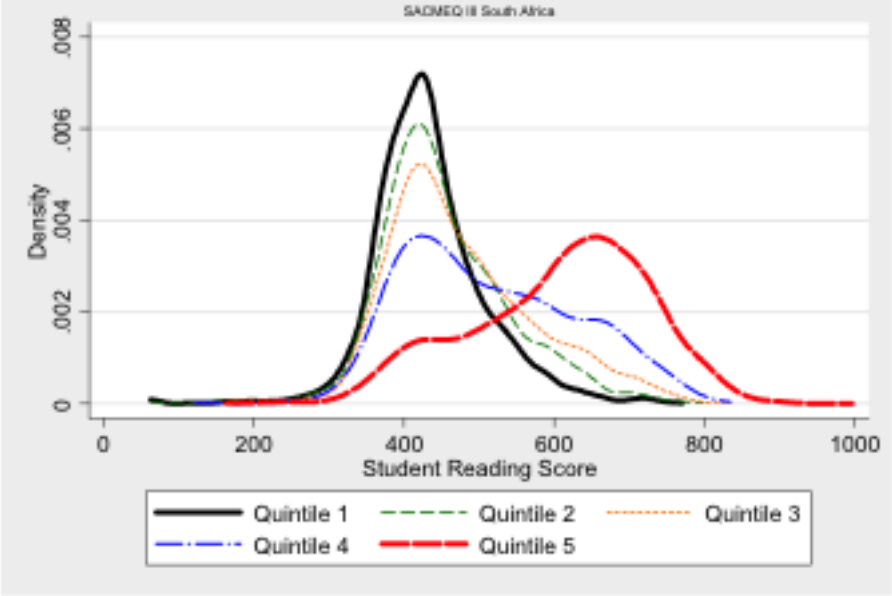
The government can also use its budget to address the mechanisms underlying poverty and inequality dynamics. The previous figure shows the concentration curves for education and health spending in 2010, showing them to be less well targeted than grants. Additionally, Burger (2005:2) identifies the core problem here: "…there is no necessary relationship between expenditure on services and service outcomes". Specifically regarding education, Spaull (2011:43) reveals South African mean math and reading scores to be below the SACMEQ average. This result can be decomposed to reveal that the top SES quintile presents results significantly higher than the bottom four. Thus, while spending on school education is relatively well-targeted, it has failed to improve outcomes for the poorest portion of the population.

Figure 6: Mean Reading & Maths (SACMEQ III)



Source: Spaull (2011:43)

Figure 7: Kernel Density of Student Reading Score by SES Quintile (SACMEQ III South Africa)



Source: Spaull (2011:9)

For discussions on the failure of service delivery, and possible solutions, in health and other public service sectors, see Burger (2005). A paper by Alexander (2007) discusses the failure of affirmative action to create equality in the workplace due to the fact that it has, to a large extent, perpetuated racial identities rather than undo them. In general, attempts at structural change by the government have yet to largely translate inputs into quality outputs.

Fundamental (Influencing Perception)

While the direct and indirect interventions mentioned above target measured inequality by trying to affect the income distribution in a way that decreases the overall Gini coefficient or 'fattens up' the bottom end of the Lorenz curve, policymakers could find opportunities regarding the subjective nature of inequality. The behaviour of government in attempting to influence perceptions could easily be branded as 'mind control'. It is undemocratic for those in power to disregard freedom of individual thought, and political history is scattered with the failure of autocratic and totalitarian regimes, apartheid South Africa itself being a vivid example. This being said, it is at least in some part the duty of leaders to inspire common identity within the group for the purpose of efficiency. It is also accepted in a democracy that the powerful may legitimately influence expectations. The South African Reserve

Bank's inflation-targeting monetary policy regime provides an example of such a strategy.

Returning to Appelgryn & Bornman's concept of relative deprivation as the 'gap' between attainment and aspiration, attainment can generally be interpreted as economic growth and how it is distributed. The direct and indirect interventions discussed above target this component. The more subjective component, aspiration, refers to expectations of future well-being. If these expectations can be influenced, relative deprivation can be influenced.

Coetzee's work hints at two avenues that may be open to influence. Firstly, it could be possible that the reference group can be expanded, thereby extending the dominant convivial village effect to 'more' neighbours. Gibson (2003:775) suggests that a more cohesive national identity will induce a broad normative consensus crucial to consolidating the democracy. While attempting to entrench a deep-seated unified South African identity that cuts across ethnic and racial cleavages is a desirable goal, it is highly impractical to achieve, especially in the short- to medium-term.

Therefore, perhaps policymakers should look to utilize the 'village' effects that currently appear to hold in South Africa. In other words, instead of trying to change the reference group, they should seek to minimize the 'envy' effect of far-off groups' increase in well-being and maximize the positive effect of neighbours' well-being on an individual's happiness. A negative signal is sent in a highly unequal society with a large gap between rich and poor when both sides perceive limited or no mobility within the system. Thus, policymakers could look to influence perceptions of mobility, thereby influencing the direction of the signal.

A way in which this can be achieved is to create tangible mechanisms through which the 'losers' of society recognize an opportunity to move up the income ladder. Direct spending is an effective but not sustainable tool. Putting these mechanisms in place (and making sure they work correctly) refers to the indirect interventions measured above. Therefore, what is left is to ensure that individuals firstly *recognize* these mechanisms as opportunities for upward mobility (preventing perverse user incentives), and secondly to ensure that they do actually result in upward mobility –

especially initially – as the success of such policies is what will induce the positive effect of a neighbour's upliftment on individual utility, and thus increase the legitimacy of the democracy.

Finally, returning to the concept of relative deprivation, one may notice that the closer attainment is to aspiration, the lower the relative deprivation. Therefore, ensuring the stability of the system entails a delicate challenge of managing expectations so as to 'match' them as closely as possible to outcomes.

Conclusion

It is largely uncontested that the legacy of apartheid has left deeply unequal divisions in South African society. For income inequality, the standard measurement is the Gini coefficient. This essay has presented the results found in the NIDS data corresponding to this inequality measure as well as poverty measures, focusing mostly on racial differences and finds that while the poverty headcount has fallen, intra-racial inequality has increased since 2000.

It is then suggested that these quantitative measures may not be providing the necessary insight for unpacking the mechanisms that determine the negative effects of inequality. After presenting the case for 'measured' inequality as a 'bad' for society, we then turn to theoretical and empirical evidence that investigates how subjective perception of others' wellbeing as well as future wellbeing enters the utility function. Firstly, we find that individuals feel more 'relatively deprived' the wider the gap between their aspiration (future expectation) and attainment (actual experienced outcome). Secondly, we find that individuals are happier if those in close proximity to them experience a higher quality of life (altruism) and less happy if those far away from them have a higher quality of life (envy).

These results are then combined with empirical work attempting to ascertain what drives support for democratic institutions and processes in South Africa. It is found that, all else constant, groups reporting a higher level of subjective well-being are more likely to perceive the democracy as legitimate. Thus, we may tentatively conclude that finding a way to keep the most people as happy as possible should

increase support for democratic institutions and thus enable the system to function efficiently.

A brief overview of direct policy interventions attempting to change the distribution of income in South Africa is presented, after which it is suggested that there may be a delicate 'window' of opportunity for policy to exploit the finding that inequality is detrimental *because* it is subjective, and that perceptions of inequality could be influenced in a legitimate manner, by signaling opportunity for instance, in order to move closer towards democratic consolidation, and improve the efficiency of the overall democratic system. Such a strategy could assist higher GDP growth in a manner that fundamentally recognizes growth not as an end in itself but as a self-enforcing means to achieveing higher levels of subjective well-being for each individual.

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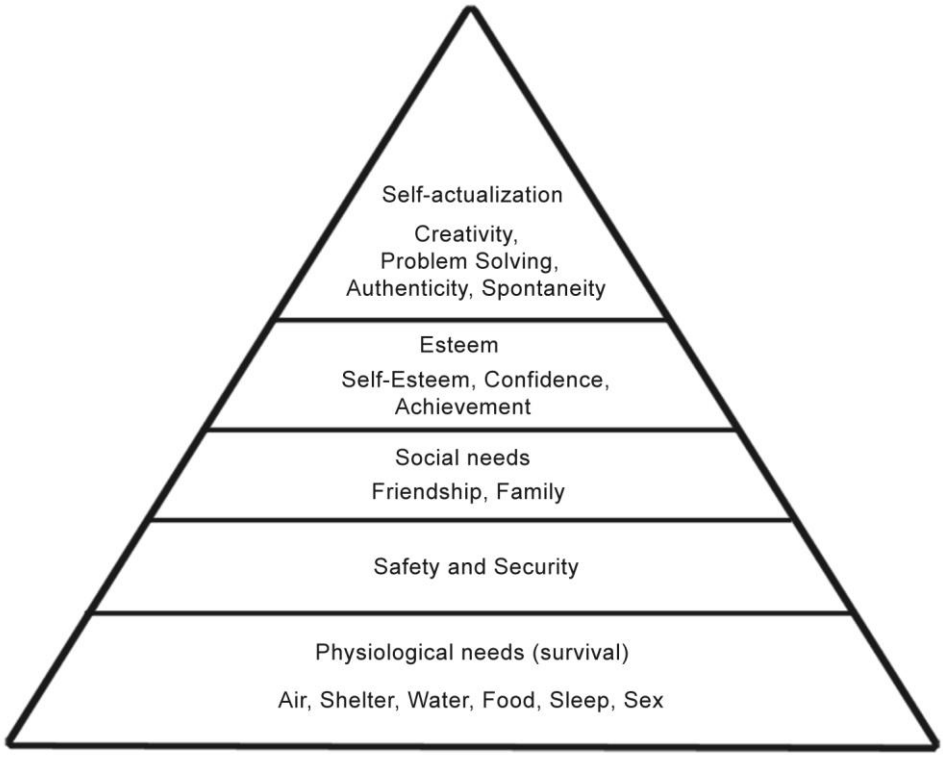
Appendix 1: Maslow's Hierarchy of Needs



Source: Adapted from http://communicationtheory.org/maslow%E2%80%99s-hierarchy-of-needs/

Appendix 2: Hypothetical Data for Fig. 4

Person	IncomeA	ShareA	CUMshare(t1)	IncomeA2	ShareA2	CUMshare(t2)	IncomeB	ShareB	CUMshare(t10)
0	0	0	0	0	0	0			0
1	1	7,14	7,14	1	5,56	5,56	1	2,17	2,17
2	1	7,14	14,29	1	5,56	11,11	5	10,87	13,04
3	1	7,14	21,43	1	5,56	16,67	5	10,87	23,91
4	1	7,14	28,57	1	5,56	22,22	5	10,87	34,78
5	1	7,14	35,71	1	5,56	27,78	5	10,87	45,65
6	1	7,14	42,86	1	5,56	33,33	5	10,87	56,52
7	1	7,14	50,00	1	5,56	38,89	5	10,87	67,39
8	1	7,14	57,14	1	5,56	44,44	5	10,87	78,26
9	1	7,14	64,29	5	27,78	72,22	5	10,87	89,13
10	5	35,71	100,00	5	27,78	100	5	10,87	100
TOTAL	14	100		18			46	100	

Source: Own calculations